

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title on header taken from: /
Le titre de l'en-tête provient:

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

THE CANADA LUMBERMAN

VOLUME XV. }
NUMBER 5. }

TORONTO, ONT., MAY, 1894

{ TERMS, 1.00 PER YEAR
{ SINGLE COPIES, 10 CENTS

THE PARMENTER PATENT DRY KILN.

WE take pleasure in presenting to our readers a cut and description of what has—after three years' trial—been proven to be a kiln of very great merit, the invention of which is the result of several years of experience in lumber drying.

The object of the inventor was :—1, To produce a kiln that could be easily and cheaply constructed by ordinary mechanics ; 2, One that would be economical, simple and reliable in its operation at any season of the year ; 3, Also one that would dry all kinds of lumber and material, rapidly and in first-class condition.

The reader will observe that this kiln is very simple in construction and operation ; the air in the kiln becomes heated by the steam pipes and at once rises to the top of the kiln where it enters the galvanized iron condensing pipes which are placed outside of the kiln. It then becomes cool and relieved of a portion of its moisture by condensation, passes downwards and re-enters the kiln at the bottom below the steam pipes, the condensed moisture trickling down the inside of the condensing pipes and escaping through a small hole in the bottom elbow. The air again becomes heated by coming in contact with the hot steam pipes and rises up through the lumber, absorbing another supply of moisture, and again enters the condensing pipes and leaves a portion of its moisture on the inside of the pipes, and continues in this manner until the air in the kiln becomes dry. No cold air from the outside is allowed to enter the kiln, and no hot air is allowed to escape, consequently it is very economical in the amount of steam required to reach the desired temperature.

The condensing pipes are fitted with ordinary dampers which by opening or closing regulate the circulation and consequently the condensation. This feature is a valuable one, especially in cold weather, and one that is said to be possessed by no other kiln in the market.

The inventor claims it is a well-known fact that a current or hot blast of air coming in contact with undried lumber dries the outside first and causes checking, warping, case hardening and honey combing.

In the Parmenter system it is claimed this cannot occur as the air in the kiln does not become dry until the lumber is dry. The circulation of air is from the centre to the sides and not from end to end, consequently perfectly dry lumber can be taken out of the kiln at one end and green lumber placed in the opposite end at the same time.

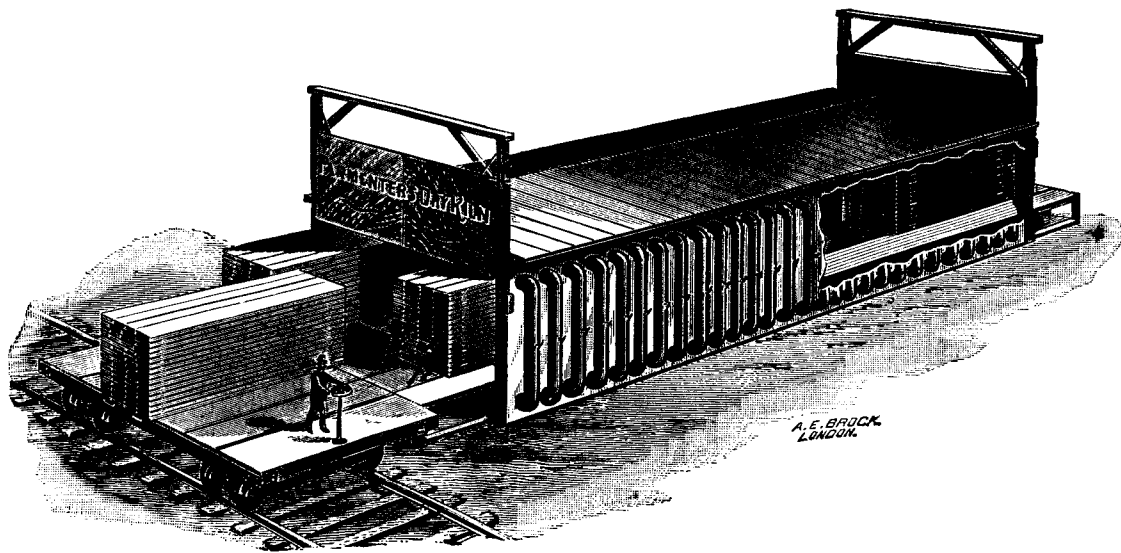
There are no fans, blowers or special engines required as circulation is entirely automatic.

Testimonials and all other information can be obtained by addressing the Patentee, Mr. J. S. Parmenter, Box 512, Woodstock, Ontario.

An interesting picture of mechanical engineering of a past generation—the “chalk age” of mechanical engineering, the author aptly terms it—is drawn by J. F. Holloway in the May number of Cassier's Magazine. To both the young engineer of the present day and to him of more mature years the reminiscences conjured up by the author must have a peculiar fascination, showing by what pluck, energy and untiring industry the achievements of early machine-shop days were accomplished.

THE AGED BOILER.

THE life of a boiler, says the Age of Steel, like that of a horse, has its limit. The number of its birthdays depends, of course, on its original stamina, and the use or abuse of its service. If sound in material and construction, and intelligently handled, its term of life is prolonged into a respectable old age, and to this on these conditions there is necessarily a limit. It is possible, however, that any arbitrary limit is beyond absolute calculation, and is likely to overlap dates that at the best can only be approximate. The biography of a boiler is one of strain and tension, and is subjected to sudden transitions from a high degree of heat to the temperature of cold air or water suddenly admitted. That iron should lose its qualities as a boiler plate in the course of years it is reasonable to assume, and that when age and service have reached a certain point the conditions of safety are weakened, is equally reasonable. The basis of calculation must, however, necessarily vary, as the qualities of the metal used may not be uniform, nor the intelligence of service always at the same standard. From tests made



THE PARMENTER PATENT DRY KILN.

of plates taken from iron boilers, varying from fifteen to thirty years of service, it has been found that there has been not only a loss in tensile strength, but also a marked loss in ductility. A plate that originally stood a test 45,000 pounds tensile strength after about twenty years of service, shows a deterioration of tensile strength to about 38,000 pounds. On this basis alone the conclusion is that the boiler, if weaker, is still good for considerable pressure, with the fact, however, left that the plate under certain conditions would act as a piece of cast iron would act, and also suddenly give way at a certain pressure. It is obvious that a boiler constructed of plate of this character would never tempt the money of a steam user. It might have a higher tensile strength than cast iron, but in the matter of brittleness the advantage would be scarcely apparent. As most, or many, boiler explosions are caused in whole or in part by a sudden shock, a boiler plate of a brittle nature is broken by a blow, which would be as ineffective as a drum tap on a plate of lower tensile strength. Here the quality of ductility asserts itself as indispensable to boiler safety, allowing it to sustain heavy shocks or strains without giving way. The presence or absence of this quality determines the value of old boilers so far as their safety goes, and for this reason it is the opinion of many engineers that boilers of the cylindrical-shell type are in their dotage at about twenty years of service.

J. F. Waldell will start a planing mill at Newdale, Man.

MANITOBA'S OPINION ON LUMBER.

IT has been made a matter of remark in our editorial columns that the placing of lumber on the free list is a question of serious concern to Northwest and British Columbia lumbermen. The Commercial, of Winnipeg, gives this view of the situation: “The lumbermen have been holding meetings and communicating with each other a good deal the last couple of weeks, but no definite announcement has been made yet. One object for which the lumbermen have been working hard, is to secure a reduction in freight rates, as an offset for the tariff changes, but so far no change has been made in freight rates. The dealers say that any reduction in freights will be entirely to the benefit of the consumers, as they (the dealers) will reduce their prices to the full extent of any cut in rates which may be given. No changes in prices have been made yet as an outcome of the new tariff. The disposition is to make no changes until the tariff debate in Parliament is finally disposed of. It is understood that pressure is being brought upon the government to induce them to put

dressed as well as rough lumber on the free list, and as further changes may be made in the tariff, no changes will be made in prices until it is known for a certainty how the tariff will finally stand. A city lumberman has been twice to Ottawa, no doubt to represent the views of the manufacturers to the government, though it is denied that he represents any one but himself. There is some uncertainty as to the interpretation of the new tariff. Rough lumber is to come in free, and a duty of 20 per cent. is fixed on dressed lumber, but it is said that the duty will be collected only on the cost of dressing. Thus, for example, rough lumber costing

say \$14 per thousand would come in free. The same grade dressed costing say \$16 per thousand feet would be subject to the duty of 20 per cent., but it is said that the duty will be collected only on the \$2, being the difference between the cost of the rough and the dressed commodity, instead of collecting duty on the full cost of the dressed. If the 20 per cent. duty on dressed lumber is interpreted in this way, the duty collected on a thousand feet of lumber, as above, would be only 40 cents, instead of \$3.20, if it were collected on the full cost of dressed lumber. If this interpretation of the duty is carried out, the government might just as well make dressed lumber entirely free at once, for a duty collected on merely the difference between the cost of rough and dressed lumber of the same grade, will be such a trifling matter as to be hardly worth bothering with. There is talk of yards being started in the city to handle imported lumber, but nothing definite has been done yet in this direction. As prices are likely to be advanced in Minnesota, there will be less disposition to cut prices in this direction. At the recent meeting of the Mississippi Valley Association, at Minneapolis, it was represented that stocks were not excessive, and that better prices should be obtained. Steps were taken to advance prices. The meeting of the Western Retail Association held in the city this week was to consider applicants who wish to open new yards, of which there are a number. There was also some informal talk in regard to tariff changes.”

TALKS WITH WOOD-WORKERS.

THE sensible advice is given that one of the best things a young fellow in the shop can do, or an old one either for that matter, is to learn to make sketches of different tools and devices in use, or of peculiar things that he sees in other shops. I often think of the opportunities for advancement, that are lost by workmen everywhere in not exercising the power of observation and of thought, as might be done. It is a bad lookout for any of us when we simply become machines in our work. As regards these proposed sketches they can be made roughly in a note book and will prove often a fund of knowledge to do good service in some future day. The ideas come to us all as we are at our work and it is a case of following the advice of Captain Cuttle; "When found make a note of it." Draftsmen it has been remarked could save the firm lots of work, by simply making a good neat sketch with correct figures instead of making an elaborate drawing for some small job that really does not want it.

* * * *

Do we realize that a good deal depends on ourselves how much we get out of a lathe, or any other machine for that matter? I have been struck with the difference in workmen. Some people, and they are not of a stingy disposition either, lay their plans so that a dollar goes much further with them than with others. So it is in handling men; if we handle a staff of men in the right way we will get, sometimes, 50% more work out of them, and yet not be nigger drivers. The inanimate machine is susceptible of the same kind of handling. A lathe can be run to an economical limit, or it may give very poor service. Speaking of a lathe a writer has said that a comparatively slow speed of cutting, (a slow running of lathe) and a heavy cut with a moderately quick feed, will give good results in most cases. What applies to the lathe applies to all classes of work, each kind of work being tried separately for best results.

* * * *

Pony planers, we are told by a writer on this subject, should never be belted with the countershaft directly under the machine, as it gives too short a belt. A perpendicular belt will always slip and will never have the same power as a belt at an angle or a horizontal belt, therefore the countershaft should be arranged at an angle of 45 degrees to the cylinder which it is to drive. Then we have an easy running belt. For the ordinary pony planer most mill men prefer to have the countershaft at the out-feeding end of machine. The reason is the belt to the cylinder is easier gotten at, the loose pulley gets better attention, &c.

* * * *

"Considerable has been said about babbitting planer cylinder arbors," says a writer in the Woodworker, "whether it is best to babbitt directly on the arbor or have a dummy to babbitt on. I have contended for the latter way. A few days ago parties from a large dressing mill brought in an arbor for me to true up. They said it rattled badly. Putting it on the centers of the lathe I found it out one-sixty-fourth inch. That is a good deal. We sprung it back true, run the tool over it, and polished it nicely. Before night they came back saying it was not true yet. Putting it on the centers I found it "out" again. "Have you habbitted?" I asked "Yes, we had to; it run too loose a fit." "Well, you have sprung it." I straightened it again, perfectly, and told them to rub red lead and oil on the arbor, put it in the boxes carefully and revolve it a little, then take it out and scrape where the lead showed on the box. This they did and it has been all right since. The bearing was two inches diameter, 10 inches long, made of machinery steel. I think the dummy arbor and scraping is the only correct way, particularly with 4,000-turn arbors on fast-feed planers."

JAS.

LEGAL DECISION.

MUSKOKA MILL AND LUMBER CO. V. McDERMOTT.—The Court of Appeal holds that the legal right of a license of timber limits under a license issued by the Ontario Crown Lands Department ceases (except as to matters specially excepted by the Act) at the expiration of the license, and there is no equitable right of renewal capable of being enforced against the Crown, or sufficient to uphold a right of action for trespass

committed after the expiration of the license and before the issue of a renewal. The insertion in an expired license of a lot omitted by error does not confer upon the licensee such a title as enables him to maintain an action for trespass committed on the omitted lot.

LUMBER DISCUSSION IN THE LEGISLATURE.

AT the meeting of the Local Legislature on 19th April, on motion to go into committee of supply Mr. Miscampbell, member for East Simcoe, and ex-lumberman of Midland, Ont., moved:—

This House disapproves of the large expenditures which are made annually by the Crown Lands Department for surveys, amounting to upwards of \$35,000 per annum, and of the sums paid by that department to unnecessary crown lands agents, and it regrets that the executive and the department persist in the practice of disposing of the crown timber reserves of the province without consulting or obtaining the approval of the representatives of the people in this House, and wholly fail to take any adequate steps for preserving the standing timber, and especially the smaller trees, from unnecessary waste and destruction; and this House deplors the improvidence which characterizes the management and disposal of the timber upon those reserves which has destroyed in many parts of the country the saw milling industries which flourished, and has transferred the business which they formerly carried on, to the state of Michigan, and other states of the neighboring republic, and is fast depriving the province of its most valuable asset, and one, if adequately and intelligently cared for, safe-guarded and managed, would continue to furnish a large revenue to the province for years to come, but which, as now mismanaged, is rapidly disappearing.

Speaking to the resolution Mr. Miscampbell said there was no question but that it would be admitted the timber limits of the province formed one of their most valuable assets. It was believed this timber was rapidly disappearing. In various parts of the province, instead of a flourishing industry, what did they find? That whereas sawmills had existed in the past, these had closed down and their owners had now to devote themselves to other occupations. As to the amount of timber taken away, whether that was large or small, every foot carried out of the country was an injury to the province. The cost of taking out the logs was about \$5 or \$6, and in order to realize a profit after coming from the mills the lumber must be sold at \$11 per thousand feet. There was a clear difference of \$5 that would have been expended in this country if the logs were manufactured here. Other industries depended upon the lumber business. There were the railways, for instance, to whom the carrying would prove most profitable. It was said if they prohibited the export of logs the United States would retaliate, but in this resolution they asked for nothing that would interfere with a dollar of vested rights. They asked that the Government should husband the resources of the province, and make it a condition that the timber should be manufactured in this country. If this course was taken they would have Saginaws and Bay Citys on the north shore of lake Huron. It was easy enough to understand the era of prosperity that would then set in. He maintained that for every thousand feet of lumber that was manufactured outside the country employment was lost to one man, or in other words, a family of five individuals, who would otherwise be living here, were settled elsewhere. As an argument to show the timber was becoming rapidly exhausted, he mentioned that some years ago the size of the sawlog cut was 160 feet, whilst to-day it was down to 100 feet to the piece. One reason advanced for selling the timber was that the manufacturers wanted timber. Was it not a peculiar fact, however, that 33 per cent. was lying unused. What other construction could be put upon that than it was being held by speculators until the price went up.

Mr. Conmee, representing west Algoma, an important lumber district, replied that the resolution amounted to an assertion that the timber of the country should be used merely for home consumption. Yet Mr. Miscampbell had enlarged on the benefits of the lumber trade. If the timber had not been cut in the past where would Ottawa and the other lumber towns be? The timber near James' Bay has been the property of the Province for years and has been of no value, because development has not approached it, and so with the timber now standing. Mr. Conmee then referred to the way in which the northern district has been gradually filling up with settlers under the present system. It would be wrong to tie up the timber of the country; it should be

used to keep the mills going in the country. A Chinese policy of repressing the industry would drive still more of the people away to the American side in order to seek for work. He was against putting restrictions on the trade of the Province; he would leave the people free to make the most of the natural capabilities of the country. If the present Government had a fault it was in being too chary in disposing of the timber. One might as well ask them for gold as for timber. Mr. Conmee then referred to the ravages which fires commit, and declared that if not cut it would be in danger of being burnt and being a total loss. As for the smaller logs now cut, it could be explained by the fact that the recent improvements in the lumber business, together with the regulations of the Government, have made it profitable to cut and use smaller logs than before.

