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# THE CANADA LUMBERMAN

Wood-Workers', Manufacturers' and Millers' Gazette

TORONTO, CANADA, JUNE, 1901

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## LUMBERMEN'S BLANKETS

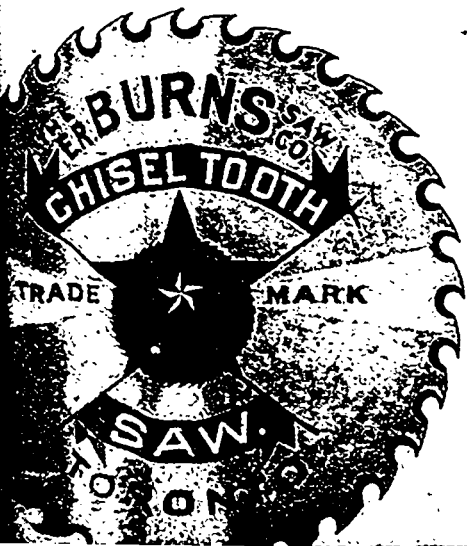
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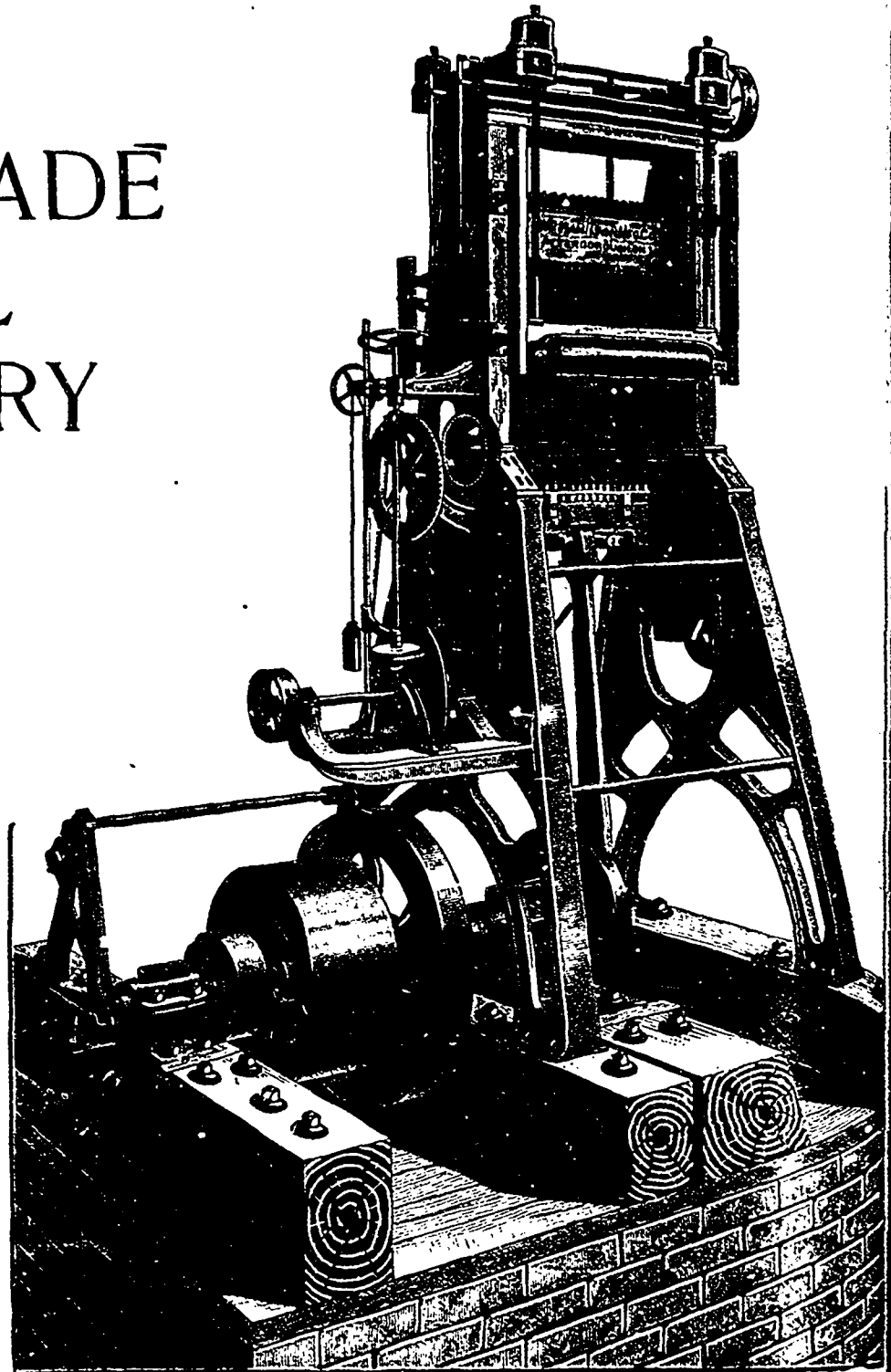
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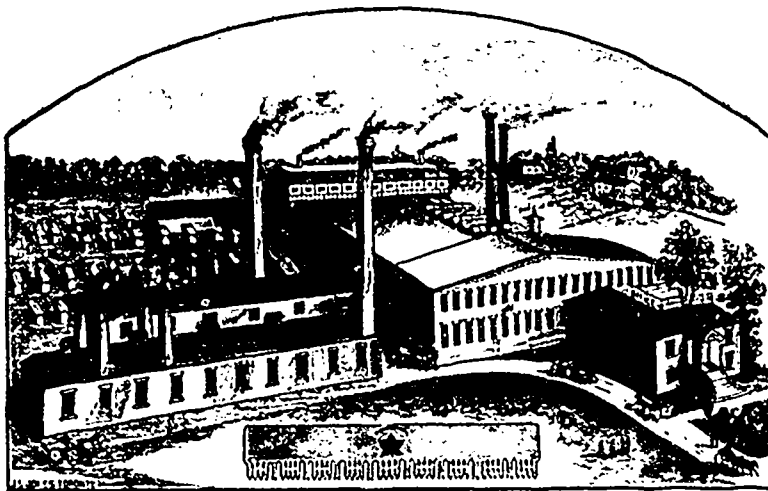
# MAPLE LEAF SAW WORKS



## Shurly & Dietrich GALT, ONT.

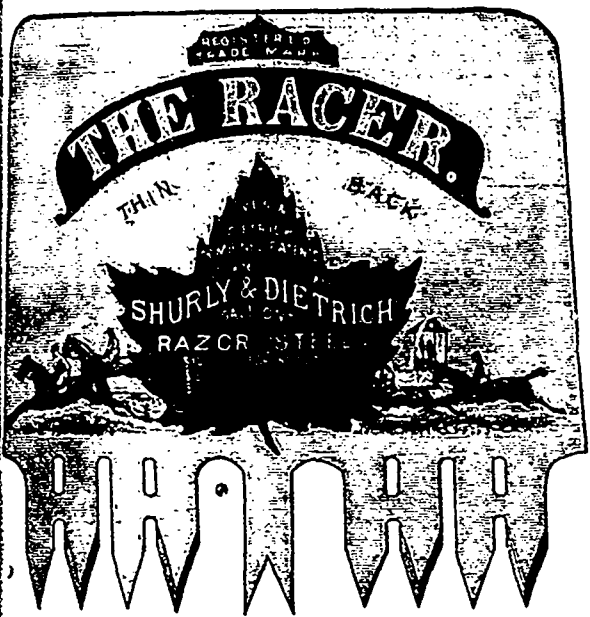
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- PLASTERING TROWELS
- BUTCHER SAWS
- STRAW KNIVES, &c.



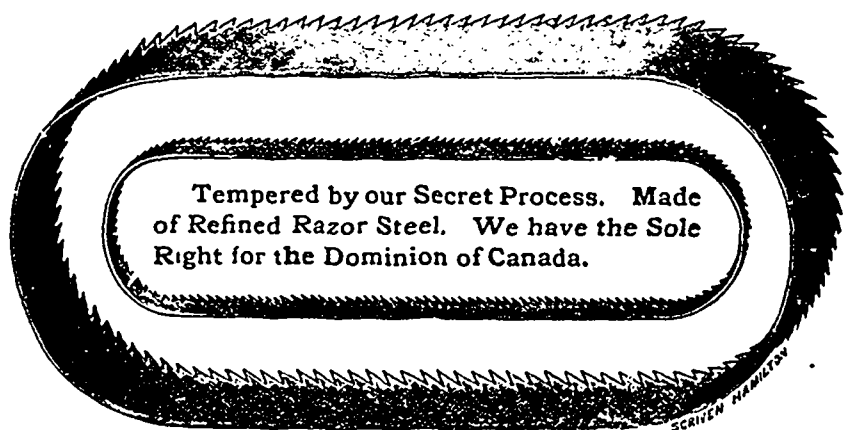
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Directions.—Place the set on the point of tooth, as shown in the accompanying cut, and strike a very light blow with a tack hammer. If you require more set, file the tooth with more level.  
If you follow directions you cannot make a mistake. Be sure and not strike too hard a blow, and it will set the hardest saw. On receipt of 40 cents we will send one by mail.



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AND IS THE

FASTEST CUTTING SAW IN THE WORLD!

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# Northey Triplex Power Pump

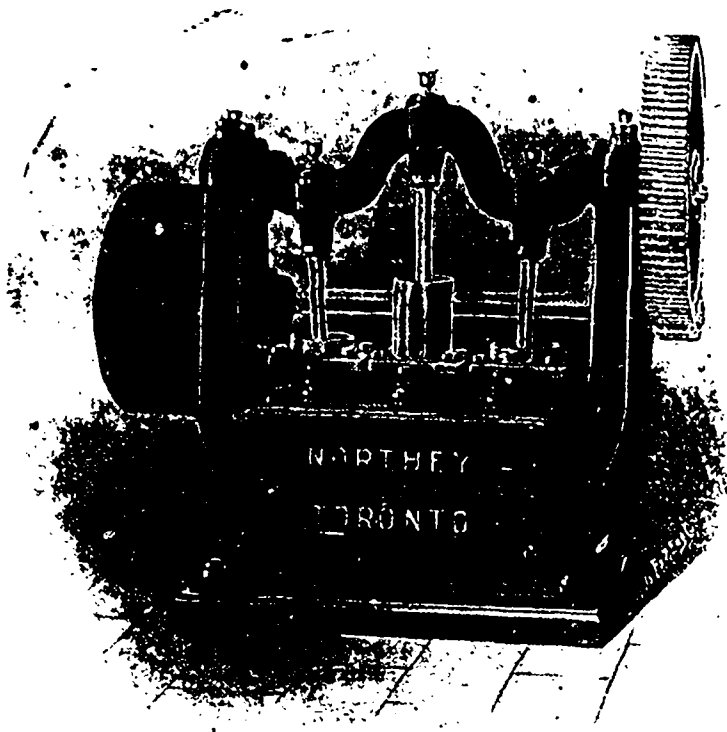
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GENERAL PRESSURE PURPOSES**

In the Northey Triplex Power Pump we offer a machine put together with the skill brought by years of experience in pump building, and with full provision made for the varied demands likely to be made upon a pump of this character. A feature of value is that the three cranks are placed 120 degrees apart, thus giving a practically constant flow of water—minimizing strain on pump and economizing power. The pump can be readily repacked and taken up, and all details are carefully worked out. It can be conveniently operated by electricity, by water power, or by belt from engine. Different styles and sizes made to suit all duties.

WE ARE MANUFACTURERS OF OVER FIVE HUNDRED DIFFERENT STYLES AND VARIETIES OF STEAM AND POWER PUMPS FOR STATIONARY AND MARINE PURPOSES. WE INVITE ENQUIRIES FROM ENGINEERS, MINE SUPERINTENDENTS AND OTHERS FOR THEIR REQUIREMENTS IN OUR LINE. CATALOGUES AND SPECIFICATIONS FURNISHED UPON REQUEST.

We are also manufacturers of the Northey Gas and Gasoline Engine, which has proved to be the handiest and most convenient power for small or intermittent power users in the market. Suitable for machine shops, pumping and electric light plants, etc. Write for illustrated descriptive booklet.

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**SYRACUSE BABBITT METAL**

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# THE CANADA LUMBERMAN

TORONTO, CANADA, JUNE, 1901

TERMS, \$1.00 PER YEAR  
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## MR. J. C. LANGELIER.

Mr. J. C. Langelier, who fills the important position of Superintendent of Forest Rangers in the Province of Quebec, is one of the ablest and most versatile of the representatives of a family who have won distinction in the province by their great abilities and eminent public services. He is the brother of Hon. Francois Langelier, now a Judge of the Quebec Superior Court, whose name is regarded so prominently for many years in the politics of Quebec, both Provincial and Federal, as a Cabinet Minister, as a member of the Provincial Assembly and the House of Commons, and as one of the leaders of his party in the Quebec district; and of Hon. Chas. Langelier, now M.P.P. for Quebec, who was Provincial Secretary in the Merrett Administration, and who is still one of the most conspicuous figures in Quebec public life.

The subject of our sketch was born at St. Basile, County of Bagot, P.Q., in 1845, so that he is now in his fifty sixth year; yet he is still as active and vigorous and as ready to face any exposure and hardship as most men at thirty. A perfect colossus in size, he towers physically as much as he does mentally above his fellows. Educated at the College of St. Hyacinthe, P. Q., where he went through a complete classical course, he studied law at Laval and Victoria Universities, and was admitted to the Provincial Bar in 1870, but never practised his profession, as his tastes ran rather in the literary groove. He preferred the pen and the atmosphere of the editorial lectern to the atmosphere of the law courts. He accordingly took up journalism and successfully as well as successively, edited *Le Courrier de St. Hyacinthe*, *La Nation*, *Le Canadien*, etc., besides acting as a frequent contributor to the columns of *L'Electeur*, *Le Soleil* and other well known and influential French newspapers published in the province; in fact, he soon became a power in the press, as well as by his readiness and force as a writer as by his wonderful knowledge of all the facts and information that bore on the questions of the day, and by his untiring energy and industry.

Mr. Langelier's pen has also been as prolific as his versatile. He has published a great many valuable pamphlets on agriculture, colonization, railways and the sources generally of the Province of Quebec and of the Dominion. His sketch of the Province of Quebec, published for the Administration of the then Premier of Quebec, the late Hon. H. Merrett, is still deservedly regarded as the most complete compendium of statistical and other useful information relative to the province, its population, industries and resources of all kinds. And the same praise may be extended to his sketches of the Gaspé district, the Lake St. John country and the northern regions of Quebec stretching to James Bay, which remain the best yet published in regard to those parts of the province. Indeed, it may be said with great truth that he knows every nook and cranny of his native province. Certainly none are better acquainted with its forests, water powers and lumber trade, and none better deserve the nickname of the "walking encyclopedia" which his friends have applied to him. A recent contribution of much value was a paper on "The Lumber Industry in Relation to our Forests," read before the Canadian Forestry Association and published in the April issue of this journal.

Yet Mr. Langelier is a most unassuming and unassuming man. Like his brothers, he might have entered the Legislature or Parliament, but he has repeatedly refused to become a candidate for public honors, and notably so for Bonaventure County in 1890. From 1887 to 1892, he filled the important office of Deputy Provincial Registrar, and it was while occupying this position that he compiled and published the "Description of the Surveyed Townships of the Province of Quebec," which is one of the most useful of the official blue-books of the province, embracing as it does the most precious information regarding all the surveys and explorations made there down to 1890. In 1897 he was appointed Superintendent of the Forest Rangers of the Province, and in that capacity has displayed his usual ability, vigor and activity, besides carrying out a number of reforms, which have largely contributed to Premier



MR. J. C. LANGELIER.

Superintendent Forest Rangers, Province of Quebec.

Parent's successful administration of the Department of Lands, Forests and Fisheries. It may be added that Mr. Langelier is also an expert in all matters relating to the pulp industry, to which he has given a powerful impetus by his reports to the Department and his writings in the press.

