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THE CANADA LUMBERMAN

Wood-Workers', Manufacturers' and Millers' Gazette

VOLUME XII. NUMBER 10. | TORONTO, CANADA, OCTOBER, 1902 | TERMS, $1.00 PER YEAR Single Copies, 10 Cents

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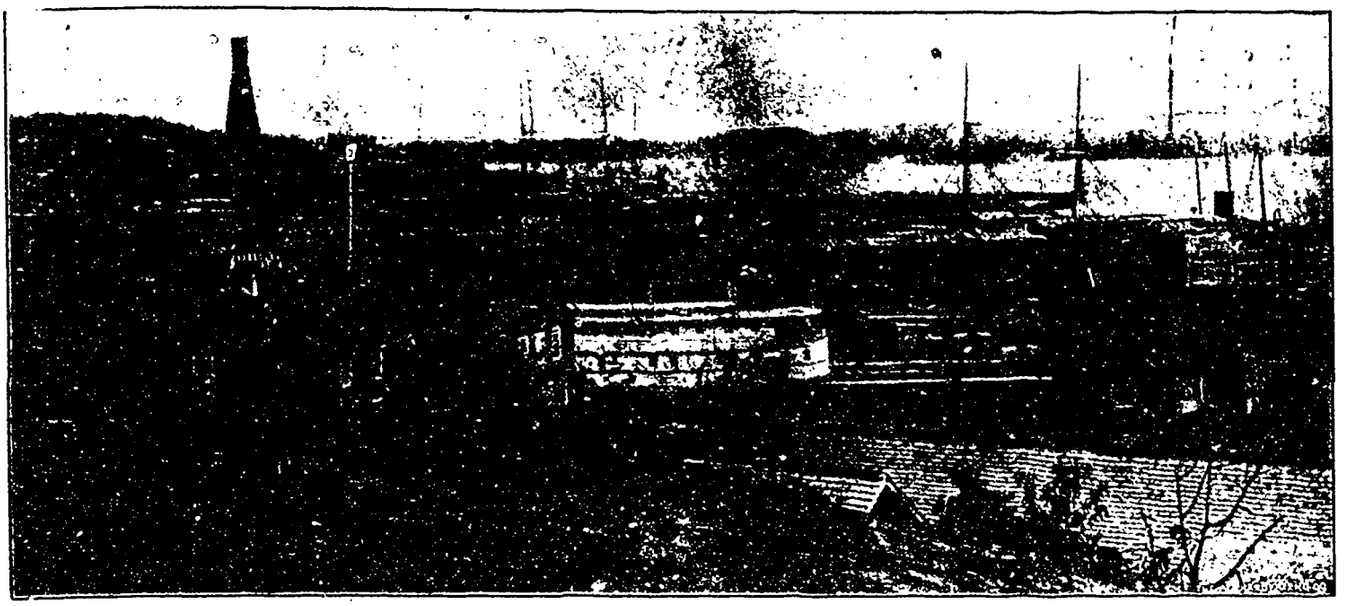
A SAW MILL ON THE NORTH SHORE.

One of the first important saw mills to be built on the north shore of Lake Huron is illustrated on this page. It was erected in the year 1883 by the Cook & Bros. Lumber Company and is located at Spragge, in the Algoma district. At the time of its erection it was considered second to none, while it has since been remodelled in keeping with the advance that has been made in saw mill appliances.

The annual product of the mill is about 23,000,000 feet of lumber and 5,000,000 lath, the annual capacity per day of ten hours being 140,000 feet. It is a steam power mill, having a battery of seven boilers. The equipment includes two band saws, a gang, two edgers, and two trimmers, as well as lath machines,



SAW MILL OF THE COOK & BROS. LUMBER COMPANY, SPRAGGE, ONT.

and machinery for making pickets is now being installed, when it will be possible to utilize much of the waste product which is now disposed of by a burner.

The company have two yards, of a capacity of fifteen million feet of lumber. Each yard is equipped with high trams and cars and all facilities for handling lumber expeditiously. Most of the mill product is shipped by water, vessels being able to load very advantageously.

Around the mill are employed over one hundred men, not including boat loaders and shippers.

The Cook & Bros. Lumber Company own extensive timber limits on the Serpent, Spanish, Blind and Mississauga rivers, capable of supplying the raw material for the mill for at least fifteen years. The timber is almost exclusively red and white pine. Mr. Geo. W. Cook is president, and Mr. H. W. Welch secretary of the company. Mr. C. E. Smith is superintendent of the mill.

UTILIZING WASTE.

According to the advanced bulletin of the 12th United States Census on the utilization of waste and by-products, nearly all of what was considered waste products of lumber and timber can be turned to some good use, and some of the new products thus formed are of considerable value. Of this latter class may be mentioned sawdust, which was formerly considered an absolute waste material, and was allowed to float down stream or was thrown into a heap where it could be most conveniently disposed of. French cabinetmakers have found a way of preparing this material which gives it a value far above that of solid timber by a process that has been in vogue for at least twenty-five or thirty years, combining the use of the hydraulic press and the application of intense heat. By this process the particles of sawdust are formed into a solid mass capable of being molded into any shape and of receiving a brilliant polish, and possessing a durability and a beauty of appearance not found in ebony, rosewood, or mahogany. This product is known as "Bois durci." Artificial woodwork, therefore, seems to have a promising future. Alum, glue and sawdust, kneaded with boiling water into a dough, and pressed into molds when dried, is hard and capable of taking on a fine polish. Ornaments of great beauty can be made from it.