Hon. Mr. Bronson, a member of the Cabinet, without portfolio, and of the extensive lumber firm of Bronson & Weston, of Ottawa, in rising to discuss the question was obliged to defend himself against a charge made by Mr. Whitney, that as the holder of 28 timber licenses all of which were held by the sanction of the government, he had no right to be a member of that government. Mr. Bronson denied that he or his firm had ever bought a foot of timber limits from the Government. Every foot that they had secured had been bought from third parties. All transactions which his firm had had were in the ordinary way of trade, and he was unaware of any discrimination having been exercised in his favor. Indeed, Mr. Whitney had been very careful to make no actual charges against him. As a matter of fact the timber dues were fixed, not shifting or dependent on the will of the Government. Nay, so far was he from having profited, that, since he had become a member of the Government, the dues on timber sold had been advanced 33 per cent. If he had had any influence, it evidently had been in the interests of the Province, not of the lumbermen. Mr. Bronson then remarked that the lumber interests of the Province are very great, and the Government might easily find the presence of a practical lumberman in its councils of some use, and any influence he may exert would be exerted in the interest of the Province. Speaking directly to Mr. Miscampbell's resolution, Mr. Bronson asked, What would be the result of adopting the policy suggested in regard to the timber of the Province, viz., the building of a Chinese wall around that timber? Such a policy would prostrate the industries of the country and inflict upon them a blow which they would not recover from for years. In timber, as in every other part of the vegetable kingdom, there is a period of growth, of maturity and of decay; there comes a time when it should be marketed, or it would decline in value. The Government's policy has been to market it as soon as the proper time comes. At the last timber sale some of the timber sold was on the point of deterioration, and would have been injured by being kept any longer. Mr. Bronson then questioned the statement that the keeping of the timber in the country would result in cities like Bay City, Saginaw, etc., growing up on the Canadian shores of the great lakes. The trade depends on the American market; only the best can be sent to Europe, and a great deal of low-grade timber must be cut and must be sold by Canadian lumbermen. But if the timber were kept in the country this market would disappear, and the country would suffer. He reminded the House that once the announcement that an export duty would be charged by the Dominion Government stopped a sale, as the lumbermen would not, under those circumstances, give the Provisional Government a sufficient bonus. He touched on the danger of fire, and said he could show hundreds of miles where timber that should have been cut years ago had been burned. The export duty would cause the mills to be shut down. The assertion that the manufacture of lumber in this country would lead to prosperity depended upon the United States allowing the Canadians to send them lumber free of duty after the export duty had been charged, which Mr. Bronson doubted. The closing down of the mills would inevitably result from the imposing of such a policy as Mr. Miscampbell advocated.

The resolution was defeated by a considerable majority.

ANTI-FRICTION MATERIALS.

By KILLINGWORTH HEDGES, M. INST. C. E.

THE use of oil as a lubricant in machines is to separate the rubbing parts and diminish the friction of metal upon metal by an intervening film of the lubricant. If the oil is supplied in sufficient quantity to cause the entire separation of the metals, the friction may be reduced to a measure of the viscosity of the unguent used; where oil is furnished in vast quantity, the friction of metal upon metal is usually resistance due to interlocking particles or the revolving and stationary parts, the oil used under this condition finding its way from the bearing, loaded with the metal that is gradually torn from either the revolving shaft or the bearing in which it has worked.

In discussing the subject somewhat over a year ago before the British Association for the Advancement of Science, the author remarked it to be a well-known fact that heavy lubricants effect a better separation of the metals than those that are more limpid, although the power required to slide the surfaces one upon the other is much less with the latter than with the former, but at the same time the wear and tear of the metal may be greater. It has been stated by more than one authority, that it makes little difference what metal is used for the bearing of a revolving shaft, provided oil in sufficient quantity can be introduced, so as to separate the shaft from the bearing in which it revolves. This is proved by the success which attends the use of cast iron for the bearings of ordinary shafting, it being no unusual occurrence to find the cast-iron sleeve of an adjustable hanger showing the tool marks after running several years with an excess of lubrication. Such a bearing would, however, quickly seize if the oiling were neglected, and therefore the friction may be said to vary according to the attention paid to the oiling. For very low pressures, amounting to only a few pounds on the square inch on the rubbing surfaces, oil causes a loss of power, so as to make it advisable, wherever possible, to dispense with it altogether. Professor Coleman Sellars even goes further than this and states that even when the pressure on the rubbing surfaces is less than 50 pound per square inch, the viscosity of the unguent acts as a sensible retardant.

Engineers have for a long time been looking for a material capable of being used for bearing surfaces and having a low co-efficient of friction when worked dry and without any oil. The idea is not one of recent date only, but may be said to go back to the time of the Romans, as some of the hand flour-mills found at Pompeii have the lower stone fitted with an iron bearing which evidently worked dry in the stone socket of the upper stone. The celebrated Coulomb experimented with an iron axle moving in a bush of elm, the friction being stated to be "1/10th of the force of pressure." He also made numerous experiments with wood axles slightly smeared with tallow, and also recommended the use of blacklead. The material which he found to give the best results was green oak on elm, and I believe the wooden axles of wagons which are used in some parts of England at the present time to transport heavy grindstones from the quarries, are constructed with axles of oak in a similar manner. Throughout Egypt, in the Nubian water-wheels, which are everywhere employed for irrigation, unlubricated wooden bearings are used, which appear to wear very slowly, the surface of the bearing acquiring a fine glaze. Stone bearings have also been employed for shafts. According to Rankine, the natural stones fit for this purpose are those which are wholly free from grittiness and are somewhat inferior in hardness to iron, such as gypsum, pure clay slate, compact limestone, marble and silicate of magnesia. From the latter the substance called "adams" was made by calcining the magnesia, grinding and molding it by hydraulic pressure into blocks, which were then baked.

In addition to these oilless bearings there are others in which, perhaps, a small quantity of grease might have been employed, such as the leather bushes used in spinning wheels, and the leather band on that part of the oar which works in the oarlock may be quoted as an instance of leather working on wood. Glass has also been tried, but the only kind which has survived to the present, and has been the most successful of all, is the plumbago bearing. The author has been told by the old millwrights that this material was often used in the footstep bearing of

the upright shafts in water mills, and most of us have seen plumbago employed instead of tallow for lubricating wooden bearings, and there is the familiar example of the carpenter's screw. The first adaptation of plumbago in a more practical form was the invention of Gordon, who inserted a number of molded plumbago plugs in the standard-size axle-box of an ordinary carriage wheel. It is said that the vehicles ran successfully without any lubricating.

Graphite or plumbago is the principal ingredient in numerous inventions for dry bearings, many of which have not got further than the Patent Office. It has been mixed with pulverized iron, asbestos, vegetable fibre, paper pulp, blood and in one curious instance sponge is used. In nearly all these applications the anti-friction composition is packed into suitable grooves, which are used in the bearing in very much the same way as asbestos is used in cocks. A substance which has been termed "metalline," which, although it contains graphite, appears to be composed of finely divided lead, has been rather extensively employed. The chief disadvantages were the expense due to the way the material was used, in the form of little plugs let into drilled holes, and the necessity for oiling when the plugs were worn sufficiently to cause contact between the metallic surfaces, thereby changing the character of the bearing.

The latest form of dry bearing is of solid material, which can either be molded so as to fit any plumber-block, or can be tooled or worked in the same manner as an ordinary brass. A new material for this kind of bearing, recently tried in the United States, is termed fibro-graphite, and consists of finely ground plumbago, mixed with wood fibre in a moist condition, and pressed into a mold of proper form. It is then saturated with some drying oil and oxidized in hot dry air. This bearing has been favorably reported on by a committee of the Franklin Institute, and a shop has been fitted up complete, so that the whole of the machinery, including the steam engine, runs without any lubrication at all. The report, which may be taken to apply to dry bearings generally, states "that an invention of this kind by diminishing the use of lubricants, diminishes the cost of machine construction by doing away with the many devices incident to oil—oil cups, oil-hole covers, the oil-hole themselves which have to be carefully placed, oil tubes to lead the lubricants to the inaccessible parts of machinery, as well as the cost of the personal attention and the cost of the lubricant required to keep the machinery in perfect order."

My own investigations on a suitable material for an oilless bearing began with the use of plumbago, which was molded so as to form a circular bush, but this was soon discovered to be a failure on account of its rapid wear. I then constructed bearings of ordinary carbon, such as is used in batteries, and for producing the electric light by means of the voltaic arc. The first experiment was made with the bearings of a small dynamo, which ran for a considerable time, but the drawback of using carbon was mainly on account of the impurities which it often contained. A small amount of silica in the carbon was found to cut the shaft very badly, while if soft carbon was used the wear was as rapid as with plumbago. In order to lessen the cutting action and the friction, finely powdered steatite was mixed with the carbon, and thenceforth no difficulty was experienced, even when the load was unequally distributed on the bearing. The name of carboid has been given to this mixture, its specific gravity being 1.66, that of carbon as used in arc lamps being about 1.68; therefore carboid is about one-fifth the weight of brass. It can be molded with the same ease as carbon, and can be turned, bored or shaped to any desired form. In practice it is found that the cylinders, as they leave the molds, are quite true enough to be put into bearings without any tooling, although it is preferable to run for a short time with half the load and then remove and scrape the bearing, so as to equalize the surface of contact.

Professor Sellers, writing on the Franklin Institute report, states that "the co-efficient of friction is lower with the dry bearings experimented on than that of many oiled bearings in good condition, and that it is undoubtedly lower than with metal bearings, as usually operated with moderate attention and poor qualities of oil. It seems to be constant in its frictional resistance, whether warm or cold, while it does not run lighter when worn by use,

as some oiled bearings do. Its uniform action is better than many oiled bearings and very much safer; the constant amount of frictional resistance being known can be provided for in the power of the machine." The above agrees in the main with Professor Unwin's experimental results with carboid. A bearing 1 1/2 inches in diameter by 2 1/2 inches long, cut in halves, was tested under loads varying from 100 pounds to 1800 pounds, or about 15 pounds to 170 pounds on the square inch, at speeds from 110 to 490 revolutions per minute, the period of test extending over six days, during which the bearing was kept almost constantly running without any lubrication or attention.

Summarizing the experiments, it appears: 1st. That the co-efficient of friction is almost the same and has not diminished as the carbon became worn to a better bearing surface. 2nd. That the co-efficient of friction increased as the temperature increased during the run, but is practically the same for any increase of pressure, and diminished with increase of speed, the maximum number of revolutions per minute being 490. 3rd. That no injury is caused to the shaft even if the bearing gets very hot, as it was found to be impossible to make it seize.

The conclusion arrived at by the author with regard to dry bearings is that the frictional resistance is governed by the conductivity of the shaft and the holder or support of the bearing; if this be so arranged that any heat generated be dispersed, the co-efficient of friction will not exceed that of a lubricated bearing.

If the bearing works under such conditions that any heat, generated at starting a new bearing, may readily be conducted away, the first cost of a dry bearing will be less than any form of brass, but taking a case of a dynamo bearing where any excess heat might be disadvantageous, it will be necessary to carefully true the bearing by scraping so as to fit the shaft, and under certain conditions where there is a great pull on the belt, it may be necessary to keep the bearing cool by means of a circulating flow of water. The economy of working is very marked. Besides the cost of the lubricants used in large establishments, there is also the attention required to apply the oil and keep the parts clean. In laundries and in those trades where unskilled labor is employed, the danger of oiling machinery in motion is very great; besides this there are instances where the lubricant used is in itself a source of danger, such as the risk of oil waste taking fire by spontaneous combustion, and the dip from bearings certainly renders the floors of the mills highly inflammable.

The principal application of carboid up to the present time has been for the bearings of ordinary shafting, and for bushing loose pulleys. It has also been applied for the bearings of steam heated rolls such as are used in cloth mills and paper works. The result of two years' experience and many experiments with light trucks seem to point out the desirability of extending its use to the axle-boxes of tramcars, and perhaps railways generally, as it involves no change in the axle-boxes; even the existing brass can remain and be faced with carboid, which can be cemented to either a smooth or rough surface.—Cassier's Magazine.

MIX THE MOVEMENTS.

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



PUBLISHED ON THE FIRST OF EACH MONTH

— BY —

C. H. MORTIMER

CONFEDERATION LIFE BUILDING, TORONTO

BRANCH OFFICE:

NEW YORK LIFE INSURANCE BUILDING, MONTREAL

TERMS OF SUBSCRIPTION:

One Copy One Year, in advance \$1.00
 One Copy Six Months, in advance 50
 Foreign Subscriptions, \$1.50 a Year

ADVERTISING RATES FURNISHED ON APPLICATION

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

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

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

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

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

NOTICE OF REMOVAL.

SUBSCRIBERS, advertisers, and others concerned are particularly requested to note that the offices of THE CANADA LUMBERMAN have been removed from the Canada Life Building to the CONFEDERATION LIFE BUILDING, Richmond and Yonge Streets. All communications should in future be addressed to C. H. MORTIMER, publisher CANADA LUMBERMAN, Confederation Life Building, Toronto.

TWO METHODS OF TIMBER SALES.

A MOTION of Mr. John Charlton, M. P., in the House of Commons a few days ago, asking for a statement, showing particulars of all timber licenses granted since January 1, 1888, raised the question as to the best method of disposing of timber limits. It has been the custom in the provinces, notably in Ontario, to put up timber limits to public auction. The Dominion Government has followed the practice of simply asking for tenders.

Mr. Charlton strongly favored the Ontario system and spoke of the importance of notice of sale extending from four to six months, and in this contention he was supported by Mr. Edwards, member for Russell, and one of the largest lumbermen of Ottawa. Mr. Bryson, also a large Ottawa lumberman, and a member of the House, favored the system of private tenders, which was defended by the Minister of the Interior, who said that this system had been the vogue since February 17, 1885.

The question is not a political one, at least, it ought not to be. It is one of business: which is the fairest business method? Which is likely to produce the best financial results to the country? It needs no evidence to demonstrate that the more open competition is made at any time, in any line of tendering, the less likelihood there is of intrigue or questionable methods being adopted by one tenderer to secure advantage over another. Public auction at any time, gives an openness to business that can hardly be expected in private tenders, where the consideration of results is left in the hands of those who may have friends to favor, and to whom a wink, that may mean much, can sometimes be

given. Unfortunately in political life, without regard to party, the temptation to hold in hand the power that comes of awarding public contracts, whatever shape they may take, is strong, and few there be who can resist the temptation. Any system, therefore, that helps to remove this temptation, would seem to have much to recommend it to public favor. It is to be feared that the record of the timber sales of the Dominion by private tender will show that some of the evils, here suggested as possible, have had an actual existence in fact.

Then there is the financial side of the system. Which plan will bring the best results? In a debate in the House about the same time that Mr. Charlton's resolution was on, the subject of Indian reserve timber being under discussion, Sir John Thompson said that it had been proved in auction sales of Dominion timber limits buyers could and did easily combine to keep down the price. For this reason he believed the invitation of private tenders was the better method. It is doubtless true that combinations of men may keep down that degree of competition that is expected at sale by auction, but, we opine, that these cases are more likely to be the exception than the rule. The experience at late sales in Ontario, both in the case of those conducted by the government, and in several extensive sales of private limits, is manifestly in an opposite direction. If we take the prices secured at these sales, and compare them with prices obtained by other methods of sale, only one conclusion can be reached as to the financial results accruing from the sale of timber limits by auction. How by private tender could such a concourse of buyers become interested in the sale of any limits as was shown to be the case at the last sale of the Ontario government, when the Legislative Chamber of the old parliament buildings was crowded with the shrewdest buyers from all parts of Canada and the United States? Relatively equal success, and similar conditions prevailed, at the extensive sale of the Mossom Boyd limits, in this city, more than a year ago, and the recent sale in Ottawa, two months ago, of the Perley and Pattee estate.

The timber resources of this country are to-day precious enough to make it obligatory on any government to employ only the very best methods in disposing of these valuable assets. Lumbermen, we know, will always welcome such a system.

EDITORIAL NOTES.

THE Northern Advance, Barrie, in contending for a re-imposition of an export duty on logs, says: "So valuable were the logs on the other side of the lake that a number of the mill owners here who had timber limits purchased from the Ontario Government for a mere song, sold them at a big price to American buyers instead of cutting them at their own mills." Lumbermen and others, who advocate a re-imposition of the log duty, are not without many and good arguments to support their case, but when our newspaper friend of Barrie gives as one reason for this step that Ontario limits, alleged to have been bought for a mere song, are being sold to American buyers at fancy prices, it is time to ask for facts. Prices paid for Ontario timber, of late years at government sales, have not run at trifling figures, and on the other hand, with the depression in the United States lumber markets, buyers from across the border are not paying extravagant prices even for so good an article as Canadian white pine.