## ACCIDENTS IN WOOD-WORKING FACTORIES.

The Inspector of Factories for Ontario, reporting on the accidents during 1900, states that of those recorded the wood-working industries were responsible for 68, as follows: By saws, circular mostly, 25; sticks thrown by saws and planers, 2; planers, jointers, and shapers, 29; veneer cutter, 1; heading machine bursting, 4; embossing machine, 2; fell into mill gearing, 1 (fatal); drawn in and held against a saw, 1 (fatal), and falling off a lumber pile, 2.

The Inspector says: "Saws and planers of different kinds account for nearly all the accidents in this industry, and I have no doubt but that those happening from these machines can be reduced in some measure by proper guarding; but it is difficult to get some employers to see that these machines can to a considerable extent be

provided with guards that will prevent many of the accidents from occurring, though I am still to be convinced that all saws and planers of different kinds can be so guarded that accidents would be impossible. Some employers have told me that they have provided such guards, but their employees soon quit using them. Others have told me that they will discharge any employee who uses a circular saw without the saw guard, and have therefore no difficulty in having them kept in use. One of these is a large furniture manufactory, which has not reported an accident for over ten years, simply because more have occurred. In the large woodworking factories having several circular saw machines, each for different work, it is not difficult to guard them, but in factories not so well equipped with saws, and each saw having to do a greater variety of work, with different thicknesses of lumber and the guards having to be adjusted to that work, which means trouble and more loss of time—the workmen, as a rule, do not favor guards, and the employer does not insist on their use. Some employers take the ground that the time lost in changing a saw guard is a valid objection to its use, and would be held in law as impracticable, as the law only requires protection when it is practicable to give it. An employer may take the risk and do without the guards, but if there is an action for compensation for injuries received from an unguarded machine, and his defence is that it was impracticable to guard it, he must bear in mind that the plaintiff may produce evidence to show that similar machines doing similar work in another factory are guarded, and the plea of impracticability would be of little avail. Then as to buzz planers and jointers, one can cover the gap over the knives, all except just so much space as will permit the timber to come in contact with the knives, which has to remain uncovered, and that is where the danger is, or in putting through a tapering stick like a waggon tongue, the gap must be uncovered enough to allow the widest part of the wood to pass over the knives, which are exposed when the narrow part of the stick is going over the gap. I have known of cases where men have lost fingers in planers when the knives are covered all except one inch to allow an inch stick to pass over, they simply dropped their fingers into that exposed inch of the knives. There is a device made of thin board, the shape of a pear, with the small end fastened to the bed of the planer, the body presses against it and causes it to follow up the pieces of wood passing over the knives, so that the gap is never uncovered. These are in use in three or four furniture factories in Berlin and Waterloo, but I think they are of doubtful utility. Two accidents happened from slivers or sticks being thrown from a saw. These cannot always be avoided. The embossing machine is not a dangerous one, still there were two accidents reported as happening from the one of which happened to a man reaching over his shirt took fire from the gas flame for heating the embossing roll. One happened (fatal) in a saw mill, a foreman was killed, no one saw the occurrence, but it is supposed he was walking on a beam and fell off, striking the shafting, or his clothing was caught in the shafting, which revolves rapidly.

Steinhoff & Gordon have decided not to rebuild their stove mill at Wallaceburg, Ont.

### A BOOK-KEEPING SYSTEM FOR A WHOLE-SALE OR RETAIL LUMBER YARD AND PLANING MILL.

By S. A. ULLMAN.

Cash Book, Journal Ledger, Sales Book, Contract Record, Freight Book, and Bill copying book are the books used.

In some enterprises of this character separate sets of books are kept for the mill and for the yard; but from the query in "Home Study" I do not understand that separate sets are required.

Sales in this line are mostly time sales, and in contract form. The builder comes to the yard or mill with his list of timber or mill work and asks for a figure, generally giving copies of his list to all competitors in the vicinity. The list is copied carefully into the contract register (an ordinary ruled record book) with the material which will come from the yard and that which will come from the mill separate. A figure being given the builder, say \$1,000, for the entire list, the price, if acceptable, is noted on the page of the contract register, with the date sold, purchaser's name and address, manner of delivery, terms, etc.

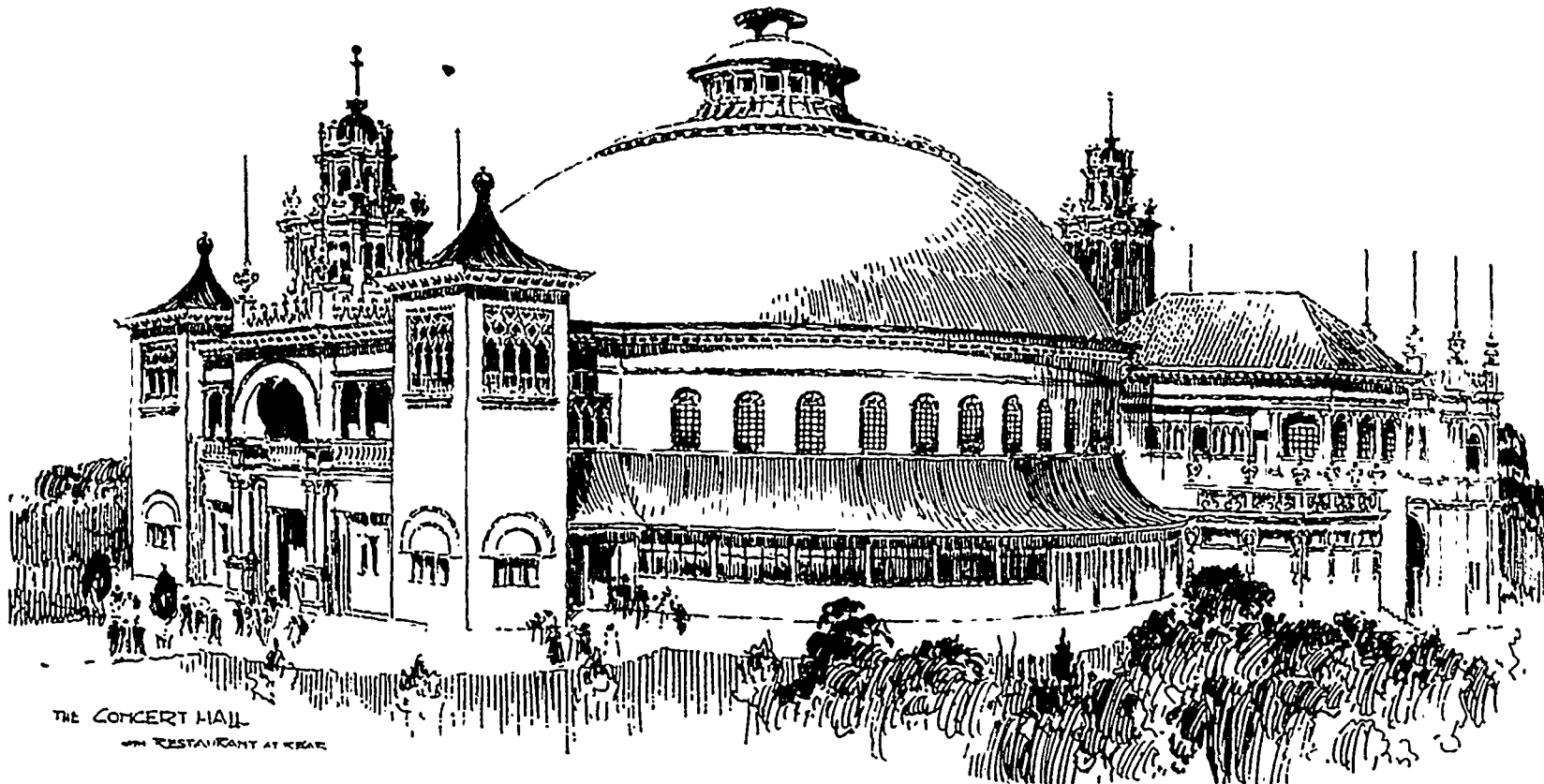
of sales account. Two such sales books, one Tuesday, Thursday, Saturday, and the other, Monday, Wednesday, Friday, should be used, which will allow the book keeper to post the previous day's work without interruption. Frequently the total amount on tickets posted to a customer's contract account does not agree with amount of the contract, but as this discrepancy arises from the variation, in pricing on the various sales tickets and in the contract register (owing to the inability to tell exactly what the mill work would cost), it is disposed of by charging the contract account and crediting sales account, or vice versa, through the journal, with the explanation "under (or over) pricing on sales tickets," accordingly as the total of the tickets charged by the customer's contract account is less or more than the amount of contract. It is best to keep each of a customer's contract accounts separate from his running account. As each contract is completed the balance of the contract account is transferred by journal entry to the customer's running account.

"John Smith".....\$1,000  
 "John Smith, Vernon Ave. yard and mill contract. Contract completed".....\$1,000

ger to be made, excluding the individual to counts of customers and creditors, and per- toring the proprietor to ascertain his condition before the numerous postings to customers' and creditors' accounts are completed, if desired, the balances of individual, customers' and creditors' accounts when taken out are known to be correct if they tally with the balances of the controlling accounts.

The total of cash sales as shown by the cash register, and as proven by the total of cash sales tickets, is entered daily in the cash book, and the difference between the sum of the totals of the four columns on each side of the cash book, the bank balance and the cash on hand, should balance the cash book.

When notice of the arrival of a carload of lumber is received the particulars should be entered in the freight book, and the shipper's account charged with the amount of the freight when same is paid—provided such are the terms of purchase. When invoices are received and checked they should be posted direct to the creditors and purchase accounts, marked with ledger folios, and filed ahead in calendar file to date when payment



THE CONCERT HALL  
 WITH RESTAURANT AT REAR

GLASGOW EXHIBITION BUILDINGS—CONCERT HALL.

The sales book is a book of consecutively numbered tickets, original duplicate and triplicate. The original and duplicate tickets are taken by the teamster with each delivery. The customer keeps the duplicates and receipts for the load on the original, which is returned by the teamster and the day's receipted original tickets are posted back in the sales book opposite the triplicate ticket bearing the same number. In case of dispute reference can always be had at once to the original ticket, which is a receipt for the goods. The sales book is made a little wider than the tickets, allowing room for two money columns. Tickets are made out by the shipping clerks: one for every shipment on account of a contract, and for cash sales as well, but in the latter case the ticket is stamped "paid" and the amount is not extended into the outer column. The footing of the outer column gives total time sales for the day or month, and the cash register the daily total of cash sales. Posting is done direct from each triplicate ticket to the customer's account, the ledger folio being entered on each ticket as posted. Cash tickets, of course, are not posted. The monthly footing is posted to the credit

If the contract accounts were not kept separate from a customer's running accounts, the balance shown on his monthly statement would contain items on account of contracts which would not be due until the contracts were completed, perhaps not for several months.

The cash book should have four columns on each side.

The first column for charges and credits to customers' accounts.

The second column for charges and credits to creditors' account.

The third column for charges and credits to real, nominal, special and controlling accounts.

The fourth column for charges and credits to expense account.

In this line there are many daily charges and credits to expense account, and by allowing a special column for expense it is only necessary to post the total of this column at the end of the month.

The totals of customers' and creditors' columns are posted monthly to sundry customers, controlling account and "sundry creditors, controlling account," thus enabling a balance of the led-

should be made. When paid they are filed away alphabetically. If voucher system of payment is used the invoice should be first posted to a voucher form, and then treated as above, except that opposite payment in cash book in red ink should be written the voucher number, and when paid invoices are filed under voucher numbers and indexed under creditor's name.

In posting from sales tickets to customers' accounts, the referring number should be the ticket number and not the page of sale book.

The sales tickets for each day should be filed the following day and the bills kept in a binder portfolio, having a page to each letter of the alphabet, and each day's charges added on the bills so that at the end of the month only the last day's items need be added, and the bills and statements can be in the customer's hand on the first of the month.

A carbon copy or letter press copy should be kept of all bills.—The Book-Keeper

—The plant of the Walkerville Match Company at Walkerville, Ont., was almost totally destroyed by fire last month. The box and basket factories were saved. The loss is in the neighborhood of \$100,000.

**IMPORTANT LEGAL DECISION AFFECTING LUMBERMEN.**

The Rathbun Company, Applicants; The Longford Lumber Company, Respondents. This case was heard in the County Court of the County of Victoria, and was an application under the Rivers and Streams Act to fix the tolls on South Creek in the district of Haliburton. The judgment is as follows:

In the matter of the Act for Protecting the Public Interest in Rivers, Streams, and Creeks, and in the matter of an application to fix the tolls on South Creek, in the Provisional County of Haliburton.

The Rathbun Company are the Applicants and the Longford Lumber Company are the Respondents. The first named Company is the holder of a timber license for the northwesterly portion of the township of McClintock, in the said provisional county, and the last named company of the southeasterly part of said township.

A small rivulet or creek named South Creek takes its rise in what is described in the evidence as the big marsh in said township, and running through the lands of both the above named companies for a distance of about seven miles, empties into Ox-Tongue Lake, also in said township. About the first day of October, 1898, the Rathbun Company, in order to bring the pine timber

said company was used in said improvements and not included in above mentioned sums.

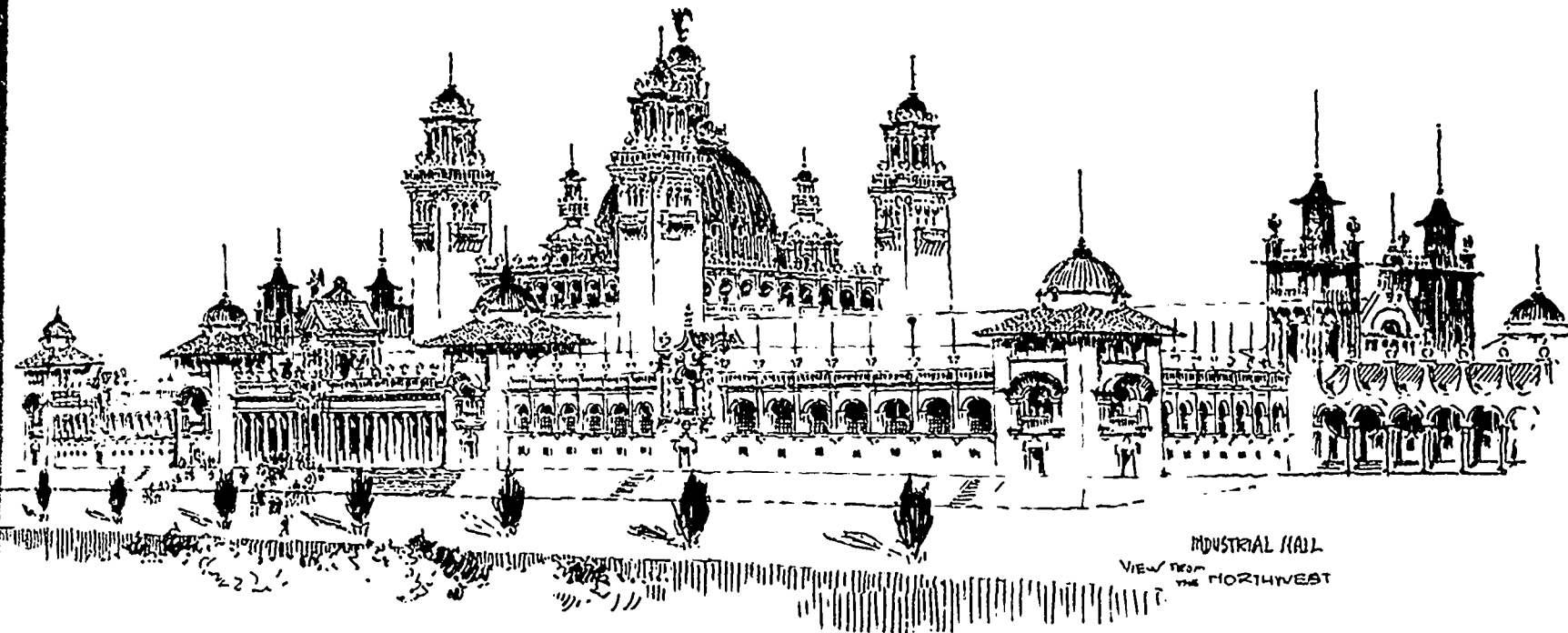
The Longford Lumber Company during the season of 1900 and 1901 have cut and landed a quarter million ft. B. M. on the banks of South Creek and are now using the improvements of the Rathbun Company on said creek for running or driving their said logs and timber, and they allege that in order to make the said improvements useful for their purposes they were obliged to expend \$1,150 in extending said improvements, adding thereto and in repairing same. It was further admitted that the above mentioned quantity was all the logs and timber that the said company would bring down said creek, and that after they finished driving out their present year's cut the improvements will not be of any further use to the said company.