A CIRCULAR has recently been sent to all Michigan and Canadian pine owners by the Commissioner of Crown Lands here saying that the department are desirous of obtaining as close an estimate as it is possible to get at this season of the year of the quantity of saw logs and dimension of timber which will be exported from Ontario this summer to be sawed into lumber in the United States. The circular asks those to whom it is sent to furnish the Commissioner with the estimated quantity in feet, board measure, which he expects to export, the berth from which it will be taken, the name or names of men from whom logs may be purchased in Canada, and the points from which they expect to clear their tows. Some of our Michigan lumbermen are interpreting the request for information to mean a raising of

crown dues on timber limits. In this connection it is also said that Michigan capitalists have been offered a large quantity of Canadian timber during the past winter, and in some cases crews have looked over limits but the condition of the money market and trade causes them to hesitate in buying.

RECENT tariff changes at Ottawa, placing lumber, shingles and other wood goods on the free list, is likely to cause considerable loss and unhealthy competition to Canadian lumbermen in certain sections of the Dominion. The Lake of the Woods mills estimate that the stocks held by them will be depreciated 15 per cent. by the change, which in the aggregate will be a severe loss. The Puget Sound shingle men have cut the price of shingles 10 cents a thousand, and with 20 per cent. duty taken off, they expect to be able to bring in their shingles to the North-West territories and out-bid the British Columbia shingle manufacturers. It may be that this competition will not stop with shingles, and with shingle manufacturing in Washington territory as demoralized as it has been for a year past, the temptation may be to bring shingles from this point further east than Manitoba. This is an instance where Mr. Foster's protective tariff does not protect. The Vancouver Board of Trade apprehending trouble ahead have passed a resolution requesting the Dominion Government to retain the duty on shingles until the Wilson bill comes into force. Then there would be free trade in lumber.

AT a time when the provincial government is moving in the direction of establishing a forestry park for the better protection of our lumber interests, it is important to note the results of experiments by our neighbors across the border. The statement comes to us that New York State is already beginning to realize a profit from the purchase of Adirondack forest lands. It has recently sold the timber from 60,000 acres and the sum realized for it was \$250,000 or a little more than \$4. per acre. No tree under twelve inches in diameter shall be cut down. This provision is to apply to all sales, and it insures a perpetual succession of valuable timber, which can be thinned out every few years. No trees are to be cut within 400 feet of any lake or water front. This is in accordance with the European rule to preserve these water course from drying up. How necessary an effort of this kind is needed can be realised when we refer to the statement made at the forestry congress at Albany a few weeks ago by Secretary of Agriculture Morton, that 25,000 acres of timber land were stripped every twenty-four hours to supply the demands of the people of the United States for wood, for building, fuel and other purposes.

SOMEBODY is going to make a lot of money out of pine lands in northern Minnesota, says the Minneapolis Lumberman, especially on the lands up in the Duluth district before many years have gone by. There is an abundance of good timber up in the vicinity of Rainy lake, and when that region is developed with railroads and water transportation available, it will undoubtedly be a great lumbering district. Michigan men are already awakening to the fact that there is money in Duluth timber. Years ago they bought Michigan timber at the cheap prices it was then selling at, and since then they have become millionaires. They didn't make their money out of lumber so much as out of timber lands, and they are of the opinion that the same condition of affairs will result in northern Minnesota before long and they are backing their judgment with money. Saginaw men are sacrificing their present interests and are putting all the money they can get hold of into Minnesota pine. Stumpage at \$2 a thousand near Duluth as compared with from \$5 to \$8 a thousand in Michigan is quite a difference, especially when lake rates from Duluth to Tonawanda are only \$1.75. Such an advantage is hard to overcome.

D. E. Sprague, of the Winnipeg saw mills, states that this season's cut of logs has amounted to 3,500,000 feet. His camp is on the Rosseau river, near the Lake of the Woods, and there has been in his employ, during the past winter, upwards of one hundred men. The logs will be floated down the river to the mill.



JOHN CHARLTON, M.P., interviewed on lumber matters, said: "In common with all other business interests having relations with the United States for market of production in whole or in part, the Canadian lumber interest would be much benefited by some definite settlement of the tariff policy in that country, as trade in all departments seems likely to continue unsettled, and buyers indisposed to do more than meet requirements for immediate demands until it is known what tariff policy will be finally settled upon. The lumber trade outlook, however, is not a gloomy one; the production of logs last winter will probably fall somewhat short of that of the previous year. Nearly all of the mills in the Ottawa valley made highly favorable contracts several weeks ago, for the sale of the season's cut of deals in the English market at a material advance on last year's prices; and the English market for deals continues strong with fair probability of a further advance. As regards lumber which must find a market in the United States, prices are no lower than 12 months ago. One concern with a capacity of 40,000,000 has contracted 85 per cent. of its season's cut for the American market at prices fully up to the scale of 12 months ago, and the market in this great centre of the lumber industry, I think, is not likely to weaken." Mr. Charlton does not look for a reimposition of the export duty on logs. "If the American government," said he, "puts lumber upon the free list, the Canadian government will not for a moment entertain the idea of returning to the policy of imposing export duties. Even if the Canadian government were desirous of putting on the duty again, the provision of the Wilson bill as reported by the finance committee of the senate would render such a course impossible. Paragraphs 672 to 683, inclusive, place upon the free list logs, timber, boards, clapboards, bolts, ties, posts, lath, pickets, shingles, staves, etc., and all kinds of wood unmanufactured with a proviso contained in the last paragraph as follows: 'Provided, that all the articles mentioned in paragraphs 672 to 683, inclusive, when imported from any country which lays an export duty on any of them, shall be subject to the duties existing prior to the passage of this act.' This proviso makes the consequence of imposing an export duty so serious that the Canadian government would not entertain for a moment the idea of doing it." Along with others it is the opinion of Mr. Charlton that the spruce interest was not fairly dealt with at the time the McKinley bill became law. He said: "In 1890 the Canadian government promised officially to remove the export duty upon logs of pine and spruce if congress reduced the duty on lumber to \$1. There was a tacit understanding that this should be done before the promise was made, but congress failed to reduce the spruce duties. The result came near being a failure to secure the repeal of the export duties. It was done reluctantly, and with a feeling that the failure to reduce the spruce lumber duties by congress did not fall very far short of sharp practice. Since that time the spruce interest has stood for the reimposition of the export duty. Had congress made the same reduction upon spruce as upon pine lumber, this feeling would not have existed."

* * * *

"We are keeping reasonably busy," said Mr. George Cormack, of Whitby, whom I ran across in the city a few days ago. "I have been fortunate enough to bag a good big order for white pine shingles that will keep me busy a larger part of the summer. Several of the mills are busy turning out the stock for us. It will all go across the lines." Have you been there recently yourself? I asked. "Yes, not long back," said Mr. Cormack. "There is no rush in lumber trade in the States. I am inclined to think that if the depression continues much longer, prices, which all along have kept very firm, will break. We are doing a very fair trade throughout the province."

Mr. D. Gillies, M.P.P. for Pontiac, Que., has returned from the California Midwinter Fair, and whilst on the Pacific coast took occasion to make some investigations of the lumber trade of British Columbia. He has great hopes of the future of lumber in that province. As a large owner of limits in the Ottawa valley, he expressed the opinion that just as the supplies in that section and in other parts of the Dominion become exhausted we would be obliged to look to British Columbia for lumber. In time, he thought, we would have to look to that province entirely for our supplies. He did not think the Wilson Bill would effect the price of lumber, but it would materially increase trade, and thus be a great benefit to shippers in British Columbia.

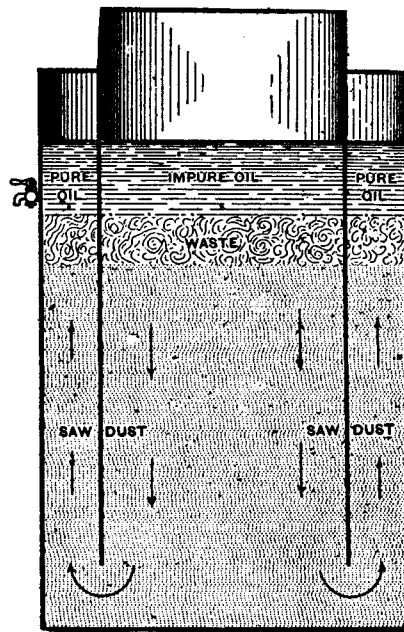
* * * *

The names of John Donogh and Jos. Oliver, constituting the firm of Donogh & Oliver, lumber merchants, have ever stood high in trade and monetary circles, both in the city and out of it. They are two manly fellows. As is my wont, when nearing publication day, I dropped in on these gentlemen, at their comfortable offices in the Board of Trade building, a few days ago. "Not very much to say about lumber trade these times," said Mr. Donogh. "Business is rather slow and we're just moving along hoping for better times after a while. In our own city and country, of course, there is always something going, but there is nothing very big to look forward to this season. We send our largest shipments of lumber to the United States and business there is, undoubtedly, dull. Trade has not really recovered from the depression of last summer, and, if anything, the past few months have been relatively duller than ever." "How about prices?" I remarked. "Well," replied Mr. Donogh, "these continue to hold up splendidly. It is the encouraging feature of the trade, indicating a solid confidence in the future of lumber." At the bottom of the present trouble, I suggested, tariff uncertainty likely rested. "There is the difficulty," said Mr. Donogh. "Mr. Oliver has just returned from a trip through the Eastern States, and he will be able to give you current opinion first hand." "Ask me something easy," was the response from this genial knight of the road, for every one, almost anywhere in Ontario and a large district of the neighboring republic, who touches lumber, knows "Joe" Oliver, and like him. "I was after orders," said Mr. Oliver. "And got some, doubtless," was my response. "Oh, yes!" he said, "we usually get there, even though we may not do as much as we would like. You ask me about the tariff. It is causing the chief trouble in lumber circles. Whether it is to be on or off no one can now tell, and consequently no one will buy stocks beyond immediate requirements, and the capitalists of the lumber trade are not going to make investments in lumber until they know just where they stand. As a result, I can say to you, that lumber business in the States, just now, is mighty dull. It had been supposed that if anything at all went through in the way of tariff changes it would be lumber, but the question is now in the Senate and the struggle has become so prolonged it looks as though nothing would go through. Lumbermen are saying settle the thing. They don't care now which way it goes, but let us know where we stand." "It really looks," continued Mr. Oliver, after an interruption from an office source, "as if these Democrats were going to fool long enough with the question to allow the Republicans to come back into power again, and then we may whistle for free lumber or any other change in that line. What fools these fellows are. They get everything in their hands snug and tight, and are hardly more than comfortably seated in their chairs before they throw away every advantage they have gained. There is no cohesion among them. Every man has his own little hobby to run, and we see the result. I was going to say, they remind me of a certain political party in this country, but I guess I had better stop there, or my friend Donogh and some of the rest of you may get mad," said Mr. Oliver, as he left us to look after some matters of business.

When news went abroad at Ottawa a fortnight ago, that the sawmills would commence work the following Monday, men flocked from all directions to get employment, and when the hour of starting came it was computed that a thousand men were on the ground ready to be employed.

HOME MADE OIL FILTER.

A CORRESPONDENT of Power gives the following description of a home-made oil filter which he has found to work successfully: It is made of an old oil can that will hold about 40 gallons. Inside this is placed a galvanized iron or tin tube, raised from the bottom by a couple of sticks and projecting about six inches



HOME-MADE OIL FILTER.

above the top of the can. The can and tube are then partly filled with clean sawdust, with a layer of waste or cloth on top, as indicated in the sketch. The impure oil is poured into the tube, filters down through the waste and sawdust and up again in the can, whence it may be drawn off through the cock as needed. By pouring in a few buckets of hot water first, you have a water filter for the oil, as it will pass through the filtering material in the same way. I have made two filters in this way, at slight expense, and they work all right.

THE PANAMA CANAL.

A CABLE from Paris says that Edmond Bartissol, a civil engineer, who helped pierce the Isthmus of Seuz, has made public his plan for completing the Panama canal. He proposes to build a stone tunnel about 10 kilometers (or 6 miles) long. Water from the Chagres river would be conducted by shafts to this tunnel, and there be used to carry to the Pacific the soil already excavated from the canal bed and thrown in the way of the current. The canal could be completed by such means in four years, M. Bartissol estimates, at a maximum expense of 500,000,000 francs. This plan was submitted some time ago to the Technical Commission of the Panama Canal Company.

TRADE NOTES.

The Waterous Co., of Brantford, report recent machinery sales as follows:—

No. 3 Allis Band Mill, to the Huntsville Lumber Co., with band saw tools, wood grinder, to convert their refuse into chips, to be fed with sawdust to their boiler, with automatic fuel feeder. A similar plant to Graham, Horne & Co., Fort William, and two other band mills to Warren Curtis, Three Rivers. With these latter mills was sent one of their steel saw mill carriages of new design, one of the heaviest and strongest mill carriages built in Canada; also a Prescott direct acting steam feed, 42 feet long, a double Kelly log kicker or double deck unloader, and two Hill's patent stationary steam niggers. By the first of the month they will ship the same firm two 150-horse-power engines. A fifth band mill will be shipped the end of this month to G. & G. Flewelling, Hampton, N.B., together with saw carriage, double edger, live rolls and other machinery. Shipment has just been made of a saw carriage, edger, lath machinery, conveyors, &c., to Humphrey and Trites, Moncton, N.B., a saw frame and carriage to Mr. McKiernon, Eganville, and another to Jesse Cooke, Zephyr.

NEWS AND NOTES.

There is still sleighing in the lumber woods around Kippewa lake. Four of the Shepard-Morse lumber camps in that district are still in full blast.

Navigation has opened earlier this spring near Chats lake than for 20 years. There are 200,000 logs in the Schneaux bovin to be towed.

The annual meeting of the Alberta Lumber Co., was held recently. A satisfactory report of the past year's business was presented, and the following directors were elected for the ensuing year: H. J. Dexter, W. G. Bell, Winnipeg; H. B. Baird, Westby Fallows; James Robertson, Minneapolis.

OTTAWA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

MUCH has been said and written here at various times about the sawdust nuisance of the Ottawa river. Protests in the House of Commons, and out of it, have been entered, and the law has, at different times been called into requisition to abate this alleged nuisance. But the mills here grind out the sawdust in as large quantities as ever, and it finds a home in the Ottawa river as usual. A fresh effort to remedy the trouble is now being made in the case of Ratte v. Booth, a petition to the Privy Council of Canada having been prepared, asking that the sawdust nuisance in the Ottawa river be ended. It alleges that these deposits of sawdust constitute a serious interference with the public rights of navigation, that they lower the value of property along the banks of the river and are liable to cause increasing damage as time passes. It is suggested in the petition that the refuse of saw mills can be economically utilized or the destruction thereof easily and successfully accomplished. It is asked of the government to place Ottawa river, between the Chaudiere falls and McKay's bay and the Gatineau river, from the mill pond above Gilmour & Co.'s mill at Chelsea, to its mouth, under the provisions of the Fisheries Act and the Act for the Protection of Navigable Waters. The latter of the statutes expressly declares that no owner or tenant of any saw mill or any workman therein or other person shall throw sawdust, edgings, slabs or rubbish into any navigable river or stream. The extent to which the river is being obstructed by the sawdust is not commonly known, but the engineer of the Gatineau Valley railway in making soundings recently between Nepean point and Hull found 68 feet of sawdust in the bottom of the river.

INDIFFERENT LENGTHS.

The fear grows that a good many logs on the smaller streams will be "hung up" owing to a lack of water.

The ice has gone out of the Ottawa but there is no perceptible rise of the water.

Towing in the Ottawa, between Ottawa and the Chats lake, is now in full swing. The tugs have begun taking down the logs of the lake, most of which, however, are of last year's drives.

Both big and little mills of the Bronson & Weston Lumber Company are cutting, giving employment to about 300 hands.

Green lumber is beginning to come up in large quantities from the lower yard of the Canada Atlantic railway at the Chaudiere. The majority of the piling grounds at Rochester-ville, Stewartson and Hurdman's are pretty well filled up on account of the slackness of shipping during the past winter.

OTTAWA, Can., April 26, 1894.

BRITISH COLUMBIA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE lumber trade, at least the shingle manufacturers, are somewhat agitated over the news that has reached them from Puget Sound, that the shingle association there has decided to cut the prices of shingles 10c. per thousand. Manufacturers here realize, unless they are ready to make a similar cut, that the Puget Sound shingle men will capture a large amount of their trade with Manitoba and the North-West, especially since the change in tariff, removing the duty of shingles. It is calculated that under this arrangement American manufacturers would be able to discount British Columbia men by about 30c. per thousand. Just what the decision of our shingle men will be, it is a little difficult to say, as this unanimity of prices fixed by the British Columbia association was expected to level up the losses that had been made by over production and ruinous competition in shingles in this province for some time past. Duty on shingles under the old tariff was 20% ad valorem, which was sufficient to keep American shingles out of the market.

COST OF LUMBERING.

The lumber trade, altogether, in the province is not in the healthiest condition. We have suffered, as do all new provinces, with over production and a cutting of prices that is usually to be associated with this practice. The volume of business during the past year has been considerable, but for the reason stated it has not been done at much profit. We learn that pine in Ontario is being sold at \$7.00 on the stump. Our magnificent timbers do not net perhaps more than that f. o. b. Considerable of our lumber goes to Australia in cargo, but largely on speculation. It is sold by auction, and does not net the mills more than about \$7.25 per thousand feet. It is calculated that it costs \$4.00 to bring these immense logs from stump to the mill. Government dues are 50c. Sawing costs \$2.00, so that the cost of production almost touches \$7.00. Time will probably remedy these evils, for if there is any truth in the forestry estimates that are made of the amount of timber in other parts of the Dominion, and particularly in Ontario, it cannot be a

great while before the rest of the Dominion will have to look to British Columbia for their supplies. In the meantime, we do, as other youngsters do, as you have done in Ontario, I fancy, act prodigal-like with our riches.

COAST CHIPS.

A number of new charters are reported, including the British ship Astoria, to load lumber at the Hastings mill. The British ship Grace Harwar, now at Yokohama, and the British bark Xanthippe, at Honolulu, these also to load at the Hastings mill. The American schooner Aida, and the Chilean bark India, are loading at Moodyville. Ship "Thermopylae," of Victoria, Capt. Winchester, is loading 800 at B. S. M. Co., for Shanghai, some sticks measuring 22 x 22 x 100 and 82 x 24 x 100.

Mr. S. M. Wharton is building a sawmill at New Denver.

Messrs. Bailey & Sparks sawmill, Vancouver, was burnt on 7th inst., loss about \$2,000.

NEW WESTMINSTER, B.C., April 25, 1894.

NEW BRUNSWICK LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE mills are commencing to resume operations. 2,000,000 feet are being cut by Barnhill for the Australian market. King Bros' mill, it is said, will be idle this summer.

At the annual meeting of the St. John River Log Driving Company, the following officers were elected. President, C. F. Woodman; secretary-treasurer, J. F. Gregory; directors, C. F. Woodman, David Keswick, George Barnhill, John A. Morrison, Robert Connors. The company expects to handle 100,000,000 feet of logs this season.

A number of export shipments have gone forward during the month including about 100,000 feet of deals for Belfast, Ireland, 185,000,000 feet of long lumber for Buenos Ayres and a cargo for Barbadoes and Bermuda. Some 6,000,000 shingles, 2,500,000 lath and about 2,000,000 feet of deals etc., have gone forward to United States markets. The lumber cut in Cumberland county, N.S., is given as follows: Young Bros. & Co. have 3,000,000 to saw at River Herbert, and 5,000,000 at Half Way lake; Kelly Bros. 3,000,000 on river Herbert; B. B. Barnhill, 3,000,000 at Two Rivers; Prescott, Gillespie & Co., 3,500,000 at Shulee; the Shulee Lumber Company about the same quantity; Chas. T. White between 6,000,000 and 8,000,000 at Apple river; E. I. White, 1,500,000 at Sand river. A lot of piling has also been got out at the head of the bay.

Eighteen inches of snow fell in St. John a week ago. Nothing so severe has been known here since 1847.

Kilburn & McIntosh cut 6,000,000 feet of timber in Quebec, near the New Brunswick border, this season.

Unless a revival takes place in shingles, the mills of the province will cut very light this summer.

ST. JOHN, N.B., April 23, 1894.

MICHIGAN LETTER.

[Regular correspondence CANADA LUMBERMAN.]

WITH navigation opened we are hoping for a turn in the tide of lumber, for there is no use denying that the closing six months of 1893 and the opening months of the new year were full of dreadful dullness. But how far our hopes are to materialize in actual business is just doubtful. Indications at present do not point to a large lumber trade this spring. Prices, I think, it is safe to say will show a decline. They have been keeping up with remarkable firmness, when we remember how dull trade has been, but these conditions cannot be expected to continue, not at least if trade is to remain slow during spring and summer.

BITS OF LUMBER.

It is anticipated that a good many logs will be towed from Canada to the Saginaw river this season and the towing companies are preparing for this work.

C. A. Merrill who is foreman of the Spanish River Lumber Company's mill at Spanish River, Ont., and who has resided in Bay City during the winter, has returned to his post for summer work. It is currently reported that S. C. Fisher has purchased 5,000,000 feet of Canadian logs to be brought to Bay City to be manufactured and that he anticipates securing another lot of 20,000,000.

The lumber firm of Begole, Fox & Co., who have been in business at Flint, Mich., for 27 years, have dissolved partnership. The firm will go out of business.

A Toronto tug is busy in these parts picking up the logs belonging to H. M. Loud & Sons, of Au Sable, which broke loose from Tonawanda and went over Niagara Falls.

The shingle trade is unusually quiet, the depression here being more acute than in lumber.

C. K. Eddy & Son's mill will not commence running until June, and their main stocks will come from Canada.

SAGINAW, Mich., April 25, 1894.

TRENTON LETTER.

[Correspondence of CANADA LUMBERMAN.]

THE outlook for a good lumber trade in this vicinity is very encouraging this spring, and already American buyers are negotiating for their season's purchases. Prices continue about the same in all lines, and until the tariff question is finally decided it is not likely there will be any important change.

Navigation is open here, and driving operations on the back rivers and lakes are in full swing. Messrs. Gilmour & Company, of this place, have started to drive the logs cut in the old limits last winter, and expect to bring the head of the drive into Belleville about the 30th, inst., where the logs will be sorted, and finally towed to the Trenton mills.

Wages continue about the same as last year, and good hands are plenty on the river.

The ice has all left the lakes around here, and the only drawback to the driving is a scarcity of water, but notwithstanding this obstacle the logs are being rushed through very rapidly.

The mills at Trenton will start about the 28th inst., with new improvements; and a large cut is expected.

Mr. David Gilmour, who has been spending the winter at Menton, France, is expected home in time to see the first logs transformed into good merchantable lumber, and Mr. Allan Gilmour is also making arrangements to leave his Ottawa home for Trenton.

The steamer "D. R. VanAllen" has already moved several cargoes of wintered lumber to Oswego, and local shipments are quite heavy for this season of the year.

Just at present all interest is centred in Gilmour & Co.'s new limits, where the tramway is situated. Ten shanties have been in active operation all winter, and about 20,000,000 feet is the result of the season's work. These logs are now being towed to the tramway, or logway, to be taken over the height of land separating the Muskoka and Trent waters, a distance of about two miles. A test will be made in about two weeks, and the opinion of all the expert engineers who have visited the place is that the result will be highly satisfactory.

It is the desire of the company to have logs in Crow Bay this year from the new limits, and everything points to a successful completion of their plans.

TRENTON, Ont., April 26, 1894.

CANADIAN SHIPMENTS TO THE U. S.

ACCORDING to the United States Treasury statement, the importation of lumber from Canada to the United States for 1893 was as follows:—

LONG LUMBER: Total quantity, both rough and planed, feet, 692,218,010.

Duty collected on white pine, hemlock and bass-wood, at \$1 a thousand.....	\$ 529,262 93
Additional for dressing.....	7,282 53
Duty collected on spruce, oak, elm, etc., at \$2 a thousand.....	325,910 16
Additional for dressing.....	7,194 75

Total duty on long lumber.....\$ 869,650 37

SHORT LUMBER.

Clapboards—Pine, 67,990, at \$1.50 a thousand.....	67 99
Spruce, 6,997,440, at \$1.50 a thousand.....	10,496 19
Hubs for wheels, etc., rough hewed or sawed, valued at \$28,227, at 20 per cent.....	5,645 46
Lath—327,442,000, at 15 cents a thousand....	49,116 34
Paving posts, railroad ties, and telephone and telegraph poles of cedar, valued at \$271,235.91, at 20 per cent.....	54,247 19
Pickets and palings, valued at \$36,699.93, at 10 per cent.....	3,670 00
Shingles—Pine, 216,781,000, at twenty cents a thousand.....	43,356 15
All other, 253,221, at 30 cents a thousand....	75,966 26
Sugar-box shooks and packing boxes, and packing box shooks, valued at \$45,745, at 30 per cent.....	13,723 66
Staves—Valued at \$646,613.40, at 10 per cent..	64,661 34

Total duty on short lumber.....\$ 320,850 58

Aggregate duty collected on lumber in 1893....\$ 1,190,500 95

A THREE CENT STAMP DOES IT.

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

THE NEWS.

CANADA.

—James Stevenson, lumber, Glencoe, Ont., has assigned.

—G. W. Parish is erecting a new saw mill at Athens, Ont.

—S. M. Wharton is erecting a saw mill at New Denver, B.C.

—Cockburn and Sons will build a saw mill at Cache Bay, Ontario.

—A sash factory has been started at Salmon Arm, B.C., by Mr. Bolton.

—Mr. Mitchell, of Millwood, will build a saw mill at Selkirk, Man.

—D. P. McDougall & Co., Maxville, Ont., have started up their saw mill.

—A saw mill will be built at Fredericton, N.B., by Donald Fraser, of River du Chute.

—D. Ross, Whitemouth, Man, is placing more machinery in his saw and planing mill.

—The Parry Sound Lumber Company will shortly commence the manufacture of shingles.

—Robinson & Co., Winnipeg, Man., have sold out their lumber business to Hugh Law.

—C. Mills, of Wheatley, Ont., has purchased the saw mill at Windfall, Ont., formerly run by Mr. Shaw.

—Mr. Minnis, the purchaser of the Burhead mill, near Markdale, Ont., has secured a large stock of logs and is busy cutting.

—Toner and Gregory, of Collingwood, have purchased the saw mill in that town belonging to the Georgian Bay Lumber Company.

—Charles Brewer's saw mill at Armstrong, B.C., has been purchased by E. C. Gargett & Co., who will add some new machinery.

—The portable sawmill owned by Samuel Maquire, at Little Rapids, Ont., was destroyed by fire a week ago. Loss \$600, no insurance.

—The lumber outlook at Norman, Ont., is not over bright. Of the three mills located here it is thought only one will be running this summer.

—John Carew, Lindsay, Ont., has just erected a lath mill, which cuts 40,000 to 50,000 lath per day. The machinery was supplied by F. J. Drake, of Belleville.

—Edwin Fisher, an old-time lumber merchant, of St. John, N. B., has assigned. The liabilities are \$10,000, and it is said the estate will show a nominal surplus. At one time Mr. Fisher was considered wealthy.

—Mr. J. Krupp, of Metcalfe, Ont., has recently purchased J. L. Rolston's saw and shingle mill at that place, and will add in the near future, lath and planing machines and a run of stones for feed grinding.

—The McClymont sawmill in New Edinburgh, which was purchased last fall by Messrs. W. C. Edwards & Co., of Ottawa, has been entirely rebuilt during the past winter, and considerably enlarged. It will be used as a planing mill, and sash, door and blind factory.

—The Imperial Lumber Company are about through hauling logs on the C. P. R. at Warren, Ont., and are making preparations to rest their drive at Deer Creek. They have been successful in getting out nearly all their logs of this season's cut, and some left over from last season.

—At a meeting of the Western Retail Lumbermen's Association, of Manitoba, held during the past month, considerable attention was given the matter of securing a reduction in freight rates. It was resolved that whatever concessions are made will be given the consumers in reduced prices.

—Wm. W. Gibson, lumber merchant, of Port Neuf, Que., has instituted an action in the Superior court, against Mr. Alex. Fraser, the well-known lumberman, of Westmeath, for \$20,000 damages for breach of contract. The provincial police have been called in to prevent rioting in the Gibson lumber shanties.

—In the case of Hale vs. Saginaw Lumber Co., tried without a jury at Pembroke, Ont., judgment has since been given by Justice MacMahon. The judgment declares that the Vermillion River was, during the spring, summer and autumn freshets, before certain alleged constructions and improvements were made by the defendant company, and is navigable or floatable for saw logs and other timber, and does not come within the class or kind of river to which R. S. O., ch. 20, applies, and in respect to which tolls may be imposed and collected; and that the defendant company have no right to charge or collect tolls from the plaintiffs for the logs which the plaintiffs have passed or may hereafter pass over or through such alleged constructions or improvements. The defendant company to pay the plaintiff's costs.

—Judgment in the case of McNab vs. Dysart, brought by D. B. McNabb, of Lindsay, Ont., against the township of Dysart, for \$5,000 damages, has been given against the defendant, though the amount of damages has not been fixed. It was claimed that plaintiff, with the permission of the township council, erected a sawmill on a road allowance on the shore of Head Lake. The mill was never completed, only the sides being put up. Some months afterwards the mill was pulled down by Mr. Prust, township clerk, acting upon the instructions of the council and the solicitor. Another mill was erected upon the same site by Mr. Prust, and the action was brought to recover the value of McNabb's mill, and for damages sustained. The evidence showed that a portion of the mill was in the lake, over which the municipality had no control, and that in pulling down the mill the township authorities were not justified.

—At a recent meeting of the Canadian Institute, in Toronto, a paper on the "Rainfall and Fluctuations of our Lake Regions," was read by Mr. Andrew Elvins. He reviewed specially the theory that attributes the decrease in the annual fall to the denudation of the forests. A chart was exhibited showing the observed results from 1840 to 1893. This showed that the rainfall of each decade is less than the one preceding. The conclusion arrived at by Mr. Elvins was that these fluctuations do not admit of explanation by the theory that the denudation of the forests has caused a decrease in the rainfall, pointing out that while the cutting down has been gradual, the rainfall has varied, and specially noting that since 1870 there has been an average increase, not a decrease, as might be supposed from the present state of the forests. Observations made at other points strengthen the correctness of the result reached, that the cutting down of the forests is not connected with the rainfall.

GENERAL.

—A general meeting of the friends of trees, is to be held in Paris, France, in May, for the purpose of protesting against deforestation.

—Mr. S. O. Fisher, lumberman, of Bay City, Mich., recently purchased twelve million feet of choice pine in the vicinity of Ottawa, Ont. The logs will all come from the Spanish River district.

FIRES AND CASUALTIES.

FIRES.

—A saw mill at Vancouver, B.C., owned by Sparks & Bailey, was burned a fortnight ago. Loss, \$2,000.

—A fire broke out in the lumber town of Huntsville, Ont., on 18th ult., devastating almost the entire business section of the town.

—Moore & Macdowell's extensive saw mills, situated about seventy miles north of Edmonton, N.W.T., were completely destroyed by fire on the 26th ultimo. The loss is \$9,000, there being no insurance.

—Richardson & Sons, lumber mills at Bedford, N.S., including all the machinery, were entirely destroyed by fire on the 21st ultimo. The loss will be between \$8,000 and \$10,000 and the insurance only \$2,000.

CASUALTIES.

—John Scott, of Birch Lake, near Webbwood, Ont., while chopping in the woods, was killed with a falling tree.

—John Bradley, of Bradley & Cameron, lumber dealers, London, Ont., narrowly escaped being killed by a trolley car. He was knocked down and badly bruised while passing at the rear of one car.

—Two weeks ago the eight year old son of Robert Hawke, of Lang's sawmill, near Atwood, Ont., while playing in the mill, stepped into a pool of boiling water at steam heat, and was terribly scalded.

—The young daughter of Mr. Peterson, who runs a sawmill at Northbrook, Ont., caught her clothes in the revolving shaft of the mill a few days ago, and suffered considerable injuries. Her father who went to her assistance had his knee cut.

—A press dispatch of a few days since, from Marquette, Mich., says: The body of Alexander Stewart, a lumberman, was brought in for burial from Yellow Dog river to-day. He was thrown into the river by a pile of logs breaking loose, and drowned. He was supposed to have been from Toronto, Ont., and was unmarried.

PERSONAL.

Mr. Kennedy F. Burns, the big lumber king of New Brunswick, and who was represented in the Commons of Gloucester, has been appointed a senator.

One of the oldest settlers in Buckingham, Que., Wm. C. Kendall, died on 14th April. Deceased was 78 years of age. He was millwright for McLaren & Co., of Buckingham, for some years, and also manager of the Bangs, Kirby, Kendall & Co., sawmill at Basin du Lievre, Que., for a long time.

SPONTANEOUS COMBUSTION.