On the 27th day of March last an application was made on the affidavit of the solicitor of the Rathbun Company to issue an order and appointment to settle the tolls to be paid by the Longford Lumber Company to the said Rathbun Company for the use of their improvements on said South Creek. An order and appointment was issued by me fixing the 12th day of April last to proceed with the enquiry and settle the amount of said tolls, and by the said order and appointment I directed a copy of said order and appoint-

neat dams.....	500.00
5th Costs and expenses of superintendent.....	217.50
6th Allowance for time of book keeper.....	140.00
7th Maintenance and repairs, including Jackson's dam.....	350.00
8th Expenditure for fire ranging.....	103.00
9th Interest on items 1 to 9 from date of Expenditure until judgment.....	

They also contended that the improvements should be divided into three sections as shown on Plan Ex No 3, and the tolls computed according to the quantity of timber and logs driven over each section by the respective companies. They further contended that the Respondents expenditure for improvements and repairs made on the works this spring in order to enable them to use the said South creek amounting to \$1,150 should not be taken into account when fixing the tolls to be paid by said Respondents to the Applicants. They further contended that the improvements made by the Respondents were above the area of the improvements made by the Applicants. They further contended that under the last clause of Section 13, Cap 142, R.S.O. 1897, the Applicants were entitled to some further allowance for risk, and they ask for the costs of these proceedings, and referred to Cap. 76, Section 1, R.S.O., Sec 14, Cap 142 and Section 22, Cap. 143, R.S.O. 1897.

Counsel for the Respondent Company admitted



INDUSTRIAL HALL  
VIEW FROM THE NORTHWEST

GLASGOW EXHIBITION BUILDINGS INDUSTRIAL HALL.

on their limit adjacent to South Creek into market, commenced the improvement of that stream so as to make it floatable for logs and timber, and it was admitted that up to the first of March, 1899, they had expended the sum of \$2,594.12 in building dams, slides and other improvements of a like nature on said stream. The Rathbun Company after their experience in driving their logs and timber on South Creek during the spring of 1899, deemed it necessary that further improvements should be made to enable them to run out the balance of their pine timber adjacent to the said creek, and it was admitted that they had expended for such improvements \$2,539.20 between the month of August, 1899, and the 21st day of December following. There appears to have been some correspondence between the above mentioned companies about the landing of the logs of the Longford Company on the banks of South Creek during the winter of 1899 and 1900, and it was conceded that the last mentioned company had remained during that season from landing their logs on said creek at the request of the Rathbun Company. It is admitted that the Rathbun Company have driven out of said South Creek \$300,000 ft. B. M. of logs and timber, and that they have no further use for their improvements on said creek. It is further admitted that rough timber of the value of \$100 belonging to

ment to be served upon the Longford Lumber Company on or before the 5th day of April last, and that a copy thereof should be published once in the Canada Lumberman. The appointment having been adjourned until the 19th day of April last on the application of the Respondents Company, the matter came on for hearing before me on that day in presence of counsel for the Applicants, and Respondents' proof having been given of the insertion of a copy of the said order and appointment in the Canada Lumberman as directed, I proceeded with the examination of witnesses and hearing on that day and on the 30th day of April last.

The matter was argued at length before me, Mr. McLaughlin and Mr. F. E. Hodgins, of the Toronto Bar, for the Applicants, and Mr. Stewart for the Respondents.

The learned counsel for the Applicants claimed that the following accounts and allowances should be credited to the said company's improvements:

1st The amount expended in 1898 and 1899	\$2994.12
Interest thereon from date of Ex. to date of judgment.....	
2nd. Amount expended in 1899 and 1900	\$2539.20
Interest from date of Ex to date of judgment.....	2539.20
3rd. Allowance for rough timber used in work above the value of rough timber taken from Respondent's lands.....	100.00
4th. Cost of clearing and burning brush.....	

that items Nos. 1 and 2 are properly taken into account, but contended that interest should not be allowed for the first and second year, as the Applicants were in the sole and exclusive use of the said improvements during those years, that item No. 3 above should not be charged in the account, as the rough timber used was of no commercial value, and that the action of the Applicants in not taking out the hemlock timber adjacent to the said creek after the improvements were all made proved that said timber was valueless; that no proper account was kept in the Applicants' books of the quantity of rough timber used in the construction of said improvements or of the particulars of items Nos. 4, 5, 6, 7, or 8, although it was proved that the Applicants' manager, Mr. Callaghan, instructed the book-keeper to keep a particular account of those improvements, as the Respondent Company would be liable to pay a portion of the cost; that the and 2 above and claiming no interest or any Applicants served a statement on the Respondents showing their total expenditure on said improvements to be \$5,533.32, comprising items Nos. 1 further payment or allowances; that Applicants cannot be permitted to extend their claim beyond the said statement or in any event beyond the items of claim mentioned in their affidavit of claim filed herein, that no allowance beyond



those mentioned in Section 13, Cap 142, R.S.O., can be taken into account in fixing the tolls; that the improvements on South creek from the reservoir dam to Ox Tongue Lake are an undivided whole and cannot be arbitrarily divided up into sections at the will of the Applicants, and that it is quite impossible to say that one section is more essential than another to the floatability of the stream; that in order that the Respondent Company could use the said improvements for the transmission of their logs and timber over the said improvements it was necessary for them to expend \$1,150 on repairs and improvements thereon within the area of said improvements; that the total costs of the improvements should be divided between the said companies on the basis of the quantity of timber driven out of said stream and over said improvements, that as the Respondents having one-half the quantity of timber to run over said improvements that the Applicants have already run out, that a sum per 1000 ft. B.M. should be allotted or fixed to be paid by the Respondents' Company to the Applicants to cover one-third of the total cost of such improvements.

The Applicants' counsel in answer contended.— That their claim being founded on a Statute cannot be enlarged or abridged by the intention of the parties; that the logs and timber of the Respondents being situated on the easterly part of the township of McClintock, and further from Ox-Tongue Lake, the Respondent Company required to use more of said improvements than the Applicants in driving or floating out their logs and timber.

In order to arrive at a proper sum to be fixed as a toll to be paid by the Respondents Company to the Applicants, for the use of their constructions and improvements on South Creek, it will be necessary under Section 13 of Cap. 142, R.S.O. that the following matters or items be taken into consideration.

- 1st. The original cost of the construction and improvements.
- 2nd. The amount required to maintain the same.
- 3rd. Interest upon said original cost.
- 4th. Such other matters as under all the circumstances may seem just and reasonable

There is no difficulty in dealing with the matters under the first and second and third of those items but more difficulty arises in the application of the fourth item. I cannot accept the Applicants' contention that under this clause I am at liberty to divide the constructions and improvements into sections and assign different tolls to the different sections according to the amount of saw logs and timber floated or transmitted through or over each of such sections by the respective parties. I find the improvements on South Creek from the reservoir dam to the outlet into Ox-Tongue Lake, one series of improvements; nevertheless I consider the use made of the said constructions and improvements by the respective parties as important element to be taken into consideration in fixing the tolls to be paid to the Applicants' Company in this case; neither can I take into consideration on this application the sum expended by the Respondents in increasing the efficiency of said improvements for their own convenience in 1901.

In computing the original cost to the Applicants of the constructions and improvements on South Creek I allow items Nos. 1, 2, 3, 4, 5, and 7 and 800 of item No. 6, and I reject item No. 8, as I consider fire ranging as neither part of the original cost or a proper charge for maintenance, although a proper precautionary measure taken in their own interest in connection with their timber limits. The charge for the book-keeper's time was not as clearly shown as such an item should have been, and I think 800 quite enough to allow.

I summarize the original cost, maintenance and interest as follows:—

Amount expended to March 1st, 1899.....	\$3144 12
Interest thereon to May 7th, 1901, 2 years and 66 days.....	411 38
Amount expended to December 24th, 1899.....	3006 70
Interest thereon to May 7th, 1901, 1 year and 134 days.....	246 57
Maintenance and repairs.....	350 00

Total original cost, maintenance and int. \$7158.77

Having considered the fact that the greater portion of the saw logs and timber of the Respondents will require to be floated or transmitted through or over the whole of the constructions and improvements on South Creek from the reservoir dam to Ox-Tongue Lake, whilst a comparatively small portion of the said Applicants' saw logs and timber was floated or transmitted over the whole of the said improvements, I find that three-fifths of said above mentioned sum of \$7,158.77 should be borne by the Applicants, and two-fifths by the Respondents.

I therefore order and adjudge that the Respondent Company pay to the Applicant Company 66 and one-seventh cents per thousand feet board measure of their saw logs and timber floated or transmitted through and over the said constructions and improvements on South Creek as and for tolls, and I fix the said tolls at 66 and one-seventh cents per thousand feet board measure of saw logs and timber, as provided by Section 13 of Cap. 142, R.S.O. 1897.

I find that the said constructions and improvements will not be of use to any other persons than the said Applicants and Respondents.

I think the costs should be divided equally between the parties, and if the parties desire they can speak of the question of costs later.

Dated this 7th day of May, A.D., 1901.

(Signed) JOHN E. HARDING,

Judge.

### A RETROSPECT OF THE TIMBER BUSINESS.

An unusually interesting article reviewing the development of the British timber trade, and giving much information regarding the import duties charged on lumber before the adoption of the present free trade policy of Great Britain is published in the last special number of the Timber Trades Journal, of London, England.

When the last century dawned there was a duty of 11s per load of 50 cubic feet levied on all European timber imported in the log into the United Kingdom. This was constantly raised until before the century was twenty years old it had increased to the enormous charge of £3 5s per load. This duty did not apply to timber from the British North American colonies, which was imported duty free till 1821, when a duty of 10s per load was decided upon.

The duty on imported timber, which was fixed at 6s 8d in 1787, was increased in the first instance for purposes of revenue, to meet the heavy demands on the country's purse of the French wars. The events which culminated in the destruction of the Danish fleet at Copenhagen having seriously affected the British relations with the Baltic powers, it was apprehended that a deficiency of their accustomed supply of timber might ensue, and the Government of the country, egged on by the shipping interest and the Canadian merchants, decided on the policy of bolstering up the timber industry in Canada, to the detriment of trade with the north of Europe. Thus the duty on timber was still further added to as a protectionist measure when a further increase had become detrimental rather than advantageous to the treasury.

In 1813, when the free navigation of the Baltic had been restored, the duty was again increased 25 per cent, and it was not until six years after the war was over, in 1821, that any attempt was made to reduce it. These burdensome duties, moreover, did not represent the whole of the charges made on imported timber, as there was always an additional duty payable on timber imported in foreign ships. When the duty on tim-

ber imported in British ships at that 6s 8d, the extra charge only amounted to but it gradually increased with the increase of the 1821 charge until when the ordinary timber was £3 5s that importers had to pay 3s excess, or £3 8s per load.

When the duty on timber imported in the by was 6s 8d per load, the duty on deals under standard of 1809 to £8 15s, in 1810 it was £15 5s in 1821 the scale of dimensions was changed, the charge on deals not exceeding 16 feet length was fixed at £19, and on deals from 16 feet to 21 feet at £22. The standard against £19 for Baltic deals. The effects of the increase of the duties on timber and the preferential treatment accorded to the British colonies is well illustrated in the following table. For the sake of conciseness the average annual value for the imports of every five years.

REPORTS OF TIMBER INTO THE UNITED KINGDOM.

Five year periods.	From Baltic Leads.	From British Colonies Leads.
1788-1792	219,396	2,660
1793-1797	164,600	1,225
1798-1802	178,019	2,916
1803-1807	232,477	16,331
1808-1812	73,718	120,537
1813-1818	125,855	147,507
1819-1823	116,600	335,556
1824-1828	191,890	410,093
1829-1833	122,783	412,682

So onerous did the duties on European timber at last become that it was no rare thing, in spite of the heavy freight of those days, to ship Baltic timber to the Colonies for the purpose of introducing it into England at Colonial rates. It was asserted that there had been a profit of ten shillings per load on one of these transactions, where the duties on Baltic timber were absolutely prohibitive of any profit at all. No reduction of the timber dues was carried out until 1842, when the duty on European wood imported into Great Britain was fixed at 2s for sawn and 2s for hewn wood. The duty on Canadian wood was at the same time reduced to the nominal amount of 1s and 2s. In 1847 the discriminating duty was reduced to 14s. Four years later the duty was fixed at 7s 6d per load on square timber and 10s per load on deals and battens from other than Colonial ports. In 1860 it was reduced to 1s and 2s per load, and in 1864 abolished altogether.

#### TIMBER PRICES.

There was a considerable rise in prices, as was to be expected, during the period of the French wars. The following table give the estimated prices of white pine which were obtained for Quebec white pine deals from the recognized Canadian ports:

PRICES QUEBEC WHITE PINE DEALS, FIRST QUALITY, PER STANDARD.			
1808....	£30 0	1817....	£17 2 6
1809....	43 0	1820....	13 0 0 to 16 0
1812....	26 0	1825....	16 0 0 to 19 0
1815....	33 0	1830....	14 0 0 to 16 10

The evidence given at the parliamentary commission of 1835 shows that the Canadian real price at that date brought £4 12s 6d per load of 50 cubic feet. But the net proceeds to the Canadian seller were only £1 12s 6d, as the gross profits were reduced by various charges to the extent of £3 before anything could be put into the seller's pocket. The charges on Canadian red pine were as follows: Duty 10s, freight 12 Government charges, 3s, interest, 2s 4d, commission and brokerage, 4s 8d— (£3 in all.) On Quebec white pine the selling price was £3 17s 6d, the total charges thereon amounting to £2 18s 10d, and the net proceeds therefore being £1s 8d.

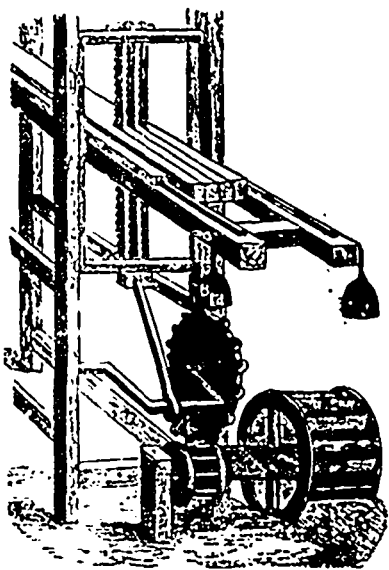
The price of Quebec deals in 1835 was £14 10s per standard. The duty was £1, freight 6s, charges, 9s 6d; interest 7s 3d; commission and brokerage, 14s 6d, total, £8 11s. The net proceeds were therefore, £5 18s 9d per standard hundred.

#### THE FIRST MILLS.

It was not until the last half of the eighteenth

century that the mill came into general use in Great Britain. A saw mill was erected in England as early as 1663, but it was destroyed by the laboring mob, who bitterly resented its introduction. As late as 1767 there are records of saw mills employed through this popular prejudice. Probably the earliest description of a saw mill to be found is that sent by the Ambassador from the Queen of England, to the Court of Rome, which has reference to one then in use in the neighborhood of Lyons. It is perhaps worth while to quote it verbatim: "The saw mill," the ambassador writes, "is driven with an upright wheel, and the water which maketh it go is gathered whole into a narrow trough, which doth breath the same water to the wheel. This wheel hath a piece of timber put to the axle-tree and like the handle of a broach and fastened to the end of a saw, which being turned by the force of the water, hoisteth up and down the saw, that it continually catch in, and the handle of the saw is kept in a rigall of wood from swerving. Also the timber lieth, as it were, upon a ladder which is brought by little and little to the saw with another vice."