THE following is a condensed report of an address delivered by Professor Vivian Lewes to workingmen, at the meeting of the British Association recently held in Nottingham, England:

The learned professor began by showing how the labors of Priestly and Lavoisier had led to a true knowledge of the actions taking place during combustion, and showed by experiment that in all the ordinary cases of combustion a chemical union was taking place between the constituents of the burning body and the oxygen of the air. The idea of combustion, however, must not be limited to processes of oxidation, although they were the most important; and in order to a true conception of the action, combustion must be defined as "the evolution of heat during chemical combustion." It was then shown that the rate at which chemical action took place was, to a great extent, influenced by various factors, and that there were many cases in which the action was so slow that the heat escaped as fast as it was generated, and no perceptible rise of temperature took place, and such actions were generally looked upon as cases of "slow combustion." Slow combustion was one of the most important natural actions, and by its means the waste matter in the world was slowly got rid of, and converted once more into simple gaseous compounds, all cases of decay being slow oxidation or combustion. All inflammable substances had a fixed temperature at which they burned actively with flame or incandescence, and this was called the "point of ignition." In some cases an inflammable substance undergoing slow combustion was surrounded with a non-conducting material, and the heat due to the actions going on gradually rose until the point of ignition was reached, and it was this change from the little noticeable slow combustion to ordinary combustion, with its manifestation of flame or incandescence, to which the term "spontaneous combustion" had been given. The lecturer then proceeded to consider special cases of spontaneous combustion, and showed that freshly burned charcoal, especially when powdered, absorbed oxygen from the air with considerable rapidity and with a rise of temperature, which with a large mass was in some cases sufficient to set it on fire. The important bearing of this was that beams, skirting boards, etc., in contact with flues and heating pipes, were liable to become charred at a comparatively low temperature, and this form of charcoal was very liable to spontaneous ignition when air came in contact with it. In the same way coal had the power of absorbing oxygen from the air, and when in masses of a thousand ton or more, especially when much broken and moist, would undergo heating, and even ignition. This was due to the absorbed oxygen setting up chemical action with the hydrocarbons of the coal, and not, as was generally supposed, from the oxidation of the coal. Nearly all vegetable and animal oils had the power of absorbing and combining with oxygen, and this gave them the power of drying: and one of the most usual causes of spontaneous ignition in workshops and factories was to be found in oily waste or rags, as the oil being spread on the surface of the material, offered a large surface for oxidation, while the rags or waste, being excellent non-conductors of heat, allowed the temperature to rise until ignition took place. Well authenticated cases were known in which sparrows building their nests of oily waste in the eaves of houses had caused serious fires. Hayracks which had been built from grass improperly dried before stacking were also very liable to spontaneous ignition; this being due to the sap of the grass taking up oxygen during a process of fermentation, which evolved heat, and the heat kept in by the surrounding hay, rose until the ignition point was reached. If grass once well dried then became wet by a shower, it became mouldy in the stack, but did not heat. The lecturer then concluded by emphasizing the fact that the so-called spontaneous combustion was merely an increase in the rate of chemical combustion from the slow stage, which was hardly noticeable, to active combustion, and showed the fallacy of supposing that the living body could undergo any such action.

—The Coleman Planing Mill and Lumber Co., of Burlington, Ont., is being incorporated to operate a saw mill at that place. The capital stock of the company is \$50,000.

TRADE REVIEW.

Office of CANADA LUMBERMAN, May 1, 1894.

THE GENERAL SURVEY.

It may be said that the lumber trade of the season has now fairly started. Mills in the Ottawa and likewise in the Northern section of the province, and generally throughout the country, have commenced cutting. How large the plans are for the season's work, it is a little difficult to say as yet. The business has been entered upon cautiously and it is doubtful if the cut will be as large as a year ago. In the Ottawa a large part of the cut has already been disposed of, and pretty steady work there may be expected. A considerable quantity of lumber will go to the United Kingdom, sales having been made there. We hear of good sized shipments for South America. Business is not sufficiently healthy on the American side, to anticipate that there will be anything approaching the same numbers of orders for Canadian lumber taken there this spring, as was the case a year ago. As our remarks a little further on, touching the United States market, will show the lumber trade in that country is by no means in a satisfactory condition. The financial and commercial conditions of the country continue unsettled. From whatever point of view we look there are disturbing elements, not even excepting the movements of Coxe's men. Trade, quiet as it is with our neighbors, might be made still worse should there be an outbreak among the laboring classes, and matters there do not look any too promising just now. Tariff conditions also are causing trouble, and so far as lumber is concerned the possibilities in this direction have a sufficient bearing on the purchase of Canadian timbers to cause Americans to move carefully.

Work on the drives generally in all parts of the country is well started, but as stated a month ago, there is danger of considerable of the winter's cut being "hung up." The cut in any case will doubtless be smaller.

Local lumbermen report a fair business among dealers throughout the various towns of the province. One thing is favorable to the local consumption of lumber, viz., that stocks have been allowed to become very low during the winter, and wherever building operations in any community are at all large, lumber must be purchased. Shingle trade so far as we can learn will be quite active throughout the province this summer. A number of permits for building have been granted in Toronto, causing some little brightening up in this respect.

Our regular letter from British Columbia does not portend the best state of affairs in that province. We had referred before to the combination of shingle men as a means of strengthening trade in that important line of manufacture. No word has reached us of any break in this combination, so far as British Columbia manufacturers are concerned, but our correspondent tells us of a decision by the Puget Sound people to drop prices 10c. a thousand on shingles. The changes in the tariff at Ottawa have placed shingles on the free list, and there is now grave danger of British Columbia finding the Puget Sound manufacturers entering into competition with them in their Manitoba and North-West trade. Of lumber in British Columbia nothing special is to be noted. Not a few cargoes are going out for export, but it does not look as though the trade of the season would be especially heavy.

Down by the sea in New Brunswick lumbermen are anticipating an improved season's trade. They are already sending a good deal of stuff to the United Kingdom and Senator Burns, New Brunswick's lumber king, is authority for the statement that the South American lumber market is more promising than for some time, and that a fairly good business can be done in that direction.

UNITED STATES.

Taking a calm view of the lumber situation in the United States, as indicated by conditions at all the leading centres, it must be admitted that the outlook, whilst not discouraging, is by no means large. A variety of conditions are combining to give unsettledness to the lumber trade. Members yet feel the severity of the winter's depression, and would appear to have entered on the spring business halt and lame. The strong ones can endure this, but should

the depression continue, it must necessarily be tough upon those who have been looking to a revival on the opening of spring, to relieve them of the severe pressure of the winter. This revival has not come. Legislators are still playing and fooling with tariff reform. And so far as lumber is concerned, the effect is that no one is disposed to buy largely, so long as they do not know what is to be the future of stocks. A doubt also exists as just how stocks stand. A good deal has been carried over from last year, but it is thought that the position of supplies on hand will be made stronger, in the first place, by a smaller cut in the woods the past winter, and that still additional strength will come from the expectation, that out of what has been cut, a good many logs will be "hung up." Should these conditions be found to prevail, a break in prices, that is feared because of the continued dullness of trade, would not be so likely to take place.

FOREIGN.

It appears likely that sufficient improvement will be shown in the lumber market in the United Kingdom this summer to give more life to trade there than has been the case for a year past. At Liverpool, Alfred Dobell & Co., report increased activity. Farnworth & Jardine, of the same place, whilst they are not sanguine of any great improvement in trade, yet think that conditions generally are better. The arrivals from British North America, they say, during the past month have been two vessels, 2,864 tons, against one vessel, 1,299 tons, during the corresponding month last year. In waney and square timbers the deliveries of the month have been light, but sufficient it is thought for the probable demands until arrival of the new import. Denny, Mott & Dickson, of London, Eng., say there is a distinct improvement in many branches of trade, especially hardwood, and there is an increased demand for consumption as the year progresses. It seems difficult to say what may be expected from South America. An impression has existed that trade there was improving, but we hear rumors again of internal war in this much unsettled country. However, at present the outlook for lumber is rather encouraging. Nothing bright can be told of Australian conditions. It has been a long siege of depression with the people of the Antipodes and there is not yet much "let up."

HARDWOODS.

In the English market the consumption of hardwoods shows an improvement. Slightly improved conditions are to be remarked of mahogany of fair quality. The United States markets are by no means lively. What distribution has taken place has not been at all general. Boston dealers, our contemporary Hardwood says, are talking hopefully that prices for hardwoods are better than for pine and spruce, but the amount going into consumption has not perceptibly increased. Stocks at no points are by any means large. The trade in Canada is steady but not especially brisk.

TORONTO, ONT.

Toronto, May 1, 1894.

Table with columns for CAR OR CARGO LOTS and YARD QUOTATIONS, listing various lumber items and their prices.

Table with columns for YARD QUOTATIONS and F. M., listing various lumber items and their prices.

Table titled HARDWOODS--PER M. FEET CAR LOTS, listing various wood types and their prices.

OTTAWA, ONT.

Ottawa, May 1, 1894.

Table listing various lumber items and their prices in Ottawa.

QUEBEC, QUE.

Quebec, May 1, 1894.

Table titled WHITE PINE--IN THE RAFT, listing various pine items and their prices.

Table titled RED PINE--IN THE RAFT, listing various pine items and their prices.

Table titled OAK--MICHIGAN AND OHIO, listing various oak items and their prices.

Table titled STAVES, listing various stave items and their prices.

SAGINAW, MICH.

SAGINAW, Mich., May 1.—Continued stagnation in the lumber trade is noticeable here. True, we are entering upon the busy season, but commercial conditions seem so unsettled, that the lumber business takes on no particular life; certainly nothing approaching what would be expected at this season of the year. Wood-working concerns, generally, are running on short time and many are closed down. Saw mills, in not a few cases, are unable to get moving with any vigor for the reason that stocks of logs have not yet come forward. Those depending on Canadian logs do not anticipate any large supplies before the first of June. Prices remain somewhat firm when we consider all these conditions.

Table titled FINISHING LUMBER--ROUGH, listing various lumber items and their prices.

Table titled SIDING, listing various siding items and their prices.

Table titled TIMBER, JOIST AND SCANTLING, listing various timber items and their prices.

Table titled SHINGLES, listing various shingle items and their prices.

Table titled LATH, listing various lath items and their prices.

NEW YORK CITY.

NEW YORK, May 1.—Trade is a long way short of giving evidence of even a fairly good spring and summer business in lumber. There is a little sorting up, as building operations commence to open out, but it is quite noticeable that everyone is moving very cautiously in their buying. It is a little difficult to say just how prices will shape this season. Queried on this point lumbermen are apt to point to the tariff and say that

they will know better what to do when they know the fate of the Wilson bill.

WHITE PINE—WESTERN GRADES. Uppers, 1 in. \$44 00@45 00. 1 1/2, 1 1/2 and 2 in. 46 00 47 00. 3 and 4 in. 55 00 58 00.

ALBANY, N.Y.

ALBANY, N.Y., May 1.—At so important a shipping point as this with navigation completely opened business certainly looks more lively than it has done for many months.

PINE. 1 1/2 in. and up, good. \$56 00. Fourths. 58. Selects. 50. Pickings. 45. 1 1/2 to 2 in. good. 52 55.

BUFFALO AND TONAWANDA, N.Y.

TONAWANDA, N.Y., May 1.—One authority here sums up the lumber business in these words, that trade is thoroughly demoralized and the oldest inhabitant would need to be called in to compare these times with any other.

WHITE PINE. Uppers, 1, 1 1/2, 1 1/2 and 2 in. \$47 00 50 00. 1 1/2 and 3 in. 55 00 57 00. 3 and 4 in. 58 00 60 00.

OSWEGO, N.Y.

OSWEGO, N.Y., May 1.—It is useless at this time to predict what the season's trade is likely to amount to. We are getting into activity but slowly, and how much is going to be done is something we cannot say anything of until later.

WHITE PINE. Three uppers, 1 1/2, 1 1/2 and 2 in. \$47 00@48 00. Pickings. 39 00 40 00. No. 1, cutting up. 34 00 35 00.

1X12 INCH. 12 and 16 feet, mill run. 21 00 24 00. 12 and 16 feet, No. 1 and 2, barn boards. 19 00 20 00.

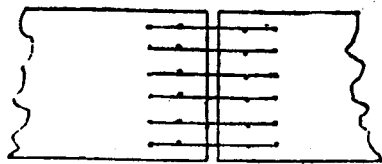
BOSTON, MASS.

BOSTON, Mass., May 1.—Rather than saw lumber on speculation some of the mills in the East are shut down and will remain so until there is stronger evidence of a revival in trade.

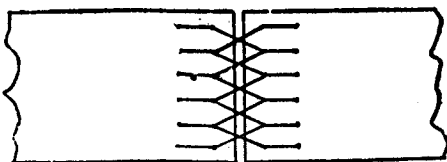
EASTERN PINE—CARGO OR CAR LOAD. Ordinary planed boards. \$12 00. Coarse No. 5. 11 00. Refuse. 12 00.

BELT LACINGS.

EXPERIENCE teaches us the best methods and the most desirable course to pursue in the various details of the mill. After twelve years experience in the milling trade and a trial of all the different styles of lacing belts that I have seen, I have settled on the two following methods as the best suited for all purposes:



No. 1.

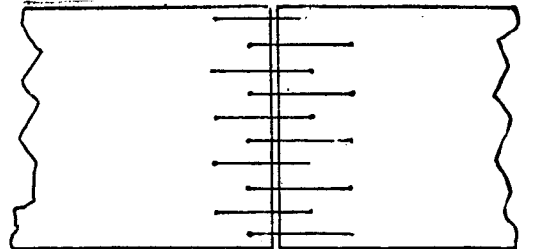


No. 2.

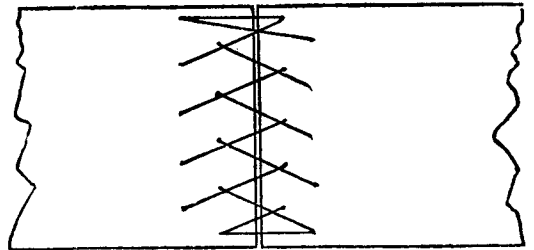
Cut No. 1 represents the right side of a belt, or the side running next the pulley, while cut No. 2 represents the reverse side of the same belt. On the right side the lacings are double between the two inside rows of holes, while a

single lace runs from the inside to the outside holes. I use this style of lacing on roller belts and have found it the only style that will wear where the work is heavy. Owing to the vicious manner of belting many of the roller mills the strain on belts is very severe, and there is no style of lacing that will wear for any great length of time.

The second style of lacing is one that I use on all large belts for heavy transmission.



No. 3.



No. 4.

Cut No. 3 represents the side running next the pulley, and No. 4 the outside of the belt. This is a single lace, there being no place where the lacings double. I can not recommend this for roller belts, but for a large drive belt it is the best thing I ever saw.

In this connection it is proper to add a few items in regard to qualities of belting. Leather belts are considered by many as the best means of transmitting power, but few ever know or stop to think that there are different grades of leather belting. In the manufacture of leather belts the select parts of the hide are used for belts of the first quality, while the refuse parts are worked into belts of inferior quality.

PREPARATION OF HYDROGEN.

J. BALL, of the Royal College of Science, notes that he has recently observed that by the addition of a few drops of cobalt nitrate solution to the acid and zinc in a hydrogen apparatus, the rate of evolution of the gas is enormously accelerated, especially at the beginning of the reaction.

McDonald & Holland, planing mill proprietors, Elora, Ont., have dissolved partnership. Mr. Holland will continue the business.

ABOUT PACKING.

If the rod is in first-class condition almost any kind of packing will answer the purpose, but where it is scored or worn tapering, or is out of line, we must use a packing that will follow up the inequalities in its travel, and to do this without excessive friction the packing must be very elastic. The following plan is a very good one, says the American Machinist.

Suppose that the stuffing box is 4 inches in diameter and the rod is 2.5 inches, leaving a space three-quarters of an inch wide to be filled with packing, and assume that the stuffing box is $3\frac{3}{4}$ inches deep. Take a piece of pure gum rubber sheet packing, without cloth insertion, which is one-quarter of an inch thick, and cut a piece from it 3 inches wide, and of such a length that when it is rolled up into the form of a circle, it will form a bushing for the stuffing box, reducing the space around the rod to $\frac{1}{2}$ inch in width. Care must be taken to cut this so that the ends will meet squarely, leaving no space between them, for this bushing of rubber must be a perfect fit in order to be effective. Next take a piece of firmly made packing, which is $\frac{1}{2}$ inch square, and cut rings enough to pack the rod out flush with the rubber bushing, which we made 3 inches deep, thus taking six rings. These rings should be of such a length that when they are in place there will be at least $\frac{1}{8}$ inch between the ends. They must never be cut so as to make a tight fit, although it makes a neater looking job in that way, for, unless there is room for the rings to expand, the heat will cause excessive friction, sometimes to the extent of burning out the packing and scoring the rod.

We have left a space $\frac{3}{8}$ inch deep, which is sufficient for the gland to enter, but the nuts which hold it in place should not be screwed up with a wrench, but with the fingers only. If there is a leak of steam when the engine is started, it will do no harm for an hour or two, but if the expansion does not take it up then, the nuts may be screwed up until the joint is tight, but no further, for obvious reasons. If packing put in according to these directions does not abolish the disagreeable hiss of steam at each revolution of the engine, I do not believe that any other kind of fibrous packing will do it, and the rod should be turned true and put into line.

So far as flange joints are concerned, it is a very good plan to have them ground so that no packing will be required, but as many of them are not built that way, it remains to select the packing which will render the best service. If the steam is not saturated with oil, we may select any elastic grade that is most convenient, but the flanges of the throttle valve, and any other that may be beyond the lubricator, must be packed with something that will not be dissolved by the oil. A corrugated copper gasket for each of such joints will answer a very

good purpose, unless the faces are very rough. If we are to use soft packing, it is well to take a small piece of it, and put it in a cup of oil, and let it remain for about a week. There are several kinds in the market that will not stand this test, for when taken out there will be but little left of them, as they will be either partially or wholly dissolved, but others will be just as good as new after the test, and these should be used exclusively.

Flange joints, when newly packed, should not be suddenly subjected to a heavy pressure, but should be warmed up gradually, and while still under a very light pressure, the nuts should be carefully screwed up until all of the lost motion caused by the relaxation of the packing is taken up. Under no circumstances is it proper to screw up these nuts under a heavy pressure, for if one of them should fail, the additional strain thrown on the others might cause them to break, and a serious accident would be the result.

In making up these joints do not begin on one side and screw up the nuts in rotation, as that will cause the flanges to be brought together on one side, and thrown

open on the other, and then when this side is tightened up also, if it does not break the flange, it will cause a very heavy strain to be brought to bear on the bolts, much of which is entirely unnecessary.

In using old bolts for this purpose, they should be put in a vise, well oiled, and the nuts run down on them, until it is known that they are an easy fit a little farther down than they will ever be needed when in place. If this precaution is not taken, it is quite possible for the bolts to be twisted off before the flange is together properly.

In packing a cylinder head it is not necessary to have a large rubber gasket, as some asbestos wicking will answer every purpose at a very low cost. In packing a large valve stem, which is worn down, or has been turned down until it no longer fills the hole in the bonnet, a washer or gasket cut from thick pieces of cloth-insertion sheet rubber packing will answer a very good purpose, if put in first, or if the gland is a loose fit it may be put in last, to prevent the wicking from working into the space around the stem.

J. F. EBY

HUGH BLAIN

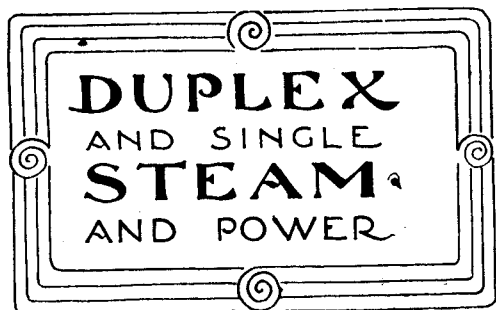
SNOW GONE

Of course you will want **CAMP SUPPLIES**. Your Fall orders must be nearly exhausted. BEFORE ordering your Spring Supplies write us for samples and quotations. We quote **Currants** and **Raisins** 'WAY DOWN, and our **JAPAN TEAS** are special value. Just drop us a line.

EBY, BLAIN & CO.
WHOLESALE GROCERS - TORONTO, ONT.

Pumps

& HYDRAULIC
MACHINERY



NORTHEY, LD.
TORONTO

WHY PULLEYS RUN STEADY.

CENTRIFUGAL force has less to do with making a pulley run unsteady than the mere tendency it has of trying to get where it can rotate about its own center of gravity. A wheel is generally looked upon as so much weight and, if held off its center, must go switching about like a heavy stone in a short arm sling, tending to pull the machinery to pieces. This may be well enough at the start, while the wheel is getting up to speed, but the time soon comes when the wheel will try to turn on its own center and let the shaft sling for a while. Just notice how the juggler can seize a dish of any kind, as a dinner plate, for instance, and throw it up in a whirling motion and, while in the air, catch it on the end of a stick and cause it to rotate with ease. At first the plate is switched about by holding it off to one side of the center, but as the speed increases, it gradually brings the point of support near the center, till at last it is allowed to spin on its own center of gravity. In this case all the driving power, supporting force and the resistance

of the load were brought to one single point, with nothing to react upon the inertia of the plate. A wheel has recently been fitted up to revolve in a frame with no other force applied to it than what is derived from the vibrations of the frame itself. The wheel, of course, is out of balance, as far as its center of gravity goes.

HORSE POWERS OF SINGLE LEATHER BELTS.

NO one can tell at sight what a leather belt will drive; almost anyone knowing the width, thickness and speed, can figure it out in a minute. This table is to save figuring; and is correct for belts 7/32 inch thick, in good condition, wrapping half way round cast iron pulleys, and joined by single leather lacings.

The rule by which it is got says "the horse power is equal to the width in inches multiplied by the speed in feet per minute and divided by 650." Thus a ten inch belt at 2,000 feet a minute should be good for (10 x 2,000) divided by 650, equals 30.77 horse power; a 20 inch belt

at 2,500 feet, for (10 x 2,500) divided by 650 equals 76.92 horse power; and so on.

This table is for leather belts in good condition, wrappings 180° on cast iron pulleys, and joined with single leather lacings:

WIDTH INCHES.	BELT SPEED, FEET PER MINUTE.									
	1000	1250	1500	1750	2000	2250	2500	2750	3000	
1	1.54	1.92	2.31	2.69	3.08	3.46	3.85	4.23	4.62	
2	3.08	3.85	4.62	5.38	6.15	6.92	7.69	8.46	9.23	
3	4.62	5.77	6.92	8.08	9.23	10.4	11.5	12.7	13.8	
4	6.20	7.70	9.20	10.8	12.3	13.8	15.4	16.9	18.4	
5	7.69	9.62	11.5	13.5	15.4	17.3	19.2	21.	23.	
6	9.23	11.5	13.8	16.2	18.5	21.	23.	25.	28.	
8	12.3	15.4	18.5	22.	25.	28.	31.	34.	37.	
10	15.4	19.2	23.	27.	31.	35.	38.	42.	46.	
12	18.5	23.	28.	32.	37.	42.	46.	51.	55.	
14	22.	27.	32.	38.	43.	48.	54.	59.	65.	
16	25.	31.	37.	43.	49.	55.	62.	68.	74.	
18	28.	34.	42.	48.	55.	62.	69.	76.	83.	
20	31.	38.	46.	54.	62.	69.	77.	85.	92.	
24	37.	46.	55.	65.	74.	83.	92.	101.	110.	
30	46.	58.	69.	81.	92.	103.	115.	127.	138.	
36	55.	69.	83.	97.	114.	125.	138.	152.	166.	
48	73.	92.	111.	129.	148.	166.	185.	203.	222.	
60	92.	115.	138.	161.	185.	208.	231.	254.	277.	
72	113.	138.	166.	194.	227.	249.	277.	305.	332.	

4

QUARTERLY ANNUAL INSPECTIONS BY AN EXPERT ENGINEER

Our Steam Boiler Policy covers all loss or damage to the Boilers, also to property of every kind on the premises or elsewhere, whether it is the property of the assured or of others for which the assured would be liable in case of explosion.

SUBSCRIBED CAPITAL, \$200,000.



FULL GOVERNMENT DEPOSIT.

THE STEAM BOILER AND PLATE GLASS INSURANCE CO. OF CANADA

Head Office London, Ontario
 J. H. KILLEY, Consulting Engineer. JAMES LAUT, Manager. S. JONES PARKE, Q.C., President.

REAMER LUMBER CO. LTD.

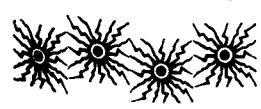
WHOLESALE DEALERS IN

WHITE PINE

AND

HARDWOODS

41 Park Row New York

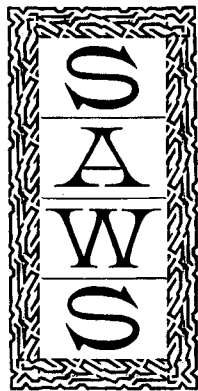


SHURLY & DIETRICH

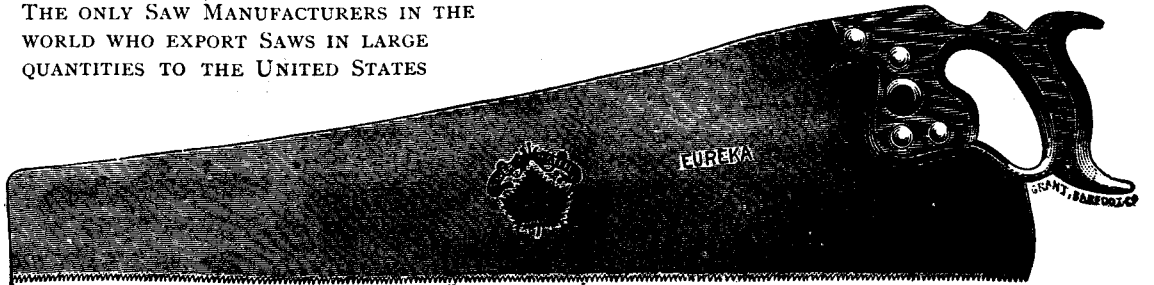


GALT, ONT.

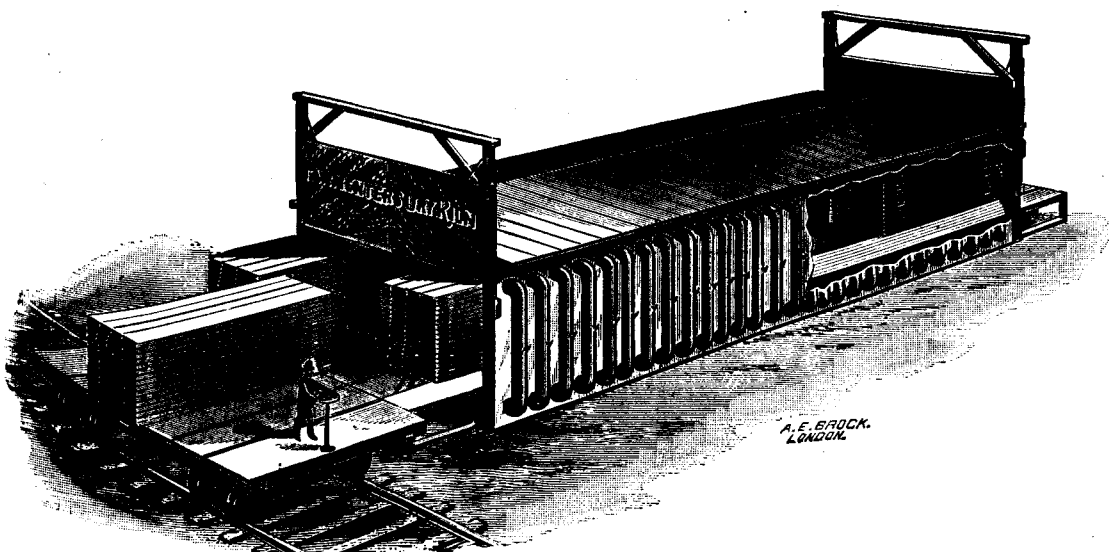
MANUFACTURERS OF



THE ONLY SAW MANUFACTURERS IN THE WORLD WHO EXPORT SAWS IN LARGE QUANTITIES TO THE UNITED STATES



SOLE PROPRIETORS OF THE SECRET CHEMICAL PROCESS OF TEMPERING : : Our Silver Steel Saws are Unequaled



A. E. BROCK, LONDON.

The Parmenter

Patent Dry Kiln

FOR DRYING LUMBER, SHINGLES, STAVES,

... HEADING, ETC. ...

For further information see first page, and address

J. S. PARMENTER, Box 512, Woodstock, Ont.

WANTED AND FOR SALE

Advertisements will be inserted in this department at the rate of 15 cents per line each insertion. When four or more consecutive insertions are ordered a discount of 25 per cent. will be allowed. This notice shows the width of the line and is set in Nonpareil type. Advertisements must be received not later than the 24th of each month to insure insertion in the following issue.

PARTIES HAVING BLACK ASH LUMBER and Cedar Fence Posts for sale send us particulars. **ROBERT THOMSON & Co.**, 103 Bay St., Toronto.

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

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

WANTED

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

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

WANTED SITUATION

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

SAW MILL CAPACITY 15,000 FEET

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

FOR SALE OR TO LET

TWO-STOBEY FRAME PLANING MILL AND Carpenter Shop—Vine Avenue, Toronto Junction, including boiler and engine, with or without machinery; size of building, 40x120 ft.; steam heated; stable, storehouse, office, and large yard in connection; can be utilized for any manufacturing business. Apply, **J. P. WAGNER**, Toronto Junction.

COMMISSIONS

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

FOR SALE

PORT ROWAN SASH AND DOOR FACTORY and Sawmill and Shingle Mills. The Factory is fitted with new 60-h.p. steel boiler, also with following new machinery by Macgregor and Gourlay, of Galt.

Large Mather and Planer combined, Band Saw, Power Mortiser, Shafter, Jointer and Sandpaperer. Apply, Box 16, Port Rowan, Ont.

LOGGING TRAMWAY FOR SALE

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

IN GOOD CONDITION, FOR SALE ON ADVANTAGEOUS TERMS.

For further particulars apply to **JOHN J. GARTSHORE**, 49 Front Street West, Toronto.

RAILS FOR TRAMWAYS

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

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

FOR SALE

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

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

For particulars apply to **J. D. SHIER**, Bracebridge.

MACHINERY FOR SALE

ONE 18 x 20 ENGINE IN GOOD ORDER, with 7-inch shaft 8½ feet long, on which are two large pulleys and fly wheel, 10 feet diameter. Will be sold cheap. Also a **THREE BLOCK CARRIAGE**, Sewrey's make, with three Boss Dogs—V track—in first-class order; two Heavy Slush Chains, with gear; one Circular Saw Mandrill, 30-inch Pulley, guides, tightener, etc.; one 40-inch smoke stack, 70 feet long; four Lumber Trucks; eight 2-wheel Lorries for sorting platform; one Shingle Saw Jointer (new); one Friction Nigger.

Apply to **MICKLE, DYMENT & SON**, GRAVENHURST.

Rochester Bros.

COMMISSION AGENTS

Limits bought and sold on commission. Limits travelled and carefully prepared. Estimates given.

Some first-class berths on the North Shore of Lake Huron and on the Upper Ottawa now in our hands for sale.

Communications confidential. References given.

36 Rochester St. **Ottawa**

HEADQUARTERS FOR TRUSSES FOR RUPTURE

INSTRUMENTS FOR CLUB FEET, WHITE SWELLING, SPINAL CURVATURE, & ALL DEFORMITIES

ILLUSTRATED BOOK FREE

CHAS CLUTHE 134 KING ST. W. OPPOSITE ROSSIN HOUSE TORONTO, CAN. ESTABLISHED 1871.

NEW & 2ND MACHINERY ILLUSTRATED CATALOGUE FREE **H.W. PETRIE** TORONTO, CANADA.

J. J. TURNER & SON

Sail, Tent and Awning Maker

251 George St. and 154 King St.

PETERBOROUGH

Canoe, Yacht and Boat Sails made to order. Perfect Fits Guaranteed.

Every description of Lumbermen's Supplies and Waterproof Clothing.

WILLIAM FOSTER

Lumber and Commission Merchant

RECEIVER AND FORWARDER OF

LUMBER, LATH AND SHINGLES

... CORRESPONDENCE SOLICITED ...

OWEN SOUND, ONT.

CHAS W. MACK

CANADIAN MANUFACTURER OF

Bucks Patent

Flexible or Pneumatic

Hand Stamp

The only Stamp ever made that will print perfectly on Rough, Uneven, Convex, Concave, Plain, or Yielding Surfaces, or for any purpose where a Clear, Sharp and Perfect Impression is desired.

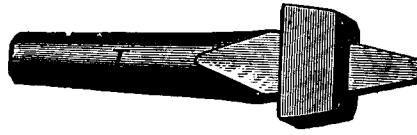
11 KING ST. WEST, TORONTO

SEND FOR PRICE LIST

Buy the Best

The "WHITING" Saw-Set

FOR CROSS-CUTS ONLY WARRANTED



The only SWAGE SET made

SAMPLE BY MAIL, PREPAID, 85c.