It was in America that the saw mill when first introduced took the firmest root, as the vast extent of the forest that required clearing led to this kind of machinery being eagerly adopted and widely employed. The first saw mill of which there is any record was erected on Salmon Falls river, near the city of Portsmouth, N.H., be-



ONE OF THE FIRST SAW MILLS.

tween the years 1631 and 1635. About 1650 they came into use in Virginia. The accompanying illustration of the mill first built there is reproduced from a tract published in London, in which is also found the following description:

"This engine is very common in Norway and mountains of Sweden, wherewith they cut great quantity of deal boards; which engine is very necessary to be in a great town and forest, to cut timber, whether into planks or otherwise. This heer is not altogether like those of Norway, for they make the piece of timber approach the saws on certain wheels with teeth, but because of preparations which those toothed wheels are often subject unto, I will omit that use: and instead thereof, put two weights, about 2 or 300 pound weight a piece, whereof one is marked A and the other B. The cords wherewith the sayed weights do hang to be fastened at the end of the 2 pieces of moving wood, which slide on two other pieces of fixed wood, by means of certain small pulleys, which should be within the house, and so the sayed weights should always draw the sayed pieces of moving wood, which advancing alway toward the saws, rising and falling, shall quickly be cut into 4, 5, or 6 pieces, as you shall please to put on saws, and placed at what distance you will have for the thickness of the planks or boards you will cut, and when a piece is cut, then let one with a lever turn a roller, whereto shall be fastened A 1 strong cord which shall be back the sayed piece of wood, and lift again the weights; and after put aside the piece already cut, to take again the saws against another piece of wood, which once done, the ingenious artist may easily convert the same

to an instrument of threshing wheat, breaking of hemp or flax, and other as profitable uses."

Among the timber merchants doing business in England one hundred years ago appears the name of Irvin & Sellers, of Preston, Lancashire, and Bootle, Liverpool. This firm can boast of an unbroken success in one family for upwards of a century. Two years ago they celebrated their centenary, to commemorate Mr. John Irvin's commencement of business at Friargate in Preston as a manufacturer of shuttles in the year 1799.

PURCHASE OF MILL SITE.

Messrs. Geo. T. Houston & Co., hardwood lumber dealers of Chicago, have purchased 148 and a quarter acres in Vicksburg, Mississippi, as a mill site, paying therefor \$23,125. The tract fronts on Lake Centennial, corners the National Cemetery, and is bordered by the V. & M. V. R.R. Co.'s tracks. The proposed plant will include 4 band saw mills and numerous other gang and re-saws, including a number of veneer saws and woodstock factory connected with conveyors to consume low-grade material and refuse. The company will employ from 500 to 800 men in their manufacturing and logging operations and will build a fleet of light draft, modern steamers and barges for towing and barging logs on the Yazoo and Big Sunflower rivers.

The company will retain their big double band mill at Bigbee, which has made a record never before heard of. The mills were started on a night and day run January 10, 1899, about the time lumber began to boom, and has kept it up and is still running night and day, with a year's supply of logs ahead.

The company has recently secured additional stumpage near the Bigbee mill on Tombigbee river, known as the "Eikelberger Tract," amounting to 4800 acres, covered with a virgin forest of white oak, ash, cypress and poplar, and that, with their present holdings, will run the Bigbee mill a number of years.

The new plant to be built at Vicksburg will contain all new and modern machinery to be equipped with all the latest and most approved labor-saving appliances. Construction is to be commenced this coming fall, or probably sooner. To start with, a single band mill will be temporarily constructed at once, to saw out the material required for the construction of the new plant, which will take from 5 to 6 million feet of timber and lumber. The first floor of the mill proper will be of stone and brick; the second and third floors frame, covered with galvanized iron, strictly fire proof. The factory building, power plant and machine shop will be constructed of brick, stone and iron, modern and of a permanent nature and likewise fire-proof. The power house will include two 1,000 horse power engines, with separate attachments, and a battery of 18 boilers with 150 pounds steam pressure.

The four band, gang, veneer and re-saws are to be built with a capacity of 400,000 feet of lumber board measure, per day, which will be the largest hardwood mill ever constructed.

The company now own 260,000 acres of the finest virgin forest lands in the south, all of which has a perfect title and is suitable for cultivation. The company have distributing yards and branches in Chicago, Cairo, Memphis, Bigbee, and Vicksburg shortly to be added. Their handling of hardwood lumber is enormous, amounting to 100 million feet of assorted hardwood annually, which is distributed to the principal consuming markets throughout the United States and foreign countries.

ABOUT STRAIGHTEDGES.

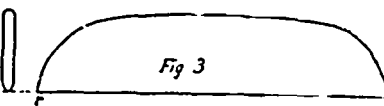
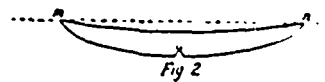
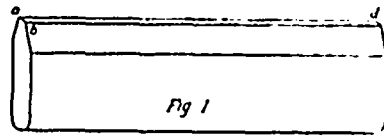
By T. L. HILES, IN THE WOOD-WORKER.

How many filers are there who hammer the circular or band saws under their charge, whose attention has never been specially directed to the subject of straightedges? Not a great many, let us hope. That there are a few such is evidenced

by the occasional accidents which call the subject of straightedges into view. A straightedge is a small affair to look at, but its condition is a large affair in anvil work. How many employers see to it that their filing room is supplied with correctly-made straightedges and with a test bar by which they can be gauged for accuracy?

Not every mill is all that could be wished for in this direction. This is one of those minor things if there are minor things in a mechanical point of view—which are sometimes left to the chance ability and opportunity of the filer to make for himself from a piece of an old saw. The edges of a straightedge should be parallel right lines. If they are not also straight lines they should vary from straight lines by a certain definite quantity, in a definite direction and for a definite purpose.

To illustrate, Fig. 1 may be a straightedge in which the surface a b c d is perfectly true, a d and b c being straight lines and parallel. It is the practice of some to use a straightedge with the edge concave about 1-100 of an inch, as shown, in an exaggerated form, in m n, Fig. 2. The thickness a b is of importance. The length of the straightedge will govern its general thick-



ness, which should be sufficient to render it stiff so it will not readily spring out of line. The edge a b need not exceed 1-16 of an inch in thickness, and may be less on short lengths. All straight edges should be of good steel, nicely tempered, so they will wear uniformly.

It is surprising to find upon what makeshift tools a mill is sometimes dependent. A young man who is the filer in the mill running a 6 inch resaw, depends upon a tool like that shown in Fig. 3. It is 6 inches long by 2 inches wide, and 13-gauge thick, made from an old circular saw. The edger is round, ground up by hand on a emery wheel. The rounding of the edge varies here and there, more metal being ground off at one place than another. Unless held perfectly vertical it will indicate an apparent lump upon a true surface. The user must often choose between a lump and the appearance of one. The industry he displays with the hammer and the appearance of his saw leads one to conclude he must labor on both the actual and the apparent inequalities.

In another mill a filer, in examining a shingle saw, complained it was in poor shape, seemed to be crooked and lumpy. An examination of his straightedge showed that it was soft, made from an old band saw, and had some kinks along the edge. Allowing that it was true on the edge, the least inclination of the level from a vertical position showed that what he mistook for lumps and wands in the saw. The worst feature of this case lay in the insistence, by the filer, that the faulty condition of his level had nothing to do with the case. It being a level or straightedge, and made by himself, satisfied him that anything tested by it and found wanting should be condemned. Reflection, it is hoped, has since cleared away his rash confidence in this particular level. This is a fault in levels to be guarded against. It is just as important that they be true on the sides as on the edges.

A test bar made from a bar of steel 3-16 or quarter of an inch thick by 1 and one quarter or 1 and one-half inches wide, straightened, and planed and ground true and square on the edge is very useful for testing the levels in daily use, to correct for wear. If the level is not of a uniform temper it will wear more in one spot than another.

# 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 trade in Canada information on which it can rely in its operations.

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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.

## LUMBER PRICES.

FIFTY years ago the timber supply of the North American Continent was much greater in extent than it is to-day. Each succeeding year saw a diminution in the quantity of standing timber, and naturally with this diminution and the fluctuation in the demand came a readjustment of the prices of lumber from time to time. A pamphlet issued by the Treasury Department of the Bureau of Statistics of the United States gives some figures of the average wholesale selling price of lumber for the past sixty years which are exceedingly interesting and suggestive.

The average price of extra clear white pine boards in 1840 was \$24 per thousand feet. This price remained unchanged for about 20 years, after which it advanced within four years to \$40, and since that time the range has been from \$35 to \$48. This latter figure was only reached in 1899. Within forty years, therefore, the price of the best quality of pine lumber has advanced 100 per cent.

White pine boards of common quality were selling in 1840 at \$10.50 per thousand. From 1864 to 1874 the price ranged from \$10 to \$22, the latter figure in 1873, and the highest point which has yet been reached for common pine. Since 1874 there has been no sustained advance, the price ranging from \$14 to \$17, with slight fluctuations from year to year. In 1899 the price was \$16, but in the previous five years from \$12 to \$14. The advance in the price of common boards within the sixty years under review has been only slightly in excess of 50 per cent.

The figures for cull white pine boards cover

less than the last 40 years, during which time there has been no substantial advance, the price ranging from \$9 to \$17, the latter in 1873. The lowest point was reached in 1876, since which time the price has recovered about \$4 per thousand.

The price of pine doors, 2 ft. 4 in. x 6 ft. 8 in., 1 1/4 in. thick, has declined within the sixty years. In 1840 the price per door was \$1.75, and in 1899 \$1.15. The highest price, \$2.25 per door, prevailed in 1874. For the next ten years the price ruled about \$2, since which time it gradually declined, until 80 cents was reached in 1896. Thus while lumber prices generally have advanced, doors have been produced at a lower cost. This is doubtless due largely to the introduction of improved machinery and manufacturing methods.

An advance of \$3 has been made within the period in the price of hemlock, \$9 being the quotation in 1840, and \$12 in 1899. The high point of \$16 was reached in 1871, and the low point of \$8 in 1896.

Very little change has taken place in the price of first quality maple boards, the selling price for the past 40 years being from \$20 to \$24. Oak boards advanced sharply from 1855 to 1865, selling from \$10 to \$30 in that period and advancing gradually until 1899, when the highest price of \$36 was reached.

The price of shingles has shown a wide variation, the lowest point within sixty years for 16 inch XXX being \$1.90 in 1846, and the highest point \$5.10 in 1868. From 1864 to 1874 prices ranged from \$3.50 to \$5.00, gradually declining for the next eight years, then selling at about \$3.00 until 1891, when they declined and sold at \$2.60 until 1898, when there was an advance to \$2.85.

Recapitulating, it will be seen that the best quality of lumber is bringing considerably higher prices to-day than some years ago, while common lumber is but slightly higher. This is the natural result of the decreased production of the higher grades of lumber and the consequent increase in the production of the lower grades. The timber now available produces a smaller quantity of high grade lumber than did the timber of, say, forty years ago. The higher prices now ruling are justified to the fullest extent by the changed conditions. Indeed, it is a matter of surprise that within the period named greater advances have not taken place. The enhanced value of stumpage is alone an item which represents a considerable increase in the cost of producing lumber.

## WHAT OF SPRUCE LUMBER?

PERHAPS there is no class of lumber for which the market is more uncertain than spruce. It has been subject to violent fluctuations in price, but has usually recovered the declines in a comparatively short time. The summer of 1899 was one of some depression, while last year spruce prices were higher. So far this season the market has been most uncertain, with the tendency in the direction of lower prices, particularly for British specifications.

Spruce, although quite serviceable, is a lumber which does not occupy an exclusive field. It meets with competition from yellow pine, hemlock, and other cheaper woods which cannot fill

the place of white pine. Consequently when the market weakens the effect is immediately discernible in spruce prices.

While as lumber spruce is not particularly favored, it does occupy a unique position as a pulp wood; in fact, it may be said to be the only eminently satisfactory timber for the manufacture of pulp. Large purchases by pulp manufacturers have recently had a marked influence on the price of spruce timber. In the Eastern States, where there are a number of pulp mills, spruce logs have changed hands at \$16 per thousand feet board measure.

While at times the spruce lumber market may exhibit signs of weakness, it is well for holders of stock to remember that the spruce lands will each year be drawn upon to an increased extent to furnish the raw material for pulp mills. The curtailment of its production should also be given consideration by lumbermen whenever there are indications of an abnormal supply.

## THE RIVERS AND STREAMS ACT.

IN another column is printed a most important judgment affecting the tolls which may be charged by lumbermen for improvements to rivers and streams for the purpose of facilitating the floating of logs. The case was an application under the Rivers and Streams Act to fix the tolls on South Creek, in the District of Haliburton. It is believed to be the first case of the kind in which a decision has been reasoned out by a judge, and the principles on which tolls should be fixed given.

One of the most important claims made by the applicants was that a section of the Timber and Companies' Act should be applied when, as in this case, all the improvements were used by the respondent's logs, while the applicants only used for the bulk of their logs two of the lower sections. We are not aware that this point has been brought up before. The decision, it seems, is really in favor of the applicants, as, though treating the improvements as all one construction, the judge has charged the respondents a larger proportion than would have been the case if all had used the improvements equally.

A second claim made by the applicants was that the company building the improvements and running the risk of fire, or destruction of those improvements, were entitled to some allowance in that respect by the company who came in after the applicants had run the risk for two seasons. This point the judge did not think was within his province to decide under the wording of the statute. The judgment is an interesting one and will probably form a precedent for lumbermen if it should be upheld on appeal.

## EDITORIAL NOTES.

FREIGHT rates represent a very heavy charge against much of the lumber exported from Canada. Last season rates were unusually high, but the indications are that they will be more reasonable this year. The Pacific coast is handicapped by freights on European shipments, while obtaining an advantage over eastern Canada in catering to the markets of Japan, China and Australia. From five to six months is usually occupied by lumber vessels in making the trip from British Columbia to the United Kingdom, three months

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Australia, two months to Japan, and from three to four months to South Africa.

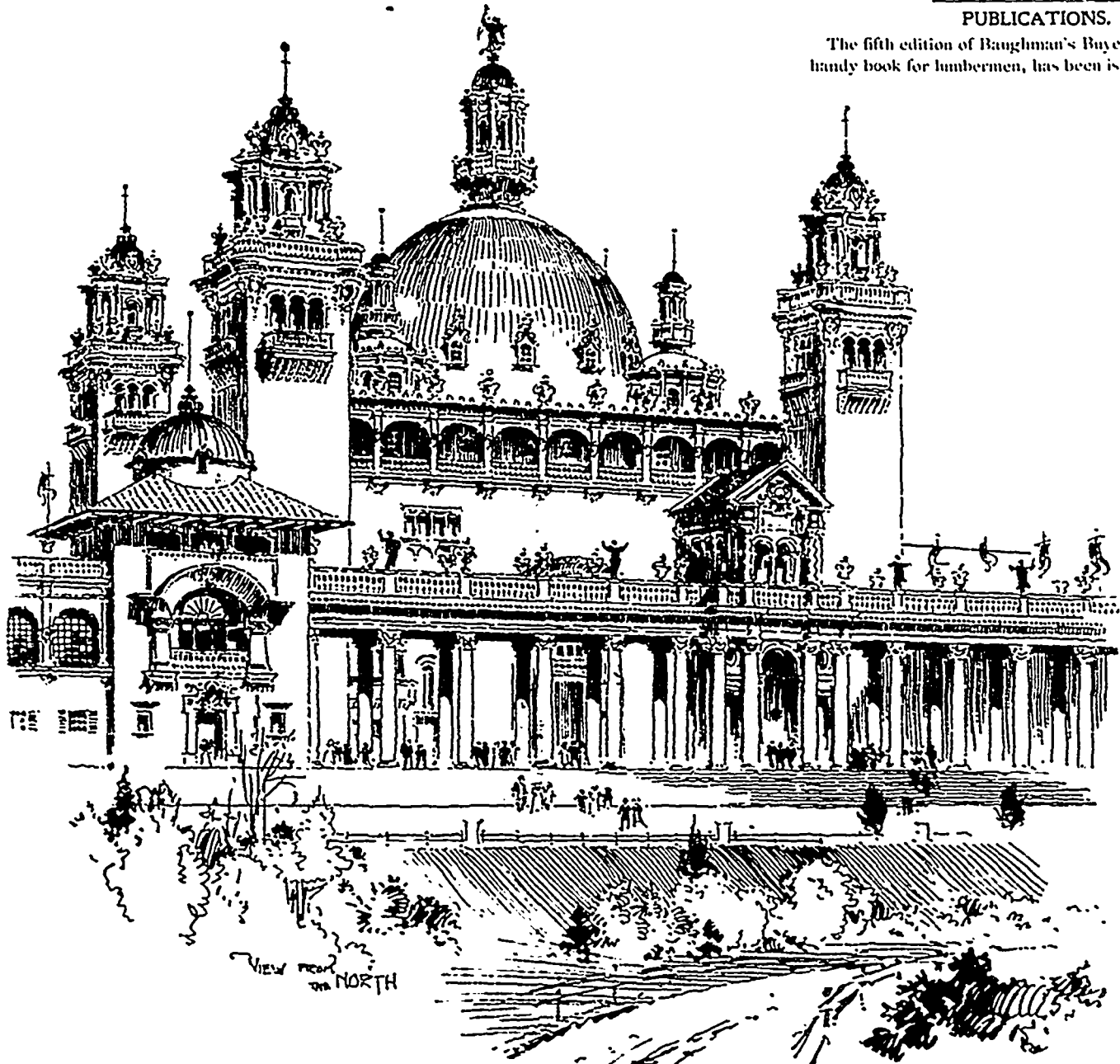
A very large attendance of lumbermen and capitalists may be expected at the sale of Quebec timber limits to be held on June 4th, when in the neighborhood of 10,000 square miles will be put under the hammer. It is understood that the Department of Woods and Forests has received many enquiries regarding timber limits and water powers from United States parties, and that fancy prices are looked for.

directions, which relieves the strain caused by the rapid speed of the carriage of the single band. How to take care of the lumber cut on the backward run is a question sometimes asked. Where circumstances will permit it is preferable to have the live rolls placed in the log deck, just below the top of the blocks, carrying the lumber towards the front of the mill clear off the log deck, where it is dropped onto a transfer moving sideways towards the haul-up, then to a chain of live rolls, conveying it under the log deck, back of the band mill, and down to the edger.

quoted by the Americans. We doubt if there is another branch of the wood-working industry on which the margin of profit has been so small, if there has been a margin at all. It is satisfactory to learn that at last steps have been taken by the Wholesale Sash, Door and Blind Manufacturers' Association of the North-Western States to place prices of their products more in accord with the market value of the raw material from which they are manufactured and the capital invested in their establishments. A new list making advances has just been adapted, the first revision since the beginning of 1895.

PUBLICATIONS.

The fifth edition of Baughman's Buyer and Seller, the handy book for lumbermen, has been issued. The lumber



GLASGOW EXHIBITION BUILDINGS—VIEW OF MAIN BUILDING FROM THE NORTH.

There are in operation in Canada, to our knowledge, two double cutting band mills. These mills have been in operation for a sufficient time to test their merits as to economy, and general utility, and it is understood they are regarded as a success. No doubt the double cutting band will eventually come into greater use, although its progress may be somewhat slow until lumbermen become more familiar with it. It is known that within the last three months the first double-cutting band mill has been installed in Washington territory for cutting fir timber, but none have yet been introduced into British Columbia. It is claimed that in addition to an increased output, the carriage travels at a more uniform rate of speed in both

It has long been the wonder of Britishers how the American door manufacturers, and particularly those of the United States, could sell their product at the low prices which have ruled for some years past. Sentiment on the subject grew so strong that an effort was made about two years ago by the Operative Joiner's Union of Great Britain to boycott American joinery, but this step did not meet with success, an investigation proving that Canadian joinery at least was manufactured under fair and reasonable conditions. Whether the same can be said of the United States joinery may be open to question. It seems strange that with the raw material close at hand our manufacturers have frequently found themselves unable to compete with the prices

tables in this work show nearly four thousand different sizes and lengths, and the number of feet in any number of pieces can be determined at a glance. It contains cost and interest tables, diagrams and rules for cutting rafters, rules for finding number of shingles and number of feet of flooring or siding for any size of building, etc. Copies may be obtained from the publisher, H. R. A. Baughman, Indianapolis, Ind., for one dollar each.

A few years ago the logs in a river in a northwestern lumber district had jammed into a nasty snarl, and no one bankered for the job of going out with a canthook and starting the key log. In the crew was an Indian who was noted for his coolness and his keenness. The boss finally looked over in his direction. "Lacoote," he said "you go out and break that jam, and I'll see that you get a nice puff in the paper. The redskin looked at the logs, and then at the boss. "Dead Injun look nice on paper," he grunted, and walked away



Referring to the British trade, a hardwood manufacturer recently gave it as his opinion that the principal drawback to the export business is that to go into it extensively means the sacrifice to a certain extent of the local manufacturing trade, which particularly should be encouraged. He thought it more satisfactory also to sell to Canadian consumers, as he understood better their requirements. This seems to be the view held by a great many of our hardwood manufacturers. First, they prefer to sell at home from patriotic reasons, to assist in building up the industries of the country, secondly, they find that their trade is more easily handled. To overcome these obstacles, I believe it will be necessary for the British importer to turn his attention, as far as possible, to the handling of hardwoods in the more manufactured state, and also to come up a little in his price. Although the hardwood supply of Canada is in a sense becoming exhausted, there are on cut-over pine limits large quantities of hardwoods to which lumbermen are now giving attention, and as these limits are mostly held by the larger firms, perhaps more stock for export will be taken out in the near future. But I must confess that the average hardwood manufacturer seems content with the local and United States markets.

\* \* \*

A coterie of friends have welcomed back to Toronto, if but temporarily, Mr. John Donogh. Mr. Donogh, as I presume most Lumberman readers know, has of late been engaged in the lumber business at North Tonawanda as one of the principals of the Swan-Donogh Lumber Company. Shortly after establishing himself in Tonawanda Mr. Donogh contracted malaria fever and after a stubborn fight to overcome it, found it necessary to remove from the place and temporarily at least sever his connection entirely from business. Although his health is greatly impaired, Mr. Donogh hopes, by means of a complete relaxation from business and a vacation in Muskoka, to be able to take up the cue again in a short time, although no plans to that end have yet been laid out. Mr. Donogh's company gave considerable attention to the export trade, while he himself has always been a great student of lumber and lumber markets. He believes that eventually a much larger trade will be done direct from the Canadian mills to British dealers and consumers. The number of representatives of large wood consuming concerns who have visited Canada and the United States for the purpose of acquainting themselves with the conditions of the lumber trade was an evidence of this. Many of these came out simply to look over the ground and gave little or no attention to the actual purchase of stock. In his opinion, it is a mistake to ship lumber to foreign countries on consignment, as it frequently results in disaster to the shipper. Recalling to the days of the Donogh & Oliver Co., which handled many millions of pine annually, Mr. Donogh remarked that Toronto was becoming less of a distributing centre. This was also the case to some extent with Buffalo and Tonawanda, and in a very short time they would cease to be distributing points for white pine, as the timber of that variety in the North-western States would soon be cut away. Canada, and the Ottawa district in particular, would then be looked to as a source of supply for the Eastern States. It was fortunate, Mr. Donogh thought, that Canada took steps as early as she did to

protect the timber supply. Lumbering in Canada was different than in the United States, inasmuch as our lumbermen seemed to be content to cut a moderate quantity of timber each year with a view to conserving the limits. In the United States this was not the case, such firms as the Weyenhausser Syndicate and Mitchell & McClure, of Duluth, go into the woods and slash everything before them, their sole object seeming to be to get a return of the money invested as quickly as possible. In a few years, he said, they will have to cease business owing to the lack of raw material.

\* \* \*

From a resident of Chelmsford, Ont., who was recently in Toronto, I learn that the Robert Thomson saw mill at that place has been purchased by the Clergues, of Sault Ste. Marie, and that it has been torn down and the machinery taken to the Soo. The Clergues, he said, were purchasing a great many mills in that district. Negotiations were under way between Mr. J. J. C. Thomson and the Morgan Lumber Company for the purchase of the Thomson mill, but terms could not be agreed upon. Had the mill been secured it was the intention of the Morgan Company to raft the logs down the Vermillion river to a point about five miles from Chelmsford, where they would be loaded on cars and carried by the C.P.R. for the balance of the distance. Failing this the logs are being floated to the Georgian Bay. My informant remarked upon the magnificence of the timber in Morgan township, stating that it was the finest in Canada.

#### QUARTER SAWING.

Probably one of the oldest questions in the wood-working industry is that of quarter sawing logs, and it is one which has never settled down to any set rule or recognized system. The original idea embraced was to cut a log through the center twice, making four quarters, which were presumed to be laid with back down on the carriage and worked into boards. In carrying out this work in detail, however, many ideas and pet theories have been developed, and the lumber trade journals have given from time to time new ideas on the subject, with illustrations of how this man or that did the work. Whether or not all these men carry out the idea illustrated, there may be some question, but the ideas are good things anyway, for they set us to thinking.

#### THE SIMPLE WAY.

In oak, one of the simplest and probably the most generally adopted methods of quarter sawing is to split the log in half. Then, instead of splitting the half again to make the quarter, it is simply tilted on the carriage as shown in figure 1, and is worked in that position till something near the center line on the face is reached, after which the balance is tilted back to lay in the po-

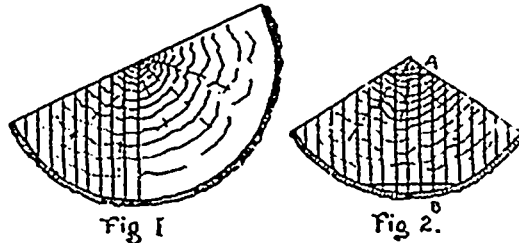


Fig 1

Fig 2.

sition shown by figure 2, in which position it is finished up. Some vary this by taking off a light slab at A or B, so that the flitch will rest better on the carriage for working, but the general idea given here is the one which is probably most followed by sawmills in quarter sawing.

#### HOLDING THE LOGS.

The question of how to hold the logs on the carriage has been raised several times, but it is very simple, too, in that it resolves itself into practically only one method. It can be seen, by glancing again at figure 1, that the half log would have a natural tendency to roll back on the blocks and to dog it in the top, as usually practiced in

sawmills, will not hold it, consequently is had to a duplex dog, one which holds both top and bottom, so that there is no danger for the log to roll either way. Those who use no equipment for dogging in this way are considerably handicapped when they come to quarter sawing, and they have either to resort to the special plans to get the quarter cut, or to turn and slab for a face to rest on the blocks before undertaking to saw up a quarter. In fact it might be said that a man is fooling away his time when he undertakes to do quarter sawing without duplex dogs.

#### CUTTING SPECIAL STOCK.

It is plain, quarter-sawed lumber of all widths that I have been talking about, and when we get from that and get into the work of cutting special stock, there are other questions which come up. For instance, if one wants to make quarter-sawn veneer, and do the work on a segmental saw, there is required at the hands of the man who prepares the flitches at the mill more than the mere quartering of the log. He must get rid of as much of the slab as possible, so when the veneer man comes to work up the log he has practically nothing to do but saw near. In making veneer of this kind width is generally quite an object, and it is not unusual work all the log into something else except veneer which will produce wide stock, and in doing this it may frequently be better to not quarter the log at all. There are quite a number of ways to this to get from two to four flitches out of a log which will make reasonably wide stock, and so the grain will show quartering, and a slab of the log, together with what you can best use the rest of the log into, will soon bring to a way to get at the work.

#### NARROW STOCK.

Where flooring and narrow stock of one width and another is the product desired, it is frequently produced without any quartering of the log whatever. Some simply saw up their logs to work to get out a fair share of this stock to the edger. Others, especially where they have gangs in the mill for working up the heavy flitches, simply flitch from the side of the log in the thicknesses for the width of the boards required, then turn the flitches down and work them into quarter-sawed stock. Quarter-sawn parquetry strips are a sample of this kind of work. Many of these are made even from the slab taken from swell-butt logs, which are cut into planks of such a thickness that when they are made into strips with a gang saw they will be 2 in. in width.—Barrel and Box.

#### PERSONAL.

Mr. Hiram Robinson, president of the Hirambury Lumber Co., Hawkesbury, Ont., has just returned from a two months' pleasure trip to Europe.

Mr. Henry Fisher was instantly killed in a saw mill at Anlierst, N.S., a few weeks ago. He was sawing hardwood timber, when he was struck over the heart with a slab from the mill.

The death occurred in Winnipeg last week of John O. Revell, who was for many years practically connected with the lumbering industry in Cobocok, Ont. Recently he had been employed by Seaman & Company.

Mr. Charles D. Shufeldt, who has been in the employ of Mr. A. F. Bury Austin, wholesale lumber and timber merchant, of Montreal, for the past six years, in the general hospital in that city on May 15, died of typhoid fever. Interment took place at Albany.

The death took place recently of Mr. C. K. Eddy, of Saginaw, Mich., one of the prominent lumbermen of Eastern Michigan. Mr. Eddy was eighty years of age, and since 1858 had been engaged in the lumber business, first at Ontario. He was the senior member of the Eddy, C. K. Eddy & Sons, who are owners of the timber limits in the Georgian Bay district. A few years ago Mr. Eddy retired from active business.

THE NEWS

LeBlanc intends building a steam saw mill  
 Ont.  
 said that there are 5,000 acres of timber land  
 county, P. E. I.  
 Bros., of Brantford, Ont., will probably add  
 king plant to their works.  
 McCauley, of Edmonton, N. W. T., will this  
 operate a saw and shingle mill near Hastings  
 Guthro was burned to death in the saw  
 mill of J. B. Snowball's saw mill at Chatham,  
 culers' examinations for the province of Que-  
 held in the Crown timber office, Hull, on  
 Hovey has purchased a saw mill at East  
 Que., and will put in machinery for barking  
 site is being cleared at Revelstoke, B. C., for  
 saw mill to be built on the Big Eddy site by  
 Inson.  
 Lakeside Wood Company, of Cookshire, Que.,  
 for incorporation, to carry on a general  
 business.  
 head & Mann, sash and door manufacturers,  
 B. C., have dissolved partnership, James  
 continuing.  
 the intention of J. & C. Hickman, of Port  
 B., to put in a Dutch furnace to burn the  
 and refuse of their mill.  
 er planing mill at Port Arthur, Ont., is being  
 Purcell & Kelly, who have purchased a stock  
 from Searson & Company.  
 que Smider, son of Henry Smider, of South  
 was killed in his father's saw mill by being  
 in the belt and drawn into the machinery.  
 South River Lumber Company have made  
 able improvements to their mill at South River,  
 which the capacity has been greatly increased.  
 eral large saw mills have been built this spring  
 eastern section of Halifax county, N. S. F.  
 of Mineville, is operating a mill at West  
 below.  
 the explosion of a boiler in a saw mill in the  
 of Burpee, owned by Miller & McMillan, of  
 ay, Ont., three men were killed and the mill  
 wrecked.  
 Southampton Manufacturing Company, of  
 mpton, Ont., have moved the machinery of their  
 mill at Pine Tree Harbor to Southampton, where a  
 mill has been built.  
 B. Trick, of Courtoice, Ont., has purchased  
 s & Argue's saw mill at Norland, Ont., and in-  
 putting in machinery for the manufacture of  
 hoops and headings.  
 saw mill originally owned by Thomas Sadler,  
 say, situated at Biscotasing, Ont., has been  
 ed by Booth & Shannon, of Pembroke, who  
 need operations last month.  
 N. Drader, of Chatham, Ont., has announced  
 tion of putting in additional machinery for the  
 ction of hoops and hoops. He expects to  
 cture 4,000 feet of lumber this year.  
 e Smokey Lumber Mfg. Company, of Sturgeon  
 Ont., has been incorporated, to manufacture  
 and other wood products. H. E. McKee, J. W.  
 ey, and J. I. Lotus comprise the company.  
 F. Braman and W. H. McCormick, of Bay  
 rich, have purchased the saw mill of the Spanish  
 Lumber Company at Spanish River on the  
 on Bay. The mill also includes a general store  
 the appliances of the plant. The mill has

an annual capacity of 20,000,000 feet, and is equipped with band saws, gang and circular rig.

—The lumber surveyors of St. John, N. B., who went on strike recently, are reported to have returned to work at the former rates. It is said that the rules of the Lumber Surveyors' Association have been suspended.