R. DILLON - OSHAWA, ONT.

MACHINERY FOR SALE

CANADA MACHINERY & SUPPLY CO. BRANTFORD

Dealers in all kinds of New and Second-Hand Machinery and Mill Supplies.

ENGINES.—One 15½x20, one 12x18, one 11½x18, two 10x14, three 9x12, one 8x 2, and a large number of smaller sizes.

BOILERS.—One 60 inches by 14 feet, two 56 inches by 14 feet, one 52 inches by 12 feet, one 48 inches by 12 feet, one 44 inches by 12 feet, and a large number of smaller sizes, also portable fire box boilers.

WATER WHEELS.—One 36 inch Lefel, four 30½ inch Lefel, one 20 inch Barber-Harris, in case, one 17½ inch Lefel, one 17½ inch Little Giant, five 15½ inch Lefels.

NOTE.—Send for our new CATALOGUE for descriptions of above, also for SAW MILLS, IRON AND WOODWORKING MACHINERY, GRIST MILLS, LATH, SHINGLE AND HEADING MILLS, and all kinds of Mill Supplies. Address the **CANADA MACHINERY & SUPPLY CO.**, Brantford, Ont.

THE CANADIAN PHOTO ENGRAVING BUREAU TORONTO

TELEPHONE 2150

16 ADELAIDE ST. WEST

COPPER, IRON, ZINC ENGRAVINGS

FOR ALL KINDS OF ILLUSTRATIONS

PRINTING AND SERRATING

... THE ...

FLINT & PERE MARQUETTE RAILROAD

FROM Port Huron and Detroit

Is the Short Line to **SAGINAW AND BAY CITY** (Centres of the vast lumber interests of Michigan)

MT. PLEASANT, CLARE, REED CITY **BALDWIN, LUDINGTON, MANISTEE**

AND **MILWAUKEE, WIS.**

The last-named place reached by the Company's line of steamships across Lake Michigan.

The line thus formed is a short and direct route from

MONTREAL **TORONTO**

and all Canadian Territory

To **ST. PAUL, DULUTH** and Pacific Coast Points.

This road traverses a section of Michigan with unrivalled advantages to settlers. Cheap lands, thriving villages and towns, well watered with streams in all directions; a market for every product of Forest and Field. The policy of the "F. & P. M." is known to all travellers and settlers.

A. PATRIARCHE, Traffic Manager. GENERAL OFFICES: **SAGINAW, MICH.**

FIRE PROOF ROOFING ILLUSTRATED CATALOGUE FREE **METALLIC ROOFING CO.** MANUFACTURERS, TORONTO

Robin & Sadler MANUFACTURERS OF **Oak Tanned Leather Belting** Montreal & Toronto.

For SAW MILL WORK our Belting is specially prepared to resist moisture.

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

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

Scribner's Lumber and Log Book SAVES TIME SAVES MISTAKES SAVES MONEY

BRIMFUL OF EVERY-DAY, PRACTICAL INFORMATION Address: **THE CANADA LUMBERMAN, Toronto**

A. ALLAN, President J. O. GRAVEL, Secretary-Treasurer J. J. MCGILL, Manager F. SCHOLES, Managing-Director



Canadian Rubber Company

Capital \$2,000,000.00.

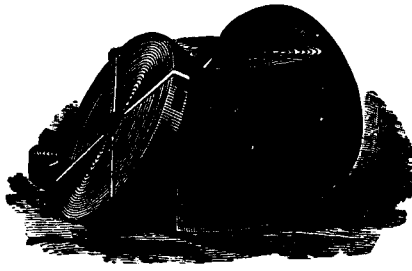
of MONTREAL, TORONTO and WINNIPEG

... MANUFACTURE ...



SUPERIOR QUALITY
RUBBER GOODS
for Mechanical Purposes

RUBBER BELTING, PACKING, HOSE



FORSYTH
Seamless Rubber Belting
Seamless Tube Hose

These Patents we control for Canada

HEAD OFFICES AND FACTORY: MONTREAL.

Western Branch: CORNER YONGE AND FRONT STREETS

TORONTO

J. H. WALKER - Manager.



Representative Lumber Manufacturers and Dealers

TOWN	Railway, Express, or nearest Shipping Point	NAME	BUSINESS	Power, Style and Daily Capacity
Ottawa, Ont.	Ottawa	Booth, J. R.	Lumber, Wholesale and Retail.	Steam, Circular and Band Mill
Ottawa, Ont.	Ottawa	Bronson & Weston Lumber Co.	2 Sawmills, White and Red Pine, Wholesale.	Water, Gang and Band, 450m
Parry Sound, Ont.	Utterson	Conger Lumber Co.	Lumber, Wholesale and Retail.	Water, Gang, Circular, Saw 90m,
Parry Sound, Ont.	Parry Sound	Parry Sound Lumber Co.	Saw, Shingle and Lath Mills, Pine, Wholesale.	Shingles 70m, Lath 30m
Muskoka Mills, Ont.	Midland	Muskoka Mill and Lumber Co., Head Office, Arcade, 24 King st. w., Toronto	W. Pine Lumber, Lath and Bill Stuff, all lengths.	2 Mills, Water, 1 Band, 2 Gangs and 3 Circulars.
Alexandria, Ont.	Alexandria	McPherson, Schell & Co.	Cheese Box Factory, Pine, Spruce, Cedar	Circular, 3m
Almonte, Ont.	Almonte	Caldwell, A. & Son	Sawmill, Pine, Lumber, Hemlock, Hardwoods.	Steam, Circular, 40m
Barrie, Ont.	Barrie	Dymont & Mickle	Sawmill, Pine, Spruce, Cedar, Hardwoods.	
Barrow Bay, Ont.	Warton	Barrow Bay Lumber Co., Limited	Saw, Shingle and Heading Mill, Pine, Cedar	Steam, Circular, 15m
Blind River, Ont.	Blind River	Blind River Lumber Co.	Oak, Oak Railway Ties, Paving Blocks	Stm., Band, Cir., S. 75m, Sh. 60m
Bobcaygeon, Ont.	Fenelon Falls	Boyd, Mossom & Co.	2 Saw, Sh. and Lath Mls., Pine, Hem., Bl. Birch	
Barrie, Ont.	Barrie	Burton Bros.	Lumber, Wholesale and Retail.	
Waubushene, Ont.	Waubushene	Georgian Bay Consol. Lumber Co. Hd. office arcade 24 King st. w., Toronto	Pine only.	Waubushene mill, stm., 200m; Pt. Severn mill, water, 120m
Calabogie, Ont.	Calabogie	Carswell, Thistle & McKay	Lumber, Wholesale and Retail.	
Callander, Ont.	Callander, G.T.R.	John B. Smith & Sons	White and Red Pine Lumber, Bill Stuff, Lath and Shingles	Steam, 2 Circular, 80m
Collins Inlet, Ont.	Collins Inlet	Collins Inlet Lumber Co.	Lumber, Pine, Oak, Ash, Birch, Whol. and Ret. Saw, Shingle and Lath Mill, Timber Lands.	Steam, Cir., Saw 14m, Sh. 20m
Glamis, Ont.	Pinkerton	McIntyre, N. & A.	Hemlock, Pine, Lumber, Hardwoods	
Hamilton, Ont.	Hamilton	BRADLEY, MORRIS & REID CO.	Lum., Tim., Pine, Hem., Hwds., Whol. and Ret.	
Huntsville, Ont.	Huntsville	Reath, Tait and Turnbull	Sawmill, Pine, Spruce, Hemlock, Hardwoods.	Steam, Circular, 25m
Hamilton, Ont.	Huntsville and Katrine	Thomson, Robert & Co.	Sawmill, Pine, Spruce, Hardwoods.	Steam, Circular, 4m
Keewatin, Ont.	Keewatin	Dick, Banning & Co.	Sawmill, Pine, Hardwoods, Wholesale.	Steam, Circular
Keewatin, Ont.	Keewatin	Keewatin Lumber & Mfg. Co.	Saw, Lath, Sh. and Pl. Mill, Moving Posts, Pine	Water, Band and Circular, 100m
Lakefield, Ont.	Lakefield	Lakefield Lumber Mfg. Co.	Lumber, Wholesale and Retail.	
Little Current, Ont.	Sudbury	Howry, J. W. & Sons.	Lumber, Wholesale and Retail.	
London, Ont.	London	Gordon, James	Exp. and dlr. in Am. Hwds, made to specification	
Longford Mills, Ont.	Longford	Longford Lumber Co.	Saw and Plan. Mill, Tim. Lands and Logs, Pine	Steam, Band and Circular, 100m
Norman, Ont.	Norman	Minnesota & Ontario Lumber Co.	Lumber, Wholesale and Retail.	
Louise, Ont.	Elmwood, G.T.R.	S. B. Wilson & Son	Hardwoods, Shingles, Lath, Handles.	Steam, Circular, 20m.
Toronto, Ont.	Warren, C.P.R.	The Imperial Lumber Co., Limited.	Pine	80 M. per day, Stm., 2 Cir. Saws
Toronto, Ont.	Cache Bay, Ont.	Davidson, Hay & Co.	W. Pine, Lath, Shingles, Dim. Timber, Car Sills	Stm., 2 Band, Cir. & Gang, 140m
Toronto, Ont.	Lakefield	S. J. Wilson & Co.	Pine and Hardwood, Wholesale.	Steam, Circular, 15m.
Toronto, Ont.	Toronto	F. N. Tennant	Lumber, Wholesale	
Toronto, Ont.	Toronto	Donogh & Oliver	Lumber, Wholesale	Com.
Toronto, Ont.	Toronto	Victoria Harbor Lumber Co.	3 Saw, Shingle and Lath Mills, White Pine, Whol.	Stm., Cir., Gang and Band, 140m
Toronto, Ont.	Toronto	W. N. McEachren & Co.	Lumber, Wholesale.	Com.
Toronto, Ont.	Toronto	James Tennant & Co.	Lumber, Lath, Shingles, etc., Wholesale.	Com.
Toronto, Ont.	Toronto	DeLaplante & Bowden	Pine and Hardwood Lumber, Whol. and Retail.	
Toronto, Ont.	Toronto	James McBain Reid.	Ry. and Ship Timber, any required dimensions.	
Warton, Ont.	Warton	Miller, B. B.	3 Sawmills, Lumber, Barrel Heads	Stm., Wr., Cir., Port. & Sta., 10m
Toronto, Ont.	Montreal	Dufresne, O. Jr. & Frere	Sawmill, Pine, Spruce, Hemlock, Hdwds., Whol.	Steam, Circular and Band, 50m
Montreal, Que.	Montreal	SHEARER & BROWN	4 Sawmills, Oak, Ash, Elm, Pine, Hem., Dim.	2 Stm., 2 Wat., Band, Cir., 40m
Moodyville, B.C.	New Westminster	MOODYVILLE SAWMILL CO.	Sawmills, P. Fin, Spruce, Cedar, Hardwoods	Steam, Circular, 20m
New Westminster, B.C.	New Westminster	Brunette Sawmill Co.	Saw and Planing Mills, Sash, Doors and Blinds	Steam, Gang and Circular
Canterbury, N.B.	Canterbury Stn.	James Morrison & Son	Fir, Cedar, Spruce, Hardwoods.	
Bridgewater, N.S.	Bridgewater	DAVIDSON, E. D. & SONS	Sawmill, Pine, Hardwoods.	Steam, Circular, 38m
South River, Ont.	South River, G.T.R.	South River Lumber Co., Ltd.	5 Saw, Shgle. and Lath Mills, Pine, Spr., Hwds. Pine, Spruce, Birch, Hemlock, Shingles.	Water, Circular and Gang, 200m Stm., Cir., 40m, Shingles, 35m, Lath, 15m

LUMBER TRUCK WHEELS

The Montreal Car Wheel Co.

... MANUFACTURERS OF ...

Charcoal Iron Chilled

RAILROAD

WHEELS

OFFICES:

NEW YORK LIFE INSURANCE BUILDING, MONTREAL

WORKS: LACHINE, QUEBEC

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

CORRESPONDENCE SOLICITED

Lumbermen desirous of being represented in this Directory can obtain information in regard to rates by communicating with the Publisher.

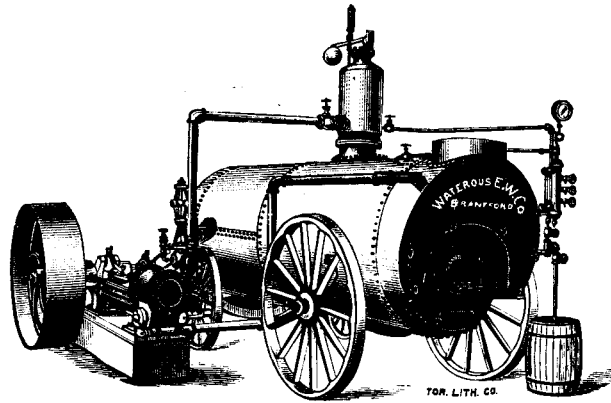
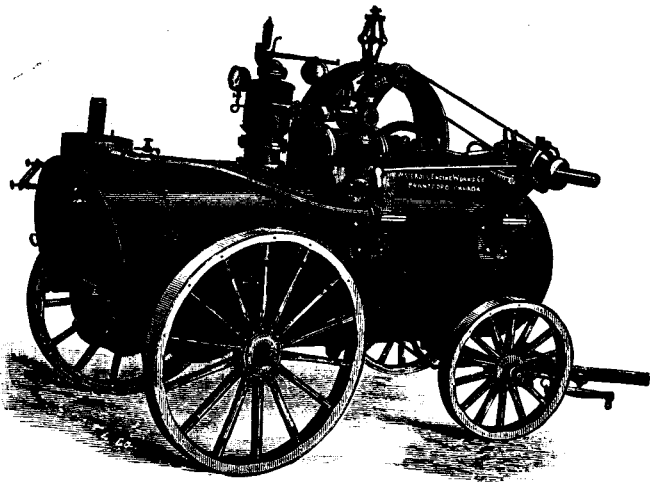
OAK TANNED BELTING

TORONTO
20 FRONT STREET
TELEPHONE 475

THE J.C.McLAREN BELTING CO

MONTREAL

ARE YOUR LOGS Hung up.



Or Difficult and Expensive
to bring to your large
: : Mill : :

Take

PORTABLE

SAW

MILL

: : : To them : : :

Our Portable Mills will cut them
as well and as cheaply per
thousand as the average
run of large mills.

WRITE US FOR PRICES

Handle your Mill Re-
fuse, Lumber, Etc.
.. with ..

EWART LINK BELTING



Most Economical and Easily applied.
Saves its cost in wages every year.