—A large dry kiln in connection with the works of William Cane & Sons at Newmarket, Ont., was burned recently, the fire originating from an overheated box on a small shaft which ran the elevator, carrying the staves into the kiln.

—The Whaley Lumber Company have suffered a serious loss in the destruction of their saw mill at Huntsville, Ont. Although the insurance did not nearly cover the loss, it is understood that the work of reconstruction is shortly to be commenced.

—The Victoria Planing Mills at Lindsay, Ont., owned by J. P. Ryley, has been purchased by George J. Brumwell, late of Bridgenorth. Mr. Brumwell is an experienced lumberman, having been associated with his father in operating a saw mill at Bridgenorth.

—J. R. Booth has announced his intention of moving his saw mill from Ottawa to some point further down the river, and as soon as a site is selected construction work will be begun. The machinery in the Chaudiere mill will be transferred to the new one.

—Webb Isenor is building a new saw mill on McDonald's lake, near Halifax, N. S. Three or four attempts at building a mill at this place have been made. Once the dam broke and the mill was washed away, while on another occasion the mill was burned just after being completed.

—The Dickson Lumber Company, of Peterborough, Ont., have appealed against a decision of the Master-in-Chambers to increase the security for costs in their case against the Standard Agency Company, of Montreal, for \$20,000 damages for non-delivery of lumber. This case was begun some nine years ago.

—The Cleveland-Sarna Saw Mill Company, now applying for a Dominion charter, are building a new mill at Sarna, Ont. It will be 50x100 feet, equipped with modern machinery throughout, consisting of two band mills, band resaw, two edgers, slab slasher, trimmer, lath mills, log loaders, steam kickers, and necessary live rolls. It will be located north of the mill of Mr. L. Dean Holden, the president of the company, which is 40x100 feet, and now in operation. Between the two mills a boiler 48x136 feet is under construction. This will contain a battery of six boilers, 72 inches x 16 feet, also the dynamo room, machine shop and two engine rooms. In the engine room on the north end there will be installed a Corliss engine, 24x42 feet, to drive the new mill; the south engine room will be provided with an engine later, it being the intention of the company to remodel the present mill, making it a special bill timber mill to run the year round.

QUESTIONS AND ANSWERS.

"W. W.," Newark, N.J., asks for the addresses of some manufacturers of spinning rollers.

Ans.—Rollers and turned wooden goods generally are manufactured by the Lachute Shuttle Co., Lachute Mills, Que.; Canadian Wood Specialty Co., Orillia, Ont.; Ker & Harcourt, Parry Sound, Ont.; Colin Reid, Bothwell, Ont., and others.

Gibson & Co., of Wroxeter, Ont., write. Does any demand exist in Ontario for short length maple flooring (16 inches and multiples), end matched and nailed and bored.

Ans.—We do not think there is a demand in Ontario for maple flooring in the sizes referred to. In the United States flooring as short as 16 inches is used, but in this country the architects almost invariably specify lengths 8 feet and upwards.

We have a point in dispute between two lumber dealers, and would like your authority as to the custom of the trade and your opinion. A

sells B half a car of mill run 4 inches and up. When car arrives, B says it is not mill run, as he says lumber from 6 to 9 ft. long is mill run shorts. A says B asked him the length, and he told B that he did not know, but B gave A the order just the same, and now B refuses the car on the length, as B claims it is not mill run as known by the trade. Kindly give your opinion. Was A right in selling 6 to 9 ft. lumber 4 inches and up for mill run, or was A misrepresenting the lumber? If so he wishes to be put right.

A SUBSCRIBER FOR YEARS.

Ans: The custom of the trade is to regard mill run lumber below 9 feet in length as mill run shorts, hence we think that the lumber was misrepresented by the seller.

LEGAL.

Godwin v. Newcombe.—Judgment by Court of Appeal, Toronto, on appeal by defendants from judgment of MacMahon, J., entered upon verdict of a jury. The action is for damages sustained by plaintiff while employed by defendants as a machinist to work a jointer machine in their piano factory, in the city of Toronto. On the occasion of the accident, the plaintiff had joined and left a piece of wood in its usual place, when it fell and forced his left hand upon the knives of the machine which, owing, he says, to the defendants' negligence, were unguarded and unprotected. Plaintiff alleges defendants were also negligent in not providing a truck whereon to place material after it had been jointed. The jury, by their answers to the questions submitted to them, found that the machine was in a defective condition, because unguarded, owing to negligence of defendants' foreman, to whom defect was known, and the cause of the accident was the piece of wood falling upon plaintiff's hand and forcing it against the knife, and that he could not have avoided it by the exercise of reasonable care. Appellants contended that the answers of the jury, read with the evidence, did not amount to a finding of negligence against defendants, that the plaintiff was negligent in placing the jointed board where he did, and its fall was the approximate cause of the accident, the machine had been sufficiently guarded within the Factories' Act, by what is known as the fence guard, that on the evidence the foreman was not negligent. Held, that the jointer was machinery within the meaning of the Ontario Factories' Act, held, also, that no objection having been taken to the submission of the questions, nor any additional question suggested, it is now too late to object, *Star Kidney Pad Co. v. Greenwood*, 5 O. R., 28, *Sexton v. Borewand* (1900), A. C. 155, that the questions to and answers of the jury constitute a finding that the absence of a guard was a defect in the condition of the jointer, and was known to defendants' foreman, who was entrusted with the charge of it, and that though no direct question was put as to the absence of the guard being the cause of the injury, the evidence amply justifies the inference that such absence was the cause. "The governing principle is that when a machine is defective with reference to danger, and such defect is within the knowledge of the employer, he is then liable;" *Tate v. Latham* (1897), 1 Q.B., 502; *Morgan v. Hutchison*, 59, L.J.N.S., 197, and distinguishing *Walsh v. Whiteley*, 21, Q.B.D., 371. What plaintiff did in placing the wood in the position from which it fell upon his hand had not the effect of severing the casual connection between the defendants' negligence and the accident, for their negligence was still continuing and was the primary cause of the accident, *Thomas v. Quartermaine*, 18, Q.B.D., 685. Appeal dismissed with costs.

Attention is called to the new advertisement of Thomas Pink, of Pembroke, appearing on the back corner of this issue. Mr. Pink manufactures the well known and famous Pink lumbering tools, and also makes a specialty of cant hook and peavy handles, using specially selected split rock maple. He can, as in the past, supply the trade by car-load or dozen.

# WOOD PULP ~

## DEPARTMENT

### CHEMICAL WOOD PULP.\*

By J. A. McCREW.

The word pulp is a term which generally may be applied to a number of materials, which are quite variable in character but more or less similar in appearance, therefore if we first classify these in a general way, we shall have a somewhat clearer conception of that special kind that we are about to discuss. We may divide them into four classes according to quality, namely:

I. Rag Pulp—which is made from cotton, linen or hemp fibres.

II. and III. Wood Pulps—which are of two kinds, chemical and mechanical.

IV. Straw Pulp—which is a chemical product of inferior quality.

As the manufacture of mechanical wood pulp was very ably described in a paper read before this Society last year, the subject matter of this article will deal exclusively with its half-brother of the chemical species, which is in reality another product from the same substance.

Mechanical pulp is simply wood ground to a fine powder and consists chemically of a combination of celluloses and lignocelluloses. Now if instead of grinding, we treat the wood with a chemical solution, which disintegrates it and dissolves out the lignocelluloses, we then have left what is commonly called chemical pulp, and this consists of those celluloses which have resisted the action of the solvent. As about half of the woody substance is thus removed and destroyed, the remaining product must necessarily be more costly than the ground pulp, but the fibres remaining are white and unbroken and are only comparable with the cheaper product when quality is not required. Mechanical pulp has a very short fibre, little felting power, is quickly discolored in air and light, and is only used as a filling material in news, wrapping, and other papers of a temporary character. Chemical wood pulp, however, makes a good, white, permanent paper, and is the source of most of our writing materials, although it makes neither as strong nor as resistant a paper as do the rag pulps.

The pulps prepared from straw are pronounced oxycelluloses, and have considerably more chemical activity than those prepared from the woods.

There are two distinct methods of preparing the chemical wood pulp, which may be designated as the alkaline and the acid. In the alkaline or soda process the usual method employed is to pack the wood in the form of chips into a horizontal cylindrical rotating digester, which has a capacity of about three cords. Here it is digested, with about seven hundred gallons of a six to nine per cent. solution of sodium hydrate, which is heated to high temperatures by means of live steam. The boiling lasts from eight to ten hours, at pressures which may vary from sixty to two hundred and ten pounds per sq. in. The products resulting from this "cook" are grayish brown pulp and a dark brown liquor, which are dumped into iron washing tanks, and after the liquor is drained off, the pulp is thoroughly washed. But as these wash waters are finally evaporated in order to recover the contained soda, they are used until they become quite concentrated, the pulp being washed continuously with a less concentrated solution until all the alkali is removed. The pulp is now treated with a bleaching solution, which contains twelve to fourteen pounds of bleaching powder for every hundred

pounds of pulp, and this removes the remaining ligneous matter, leaving a pure white cellulose.

The recovery of the soda from the waste liquor is accomplished by evaporation in vacuum pans until it has a density of 40 degrees Baume, when it is burned in a special furnace to remove the organic matter. The remaining ash contains the soda in the form of a carbonate, and when this is heated in tanks with slaked lime, in the proportion of one hundred of soda to sixty of lime, the lime is precipitated as calcium carbonate and the soda becomes caustic again.

Another method of recovering the soda, which has been lately adopted, consists in heating three parts of ferric oxide with one of soda carbonate, when sodium ferrate is formed. And on heating this with hot water, it decomposes, forming sodium hydrate and ferric oxide once more. The liquors of the alkaline process, sometimes contain large quantities of the sulphate or carbonate which are cheaper although weaker in action than the hydrate. In addition to the recovery of the soda from these liquors, a valuable product in the form of acetate, may be obtained from the organic matter of the solution. As perhaps you are aware, one of the standard methods for the manufacture of oxalic acid, is the treatment of wood or sawdust with alkaline hydrates at temperatures ranging from 200 degrees to 250 degrees C.

Now if the heating is prolonged and oxidation is allowed to take place, either from contact with air or oxidizing agents, a large percentage of acetic acid is formed. Therefore if the soda liquor is evaporated and charred at temperatures from 350 degrees to 400 degrees C, the organic matter reacts with the soda to form sodium acetate ( $\text{Na C}_2\text{H}_4\text{O}_2, 3\text{H}_2\text{O}$ ). This product comprises about 38 per cent. of the soluble portion of the char, and about 16 per cent. of the residue. With Esparto liquor five to six per cent. of the weight of the original fibre was obtained.

In the soda process poplar is largely used, although maple, cottonwood, white birch and basswood, are also employed. The spruce, pine and hemlock yield a long fibre, but are a little more difficult to treat. The main objections to the process are:

1. The high temperatures and pressures required.
2. The formation of dark colored products which are difficult to remove from the pulp.
3. The destructive action that the alkalis have on the celluloses themselves, as the less resistant are attacked and dissolved in the severe treatment required to remove the ligneous portion.

The acid or sulphite process:—

This is the process which is now being most commonly introduced into this country, because it has several important advantages over the alkaline treatments just described. In the first place, the cost in chemicals is less; and a larger yield of fibre is obtained, which is not weakened by the treatment. And secondly, the paper, which is made from this pulp is harder and more transparent and durable than that from wood pulps made by other methods. The treatment consists in digesting the wood at high temperatures with an acid sulphite solution. The acid radical unites with the products of hydrolysis to form soluble sulphonated derivatives, while the base unites with the acid products of the decomposition. The hydrolytic action is greatly increased by the presence of sulphurous acid, and for this reason, the bi-sulphite ( $\text{Na H SO}_3$ ) so-

lution effects a reduction in less time, and at lower temperatures, than a neutral sulphite solution would.

Now, turning our attention to some of the details of the treatment, we find that the bark and knots and also the resinous matters of the wood are very slightly acted upon by these sulphite solutions, and must in consequence be carefully removed. Sound knots may be allowed to pass through the digester and be afterwards removed from the pulp by screens. Before very high temperatures are reached it is necessary that the wood be thoroughly impregnated by the solution, and the absorption is hastened by previously crushing the wood. Dry and green woods, of woods of different species, should not be treated together in the same digester as they will be unequally reduced and leave chips in the pulp.

The first step in the preparation of the sulphite liquor is the formation of sulphur dioxide ( $\text{SO}_2$ ) from the combustion of either sulphur or its compounds. As this gas must be absorbed by water to form sulphurous acid ( $\text{H}_2\text{SO}_3$ ), it is evident that the less it is diluted with other gases the more complete will be its absorption. Therefore the sulphur is burned in specially constructed furnaces with the object of obtaining a complete combustion with the smallest possible draught. If the combustion of the sulphur is incomplete, a part of it sublimes and reacts with the sulphur dioxide to form thiosulphuric acid ( $\text{H}_2\text{S}_2\text{O}_3$ ) which in turn forms thiosulphates. These will decompose on boiling, and precipitate the sulphur into the pulp, which, being practically insoluble, it is impossible to remove. When the sulphur becomes oxidized to sulphuric acid it is very injurious to the paper making machinery as well as the pulp.

When pyrites is used in the production of sulphur dioxide more complicated burners are used, and additional care taken to avoid overheating, as slags are easily formed which impede the draught and are difficult to remove. Blowers or exhaust fans are used to improve the draught through the furnace, and these cause a lot of fine dust to be carried over with the burned gases. This dust never reaches the pulp, however, as the gases pass directly from the furnace into a dust chamber where it settles before the gases enter the cooler.

From the fact that one volume of water at ten centigrade will absorb sixty-nine volumes of sulphur dioxide, and at forty degrees will absorb but seventeen volumes, it is evident that the temperature of both gases and liquor will be kept down as much as possible during absorption. To practice the temperature of the cooler varies from ten to fifteen degrees. The absorption apparatus are of two kinds, namely, that in which the gas is absorbed by water holding the base in suspension or solution; and that in which the gas and water react together upon lumps of the carbonate of the base. The latter method, which is the simpler and simpler, consists of a high shaft or tower packed with limestone or dolomite, which is covered by a thin film of water that enters from above. The gases enter the base of the tower under pressure sufficient to force them through the limestone and out at the top. The sulphur dioxide meeting the moist limestone, reacts with it, forming at first sulphurous acid ( $\text{H}_2\text{SO}_3$ ), and then calcium sulphite ( $\text{Ca SO}_3$ ), while the insoluble product unites with more sulphur dioxide to form calcium bi-sulphite ( $\text{Ca H}_2(\text{SO}_3)_2$ ), which being soluble is washed out by the descending water. The former or tank apparatus is the one generally used in this country, and consists of a series of tanks filled with water which holds the carbonate in solution in suspension.

In this case the chemical reaction is practically the same as just described, for as the sulphur dioxide is absorbed, the insoluble calcium sulphite is precipitated, but becomes redissolved as it reacts with more sulphur dioxide to form the bi-sulphite ( $\text{Ca H}_2(\text{SO}_3)_2$ ). In practice more or less of the insoluble sulphate ( $\text{Ca SO}_4$ ) is formed by oxidization, which is allowed to settle and the

\*Abstract of a paper read before the Engineering Society of the School of Practical Science, Toronto. Published by permission.

1901

liquor is drawn out and stored in air tight lined tanks, until it is required for use. The real process of pulp making begins when the chips and liquor are brought together in the digesters, which vary in size, and may be either upright or rotary. But the great difficulty in making digesters for this process, is to obtain a suitable lining which will protect the iron plate from the corrosive action of the sulphurous acid. The lining in the past has been generally in the form of lead linings, as they are but slightly acted upon by the acid, and are further protected by the coating of lead sulphate which forms. The objection to the use of lead, to overcome which many devices have been tried is the fact that it has about the co-efficient of expansion of iron, so that in alternate heating and cooling, it buckles and draws to such an extent as to soon necessitate repairs. Bronze linings have been used with some success, and boiler scales in the form of sulphite of iron or silicates of iron and calcium have worked very well. But the digester lining that takes the precedence and which is now being rapidly introduced is merely a layer of Portland cement about one inch in thickness, and this may be applied to the boiler directly or first made into slabs and then fitted in. At first it is more or less porous, but the interstices are soon filled by a deposit of sulphate and sulphite of lime which render it quite impervious. The cheapness of the application and repair of this lining will recommend its general adoption. In a digester containing two cords of chips, about twenty-five hundred gallons of a three and one-half per cent. liquor is used. The temperature is raised slowly until after the wood has become saturated with the liquor, and then a steam pressure of sixty-five to eighty-five pounds is turned on, which is equivalent to a temperature of one hundred and fifty-five to one hundred and sixty-five degrees centigrade. At these high temperatures the bisulphite is decomposed into sulphurous acid, and the normal sulphite, which being insoluble, is deposited in the pipes or pulp. The sulphurous acid gas forms a hydrostatic pressure, which, added to that of the steam for the given temperature, gives the total pressure in the boiler. This pressure may be considerably increased by the formation of this gas, without an equivalent rise in temperature. On account of the greater convenience the digesters are heated by means of live steam, which, by condensing in the dip, is continually diluting the solution, but by employing a non-conducting jacket very little difficulty is experienced in practice, especially when cement linings are used. At the end of the cook the gas is nearly all blown off and then the pulp is blown out under a pressure of about thirty pounds. This saves time in handling and the trouble of heating. It must now be thoroughly washed to remove any of the precipitated sulphite, especially when leaching is to follow, for the sulphite is a strong color itself, as it takes up the free oxygen

formed by the action of the chlorine

The pulp is never a pure, permanent white until after the ligneous and coloring matters remaining, have been broken up and removed by the action of a bleaching agent. The true bleaching action is purely an oxidization, which breaks up the coloring matters into simple colorless oxidized derivatives. With bleaching powder (Ca O Cl<sub>2</sub>) the chlorine unites with the hydrogen of the water and this action liberates the oxygen which does the work. Pure oxygen, ozone or hydrogen peroxide, may also be used with equal effect. On the other hand the bleaching action of sulphurous acid is of a quite different character, for it combines with the coloring matters to form colorless compounds, which are easily reduced with a return of the color when the acid is neutralized.

You will naturally wonder what becomes of the waste liquor in this process, and this is one of the problems that has been left for this country to decide. In some places the gas is recovered but the general practice is to dump the liquors into the nearest pond or stream to get rid of them. This not only means a loss of half the woody structure and the gas in solution, but the effect of these liquors in fishing streams is remarkable. The sulphurous acid being a reducing agent, combines with the free oxygen in the water, and the organic paste in the solution forms a coating over the gills of the fish, therefore the fish have left no atmosphere and could not breathe if they had. If the waste liquor is evaporated, the residue has no fuel value, therefore we must look in other directions for methods of conversion into valuable by-products. All that is known concerning the chemical composition of these liquors, is that they are sulphates containing the OCH<sub>3</sub> group. Future research may result in the manufacture of either glucose, alcohol, oxalic or acetic acid, from this organic residue.

Resinous woods are not very suitable for pulp making, as the resins are insoluble in hot bisulphite solutions, and although they are dissolved by the alkaline solvents, every hundred parts of resin will neutralize eighteen parts of the alkali.

Woods such as chestnut, which contain tannin, should not be treated by the sulphite process, as the tannic acid would act as an oxidizing agent, converting the sulphurous into sulphuric acid. Spruce and poplar are used almost exclusively in the sulphite process.

TO ASSIST PULP MAKING.

An act was passed by the British Columbia Legislature, at its recent session, to assist the development of the pulp industry in that province. The bill reads as follows:

Whereas it is expedient to encourage the manufacture of wood pulp and paper; therefore, His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:

This act may be cited as the "Wood Pulp Act, 1901." It shall be lawful for the Chief Commis-

sioner of Lands and Works to enter into an agreement or agreements with any company holding any water records or water privileges under the "Water Clauses Consolidation Act, 1807," and amending acts, by which on the erection and completion by the company of a pulp or paper mill of such capacity as shall be provided for in such agreement, all said water records or water privileges held by the company shall be reserved to the company without liability to forfeiture, except for non-payment of fees, for a period not exceeding twenty-one years from the date of such agreement, and providing for the payment of fees to the government of British Columbia for the said period of twenty-one years in accordance with the schedule of fees which shall be in force at the date of the said agreement. After the said period of twenty-one years, the scale of fees shall be fixed under such conditions and regulations as may be deemed advisable and determined by the Lieutenant-Governor-in-Council. The said agreement may contain such terms and conditions as the Lieutenant-Governor-in-Council may deem advisable.

PULP NOTES.

—It is said that J. B. Klock of Klock's Mills, Ont., is talking of erecting large pulp and saw mills at Les Erables, near Mattawa, Ont.

—The dispute over the location of the pulp mill of the Blanche River Pulp & Paper Company has been settled, and it is expected that the mill will be built at Mattawa, where there is reported to be ample water power.

—A meeting of the creditors of the Consolidated Pulp & Paper Company, of Toronto, has been called. The company was organized last year, with a capital of \$500,000, and recently took over the paper mills of Thompson Bros. at Newburg, Ont.

—William Kennedy, jr., of Montreal, consulting engineer for the Hull & Ottawa Power, Pulp & Paper Company, is preparing plans for the improvement of the water power and for the power house and pulp and paper mills. The company have recently acquired the rights of the portion of the Table rock water power formerly owned by Alex. Fraser.

—The Inglewood Pulp & Paper Company held a meeting in St. John, N.B., recently at which it was decided that the saw mill at Musquash should be continued to be operated this season, and that in the fall steps would be taken to erect pulp and paper mills. The directors elected include Duncan Stetson, George McAvity and G. Mullins, of Bangor, Me., B. F. Pearson, of Halifax, and Chas. Burill, of Weymouth, N.S.

—A syndicate has been formed to build a pulp mill at Petawawa, on the Ottawa river, ten miles above Pembroke, Ont. Messrs. J. W. Munro, M. P. P., of Pembroke, and A. T. Mohr and J. C. Scovel, of Buffalo are the promoters. The extent of pulp limits to be set apart has not been decided by the Government, but the syndicate has been granted the necessary water power. The agreement calls for the erection of a mill of a daily capacity of 50 tons.

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**BRAZING SAWS.**

The parts to be joined should be beveled to a feather edge, the level being about 5-8th inches long, the ends perfectly square, and the taper uniform. Too much attention cannot be given to this latter point. If the bevel is not uniform and surface of same perfectly even, a good joint cannot be made. Clean the beveled parts with brazing solution or slacked lime, until entirely free from grease or dirt of any kind. Place the ends to be united in the brazing frame with the beveled edges lapped directly at the center where the brazing irons are applied. Clamp same so that the back of the blade is straight. Clean a strip of silver solder in the same manner as the bevel surfaces, and place between same. Then apply the brazing pads, same having first been heated to a bright cherry red and scraped clean and free from all scales. Clamp same upon either side of the blade where it is to be joined, and

then immediately loosen the side clamps to allow for the expansion of the blade and to relieve the joint of any strain. As the brazing pads cool, the clamps that secure same upon the joint should be tightened. Allow the pads to remain until they become black. Do not attempt to cool with water. The braze should then be dressed, leveled and tensioned. After using a few times, the pads should be again dressed to a true surface. Be sure that they have a true surface.—From J.A. Fay & Egan Company's Brochure.

**PRINCIPAL CAUSES OF SAW BLADES CRACKING.**

Insufficient hook to the teeth is one of the causes. Crystalizing the saw by running it against the back guard. Should the blade through any accident or inattention, come in contact with the back guard, hold a piece of soft emery stone against the back edge of the blade while it is moving slowly. Sharp corners in the throat or gullet.

Uneven tension ("tight and loose" places) with the blade. Feeding too fast as the log comes in contact with the blade. Slipping of the blade upon the wheels through not enough strain. It is better to have too much strain than too little. Crystalizing the teeth by passing too hard an emery wheel or grinding off too much at a time. Striking too heavy a blow. Hammers with imperfect faces. Hammering too near the edge. Uneven teeth (not of uniform length.) Dull teeth. Dust accumulating on the wheels under the blade. Wheels imperfectly lined. Track out of line with the blade. Uneven track. Accumulation of dust on the track. Not removing strain when shutting down at night, noon, or for a period of an hour or more. Using blade of too heavy gauge for the diameter of the wheel.—From J. A. Fay & Egan Company's Brochure.

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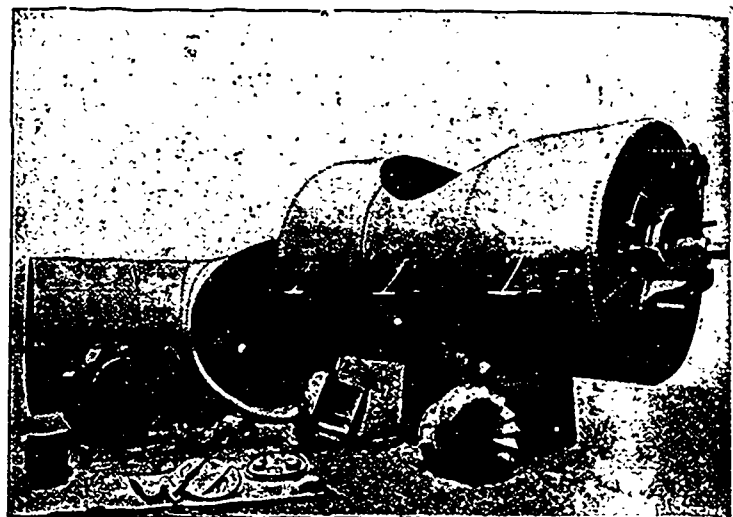
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leigh hol for the country saw mill  
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the sideway outside is stepped up high,  
And the teams are moving around,  
The farmer will scurry and get in a flurry  
If no room for his horse to be found.

He dumps all his logs on the railway,  
Chalks his name on their ends, "what a scrawl!"  
Each letter indite and queer figures write  
The sawyer can't read them at all.

Some 2x4 scantling, 500 ft. plank,  
And some battens, with old farmer Lynch,  
A dozen good braces he carefully traces,  
And marks all the balance for inch.

The boys in the mill are busy as bees,  
Rough and ready, a good hearted crew,  
They work round the saws with a "cud" in their jaws  
And "stay with it" all the day through.

Jack holds his hand on the lever so firm,  
His eye on the cut keenly gazes,  
For he knows there's no fun when the saw gins to run  
And everything then goes to "blazes."

And tail sawyer Jimmie with rubbers and socks  
Hops round like a hen on a griddle,  
He can dance you a jig, take a slab off so big  
That the log is nigh cut through the middle.

And Gillespie cuts up all the slabs into wood,  
And fires it clean out of the mill;  
He can edge to a dot, cut out all the rot  
From an inch board up to a sill.

And Tom is the fireman so trusty and strong,  
His face how it proudly does beam;  
For his engine may puff, she's thro' it like snuff,  
With sixty-five pounds of dry steam.

Oh give me the days in the old saw mill,  
With its noise and busy throng,  
Where the steam rolls about and the saw sings out  
So cheerily all day long.

--THOS. GIBSON, Wroxeter, Ont.

It is understood that Mr. W. R. Beatty, M.P. P., of Parry Sound, Ont., has been appointed manager of the large timber interests in Nova Scotia recently purchased by the Beardmore Company, of Toronto, and that he will take up his residence in the eastern province. Mr. Beatty has had a wide experience in the lumbering business.

There passed away at Pembroke, Ont., recently, Mr. Alex. McDougal, one of the pioneer lumbermen of the Ottawa valley. When a young man he took rafts of square timber to Quebec, operating on the Madawaska and Bonaventure rivers, and afterwards becoming agent for the late John Egan at Quyon, Que. He was 87 years of age, and for some time had lived retired.

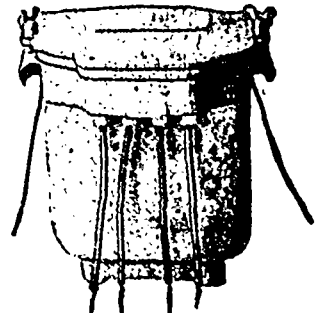
As we go to press it is learned that Mr. A. F.

E. Phillips, representative in Winnipeg of the Brunette Saw Mill Company, of New Westminster, B.C., is seriously ill with appendicitis.

Mr. G. H. Moulthrop, of the Moulthrop Lumber Company, which bought the saw mill on John's Island, Georgian Bay, has removed from Bay City to John's Island, where he will remain for the summer.

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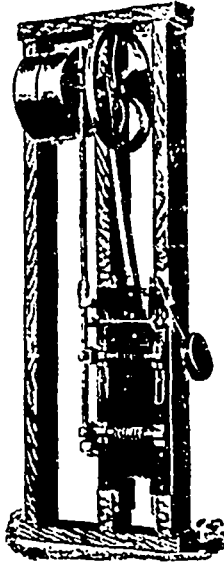
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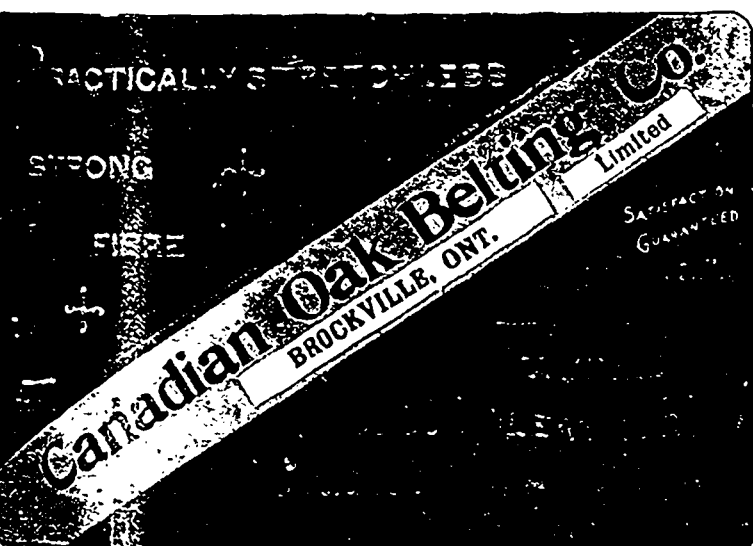


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NEW TIMBER REGULATIONS.

New regulations have been adopted by the Dominion Government for cutting timber on Indian lands in Ontario. They provide that all licenses issued or renewed after April 30, 1901, shall contain the "manu-

facturing clause," stipulating that all pine timber shall be manufactured into lumber and all pulpwood into pulp or paper in Canada. The penalty for infraction of the regulations is suspension of the license. To prevent a breach of the regulations any logs or pulp-

wood suspected of being intended for export may be seized by the government officials, and if secured home manufacture is not given it may be sold by auction. -E. H. Heaps & Company, of Vancouver, B.C. have just completed a large addition to their saw-

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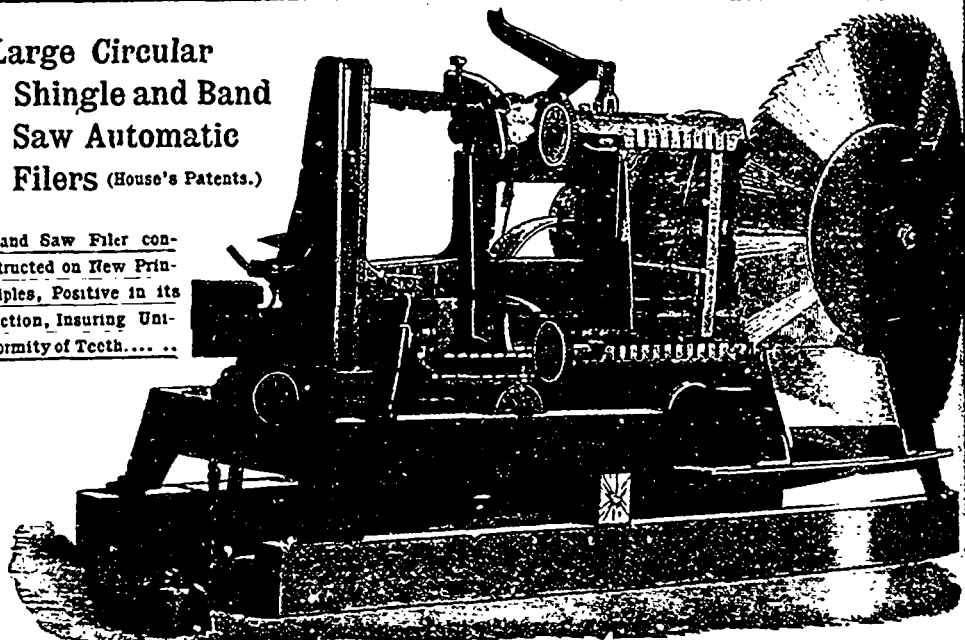
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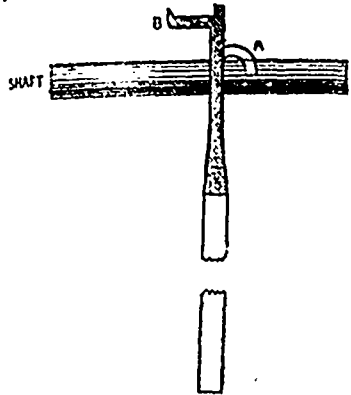
Large Circular Shingle and Band Saw Automatic Filers (House's Patents.)