WE are AGAIN HANDLING the ORIGINAL



BEST STITCHED
COTTON BELT MADE

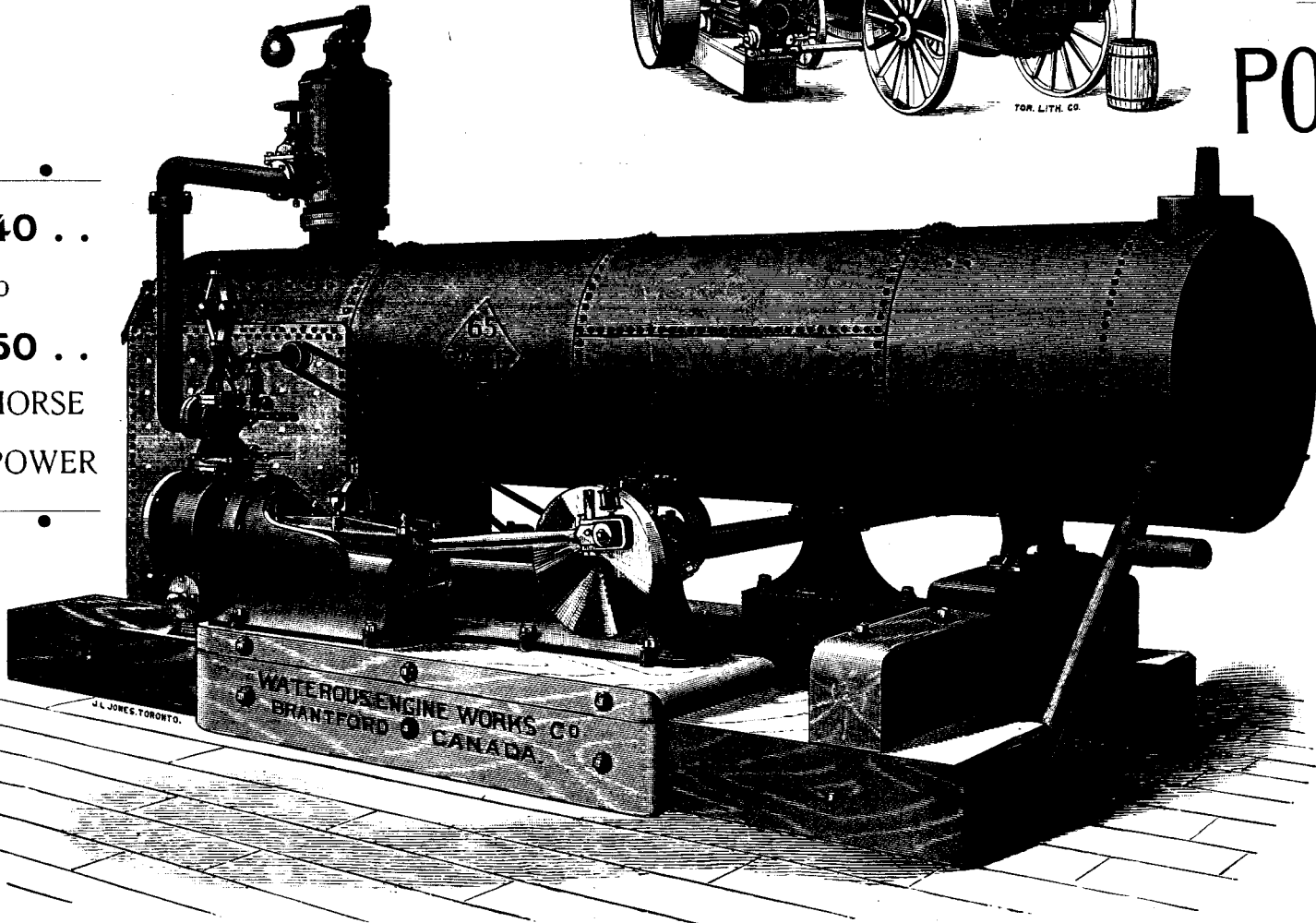
Send for Prices

WATEROUS BRANTFORD

HIGH GRADE
MACHINERY

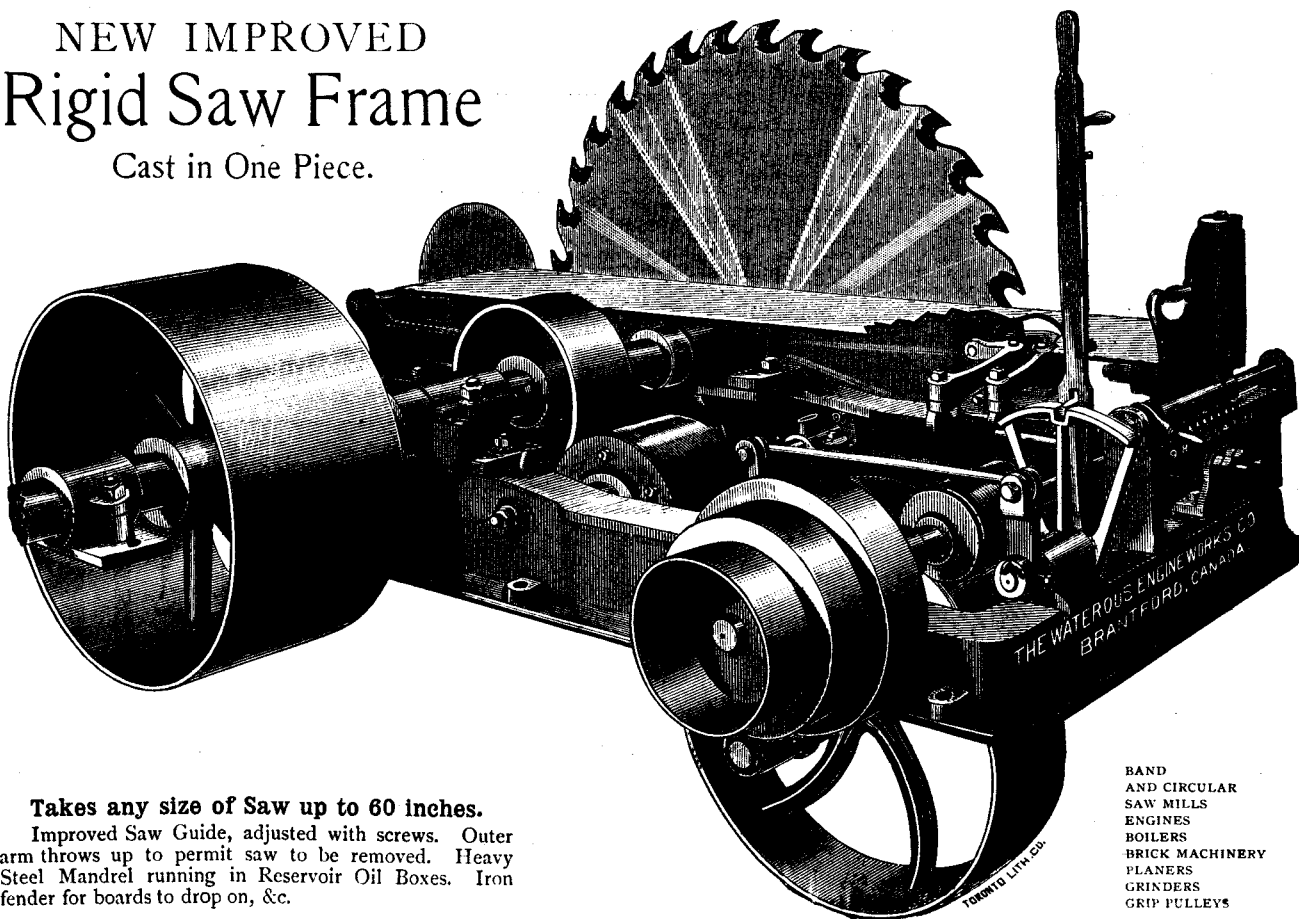
CANADA

40 ..
to
50 ..
HORSE
POWER



NEW IMPROVED Rigid Saw Frame

Cast in One Piece.



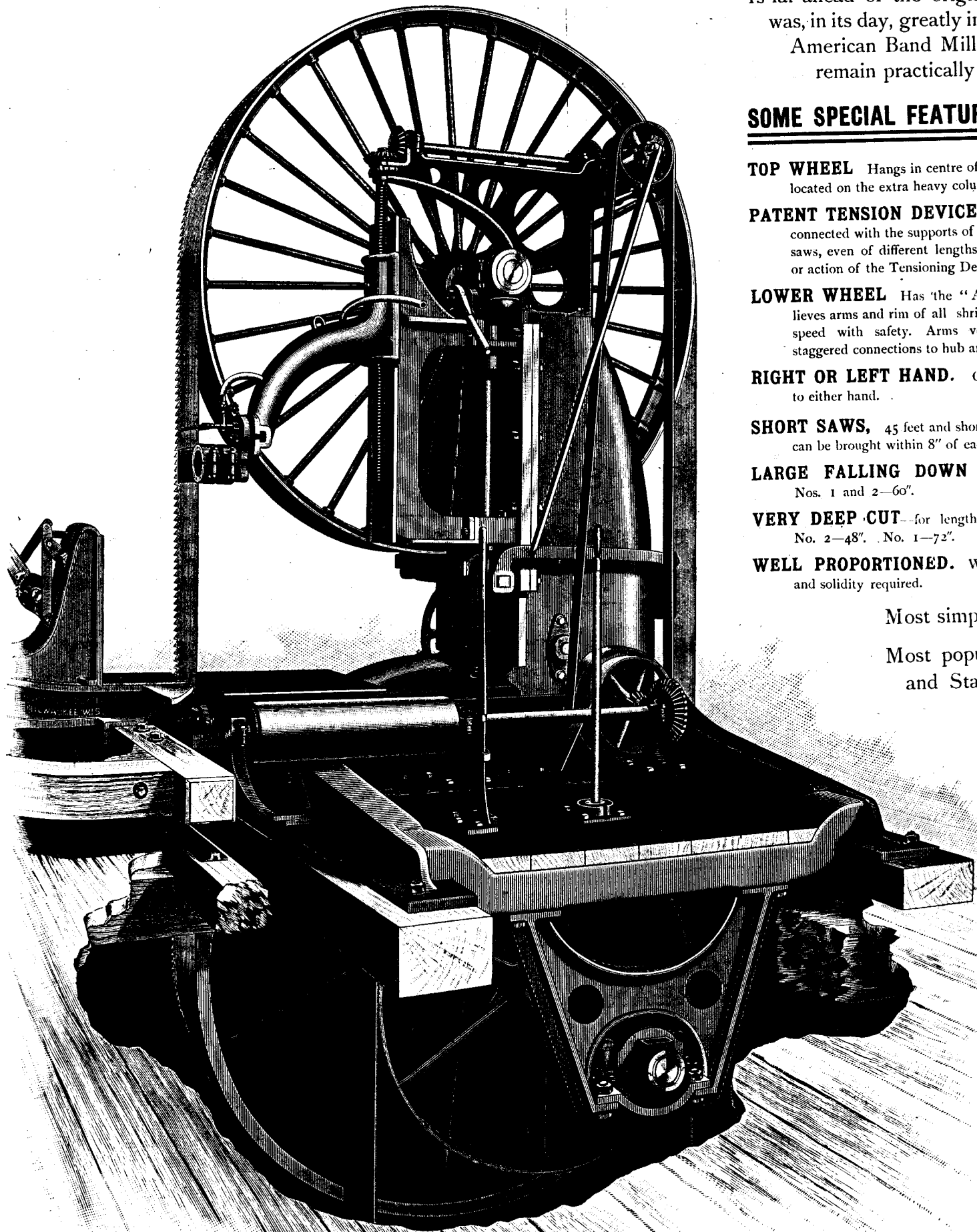
Takes any size of Saw up to 60 inches.

Improved Saw Guide, adjusted with screws. Outer arm throws up to permit saw to be removed. Heavy Steel Mandrel running in Reservoir Oil Boxes. Iron fender for boards to drop on, &c.

BAND
AND CIRCULAR
SAW MILLS
ENGINES
BOILERS
BRICK MACHINERY
PLANERS
GRINDERS
GRIP PULLEYS

TORONTO LITH. CO.

THE NEW ALLIS BAND MILL



Is far ahead of the original Allis Band. It was, in its day, greatly in advance of other American Band Mills, which to-day remain practically unchanged.

SOME SPECIAL FEATURES ARE

- TOP WHEEL** Hangs in centre of arbor and arbor is centrally located on the extra heavy column, slotted to receive wheel.
- PATENT TENSION DEVICE,** All parts of which are connected with the supports of Top Wheel, so that changing saws, even of different lengths, does not affect the position or action of the Tensioning Device.
- LOWER WHEEL** Has the "Allis" Patent Hub which relieves arms and rim of all shrinkage strain, permitting high speed with safety. Arms very broad, no number with staggered connections to hub and rim.
- RIGHT OR LEFT HAND.** Can be readily changed at will to either hand.
- SHORT SAWS,** 45 feet and shorter with 8 foot wheels which can be brought within 8" of each other.
- LARGE FALLING DOWN SPACE.** No. 3 has 54". Nos. 1 and 2—60".
- VERY DEEP CUT**—for length of saws. No. 3 has 44". No. 2—48". No. 1—72".
- WELL PROPORTIONED.** Weight placed where strength and solidity required.

Most simple to erect and run.
Most popular Mill in Canada and States.

ALLIS & CO.
SOLD 49
BAND MILLS
IN 1893

ORDER NOW.

Change to Band easily made
Entire cost will be . . . more than . . . repaid by . . . saving in . . . this year's . . . cut.

"NEW ALLIS" BANDS IN CANADA 1st APRIL, 1894.

- GILMOUR & HUGHSON, (2) Hull, Que.
- GILMOUR & Co., Trenton, Ont.
- HUNTSVILLE LUMBER Co., Huntsville, Ont.
- GRAHAME, HORNE & Co., Fort William, Ont.
- WARREN CURTIS, (2), Three Rivers, Que.
- G. & G. FLEWELLING Co., Hampton, N.B.

MERRILL'S SLAB & EDGING GRINDERS Make a fuel that can be fed automatically with band sawdust, giving plenty of steam, saving labor of one or more men

WE MANUFACTURE UNDER LICENSE FROM PATENTEE
Hill's Patent Steam Niggers, Steam Kickers or Single and Double Deck Log Unloaders;
Steam Cushioned Prescott Steam Feed, Steam Cut-off Saw.
Allis' Patent Double Valve Prescott Feed, also Plain Prescott Steam Feed.
Girder Steel Carriages for Circulars or Band Mills.

Correspondence Solicited

WATEROUS
BRANTFORD
CANADA
HIGH GRADE
MACHINERY

H. G. ROSS & CO.

Real Estate, Fire and Life Insurance
 SHIPPING AND GENERAL COMMISSION AGENTS
 TIMBER LIMITS AND FARMING LANDS A SPECIALTY.
 A.B.C. Code
 CABLE ADDRESS: "ROSS" NEW WESTMINSTER, B.C.
 CORRESPONDENCE SOLICITED BOX 272

H. P. ECKARDT & CO.

WHOLESALE GROCERS

Lumbermen's Supplies a specialty.....
 Correspondence solicited

H. P. ECKARDT & CO. - 3 FRONT ST. EAST, TORONTO

J. W. MAITLAND—H. RIXON J. G. AINSIE—W. STODART

MAITLAND, RIXON & CO.

OWEN SOUND, ONT.

Saw Millers and Lumber Dealers

All kinds of Building Material kept in stock

WE MAKE A ... SPECIALTY OF LONG BILL STUFF IN ROCK ELM, PINE, CEDAR AND HEMLOCK
 Quotations furnished on application

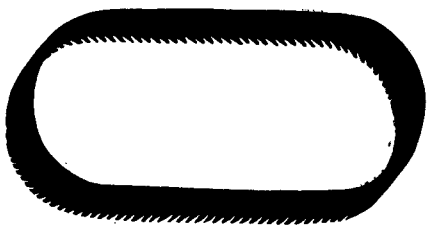
GALT MACHINE KNIFE WORKS



PETER HAY, GALT, ONT.

WHY BAND SAWS BREAK

SIXTEEN REASONS, AND HOW TO AVOID THEM

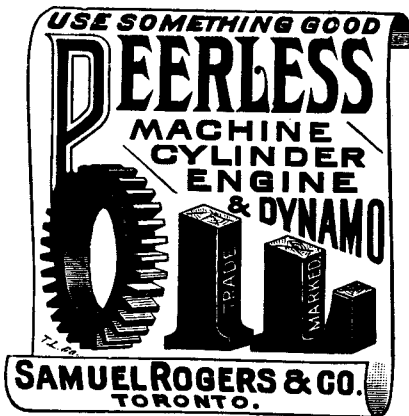


Being instructions to filers on the care of large band saw blades used in the manufacture of lumber.

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

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

Address— CANADA LUMBERMAN, Toronto, Ont.



SAW MILLS

SUPPLIED SPECIALLY WITH

High Grade ...
 ... Heavy Quality



FOR PRICES AND SAMPLES OF
REDDAWAY'S
 CAMEL HAIR BELTING
 (CAMEL BRAND)

WRITE TO
W. A. FLEMING
 SOLE AGENT FOR REDDAWAY & CO., MANCHESTER, ENG.

The "Camel" Brand Belting stands almost twice the strain of best English oak double Leather Belting.

AGENT ALSO FOR THE FABRIC FIRE HOSE COMPANY, OF NEW YORK, U.S.



HARD-MOUTHED HORSES AND PULLERS CONTROLLED WITH ABSOLUTE EASE. RUNAWAYS IMPOSSIBLE.

This statement is now repeated by thousands who have purchased
BRITT'S AUTOMATIC SAFETY BIT.
 SAFETY GUARANTEED
 This Bit, by an automatic device, closes the horse's nostrils. HE CANNOT BREATHE, AND MUST STOP.
 SAFETY FROM RUNAWAYS ABSOLUTELY GUARANTEED WITH THIS BIT.
 Any horse is liable to run, and should be driven with it. By its use ladies and children drive horses men could not hold with the old style bits.
 Send for illustrated pamphlet containing testimonials from all parts of the world, and earnest and candid expressions about the BRITT AUTOMATIC SAFETY BIT and its resistless but harmless and humane power in subduing the most vicious horses and controlling the most stubborn pullers and chronic runaways.
 The only bit in the world that is endorsed, advocated, used and sold by the Society for the Prevention of Cruelty to Animals, The Highest Authority.
DR. L. P. BRITT, 37 COLLEGE PLACE, NEW YORK

Best Box MetalExtant Stands any Gait Weight or Motion	COPPERINE	Four Grades do all your work with economy No Hot Boxes
Holds the best TESTIMONIALS from the largest machinery manufacturers, owners and users in the country		ALONZO W. SPOONER SOLE MANUFACTURER PORT HOPE, ONT.