Band Saw Filer constructed on New Principles, Positive in its Action, Insuring Uniformity of Teeth. . . . .



BELT HOOK.

So many accidents have happened to workmen engaged in riveting belts which are hanging on revolving shaft through the men being drawn by the loose belt and dashed to pieces, that in England the inspector of factories in his last report recommended snap hooks being used while the belts are off the overhead pulleys. In large engineering works and other shops it has been pointed out that it would be a large undertaking to supply a hook to every belt. On this account we have designed a simple tool which can be used on any belt and which has met with approval



BELT HOOK.

wherever it has been tried. It comprises, as shown in the cut, an iron hook, A, at right angles to a bar, B, on which the belt rests whilst the hook is on the shaft. This can be fitted to a pole of wood and the belt thus raised off the revolving shaft whilst it is being spliced or riveted.

FRENCH DEMAND FOR LUMBER.

The United States Consul Skinner, of Marseilles, in a report to the State Department upon the demand in France for saw-logs, says that that country presents a good market for American lumber. He says: "All kinds of soft woods in logs are admitted free of duty; squared lumber is dutiable at the rate of 24 cents per 220 pounds,

while walnut is the timber most in demand and the most difficult to obtain. There is also an opportunity to dispose of ebony and mahogany, if Americans are at present prepared to export these woods from our colonial possessions. Present prices are about \$19.30 per 1,308 cubic yards for logs, and \$24.12 per 1,308 cubic yards for sawed lumber." All of the American pine imported at Marseilles is purchased from London middlemen. I have had occasion to investigate this matter, and discover that the occasional efforts made in this city to buy direct have been extremely unsatisfactory. Two firms in London are reported to me to be the actual importers of fully 80 per cent. of all the American lumber shipped to England and the Continent. These two houses sent their representatives into the Florida and other pine regions, who supervise every detail preceding the actual departure of the lumber for its final destination. What is true of the lumber trade is also more or less true of many other commercial lines, and I think it would surprise a great many American business men if they could realize the extent to which they are dependent upon British middle-men for their foreign trade."

TRADE NOTES.

The Imperial Lumber Company, of Toronto, have opened a branch for Great Britain at 41 Corporation Street, Manchester, under the management of Mr. A. A. Grant.

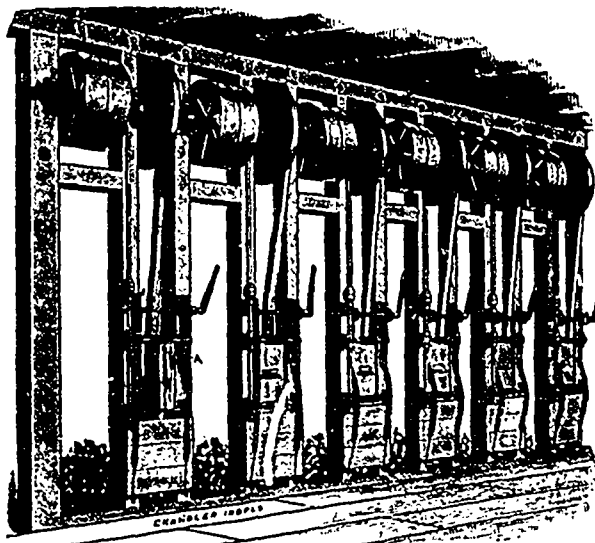
W. B. Mershon & Company, of Saginaw, Mich., report an excellent demand for their band resaws. Last week they received an order from Firstbrook Bros., of Toronto, for four of them to be installed in their new mill at Penetanguishene.

The Thos. Forrester Co., of Montreal, are sending out to saw mills and sash and door factories, a useful combined calendar and standard price list of beltings. If any of our readers have failed to receive a copy they are requested to write the company for one.

John Palmer, of Fredericton, N. B., is reported to have purchased the business and stock in trade of Charles D. Dickenson, manufacturer of larrigans, etc., of Woodstock, N. B. It is said that the deal includes the sole right to manufacture and sell in Canada the Henderson patent moccasin.

Robert Bell, of the Seaforth Engine & Machine Works, Seaforth, Ont., has recently issued new catalogues of his Bell automatic self-oiling engine, "Standard" tubular stationary boiler, No. 6 saw mill machinery, and other well known lines which he manufactures. He is now building gasoline engines.

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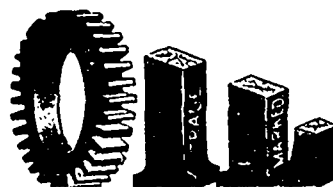
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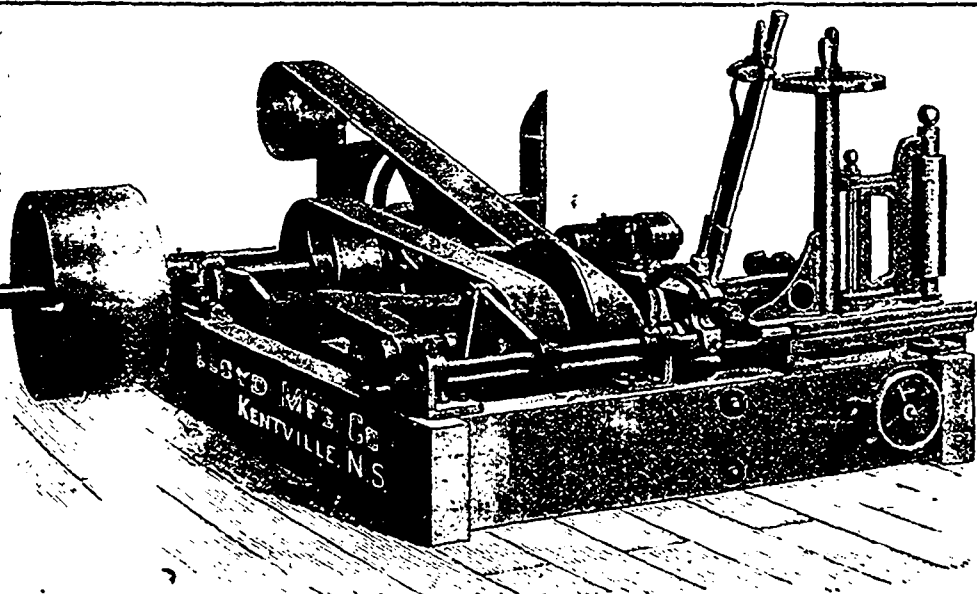


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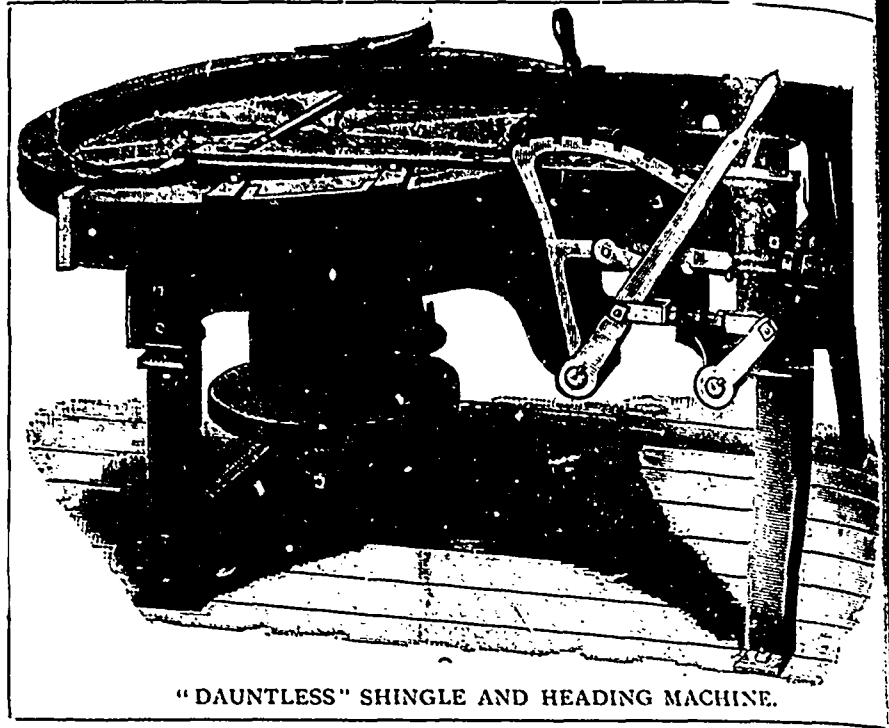
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Costs less money than any other high grade machine and costs less to keep in repair.

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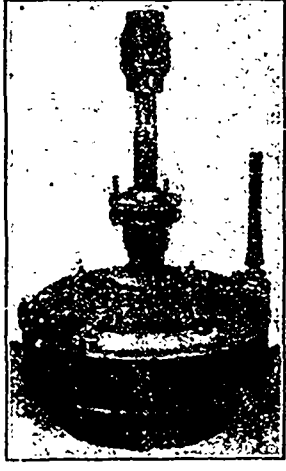


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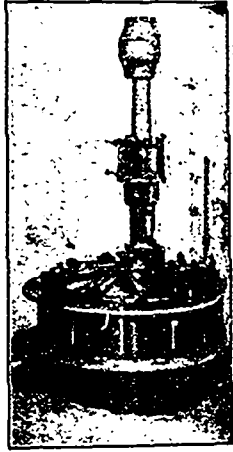
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any other Turbine built. Mr. J. D. Flavelle, of the Flavelle Milling Co., of Lindsay, writes us under date of March 7th as follows :

" Referring to the two 74" water wheels (Leffels) purchased from you during the past year. As far as we have had an opportunity of testing, they have done their work excellently, in fact are doing more than you guaranteed them for. We took a test of the power they were developing with a head of water of 3 ft. 10 in., and they developed very close to 100 h. p. We are thoroughly satisfied with same."  
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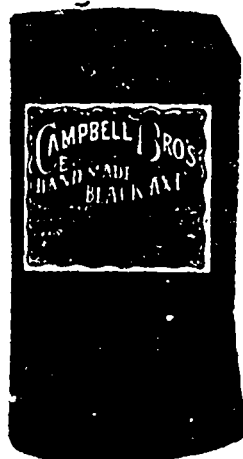
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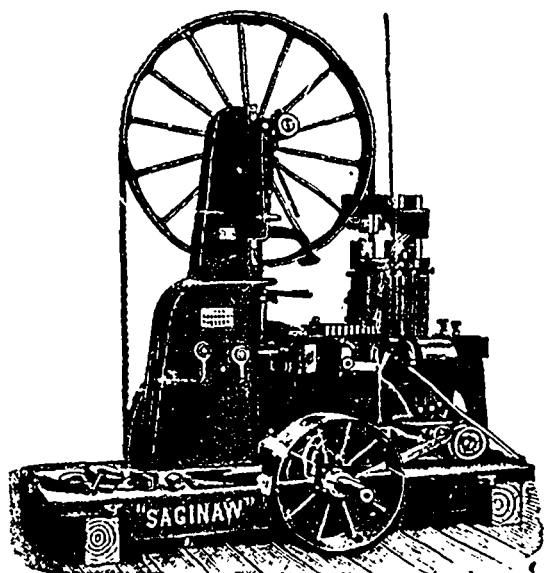
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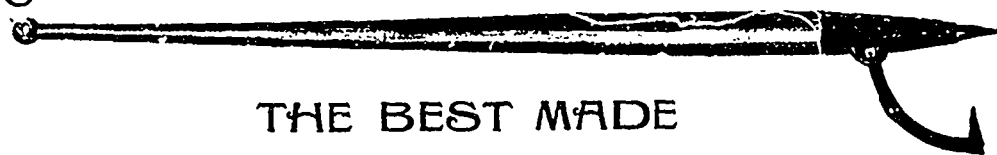
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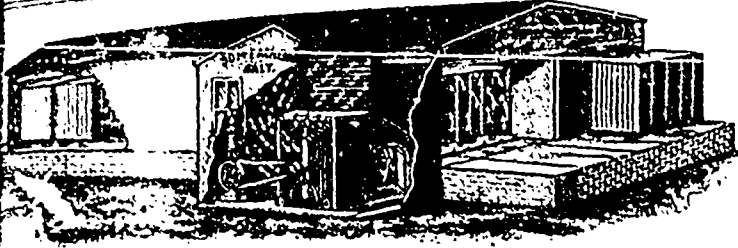
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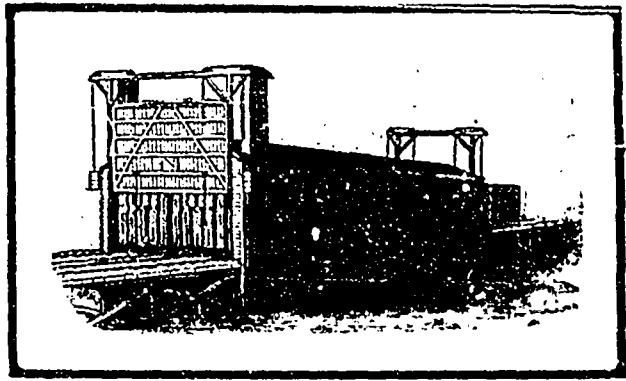
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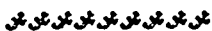
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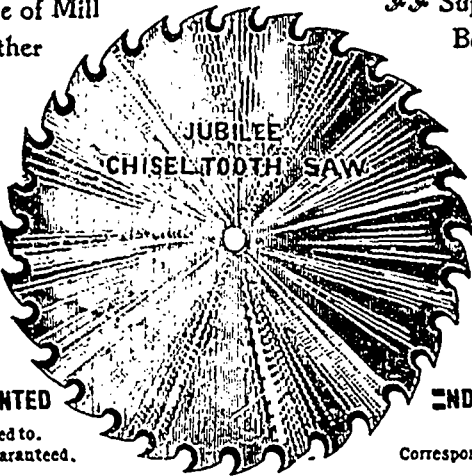


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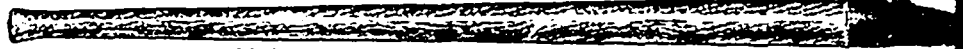
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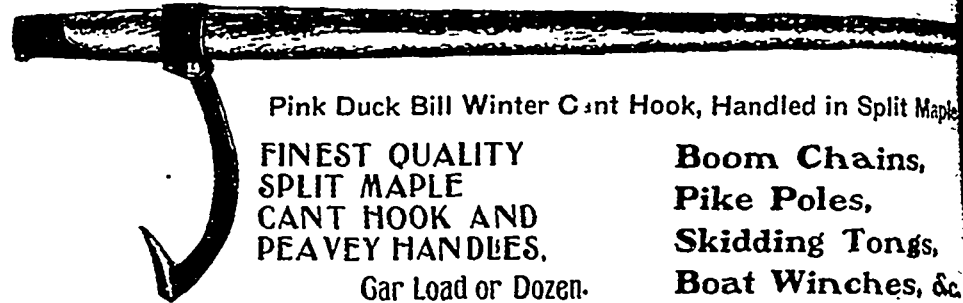
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