The production of acetic acid, wood naphtha and tar from sawdust is one of the latest enterprises in Norway. A factory has been started at Fredrikstad capable of distilling 10,000 tons of sawdust in a year. It also manufactures *charcoal briquettes*, which are exported to the Netherlands. The acids are chiefly placed on the German market, while the tar is mostly consumed at home. The factory is said to be the first of its kind erected in that country. According to an English patent of 1897, sawdust may be so prepared as to be non-inflammable, and then applied to jacketing of boilers and other purposes.

In the Journal of the Society of Chemical Industry for 1898 is described a series of experiments for obtaining alcohol from either coarse or fine sawdust, without affecting the yield. It was found that pine sawdust as compared with fir sawdust was superior as yielding a purer alcohol. It was also found that a high yield of sugar was obtained from birch sawdust, the yield of sugar being about 30.8 per cent. of the quantity of birch wood used. The quantity of alcohol obtained from 220 pounds of air-dried sawdust (20 per cent. water) was 7 to 8 quarts. The quality of the alcohol distilled from the fermented liquid was said to have been excellent, and the perliminary experiments indicated that the trifling impurities found in it could be readily removed.

A patent taken out in England in 1896 for utilizing certain waste products of wood describes a process of constructing or manufacturing a product resembling wood from a mixture of sawdust or wood refuse and certain quantities of gums, resins, or other suitable agglutinants, either in a dry state or dissolved, the compound being subjected to pressure at a temperature sufficiently high to soften or melt the gums or resins.

MR. M. P. KINSELLA.

Mr. M. P. Kinsella, of Trenton, Ont., has been appointed travelling representative in Canada for the Skilling, Whitneys & Barnes Lumber Company, of Boston, Mass., and Ogdensburg, N.Y. Mr. Kinsella was born in Trenton, and as a boy entered the employ of the well known firm of Messrs. Gilmour & Company, Limited, of that town, remaining in their service for twenty-five years and until accepting his present position. He worked in many capacities connected with the lumber business, and gradually gained the confidence of his employers, and for the past ten years has been salesman and travelling representative for the products of their saw mill and sash and door factory.

During his term on the road Mr. Kinsella has become favorably known to the lumber trade of this country and is most popular. He is now thirty-eight years of age, just in the prime of life, of good physique and commanding appearance, and is known as a temperate and conscientious man. Always pleasant and possessed of considerable humor, he at once gains the respect of anyone he comes in contact with, which is shown by the feeling address and worthy presentation that was tendered him when severing his connection with Messrs. Gilmour & Company and their large staff of employers.

The Skillings, Whitneys & Barnes Lumber Company, with which Mr. Kinsella has connected himself, are among the largest buyers of white pine lumber in this country, with large stocks in the Ottawa Valley and Georgian Bay districts and at their Ogdensburg yards. With such a large connection, and a wide experience, we bespeak a bright future for Mr. Kinsella, and the CANADA LUMBERMAN wishes him every success.

The address presented to Mr. Kinsella by the members of the office staff of Gilmour & Company was as follows:

Esteemed Friend and Fellow Worker:

It is with a very great regret that we have learned of your intention to depart from our midst (wherein for so long you have enjoyed the utmost confidence and respect of all) to enfuse into other atmosphere the sunlight of the many good qualities of a genial, generous, whole-souled man. We appreciate the fact that, looking at the matter as you do, the course you are about to pursue is undoubtedly for the best, and for your personal welfare will be much more advantageous; but nevertheless we cannot help wishing that such a severance of good-fellowship, in labor and in recreation, had not taken place. In the whirl of mightier events we hope that you will not consign entirely to oblivion the memories of the lively little town, the circle of friends and co-workers, and the beautiful scenery, among and in which you have lived, and which you have enjoyed, for almost a lifetime.

As a slight token of the admiration with which you are regarded by us, and of the respect which we entertain for you, and as a trifling reminder of the many pleasant days we have spent together, and of the drummers' stories with which at times you were wont to regale us, we desire that you accept of this ring, and that in the wearing thereof you will occasionally bestow a fond remembrance upon the old firm that disciplined you for the battle of life and of business, and for the many fellow-employees who now look with such regret upon your departure from their midst.

Trenton, Canada, August 23rd, 1902.

The Columbia River Lumber Company, of Golden, B.C., are increasing the capacity of their saw mill and installing two boilers.

THE LUMBERING INDUSTRY OF THE UNITED STATES.

From the official statements of the Census Department covering the year 1900, some interesting data has been compiled regarding the lumbering industry of the United States. As the conditions existing in Canada and the United States are somewhat similar, the figures given are interesting.

The lumber industry was in 1900 the fourth among the great manufacturing industries of the United States. There were 33,035 establishments, with a total capacity of $611,611,524. The cost of materials used was $317,923,548, and the value of products $566,832,984.

Of the total product of the lumber industry, sawed lumber formed in value 81.2 per cent., or nearly five-sixths of all products. Shingles formed 3.9 per cent., cooperage materials 3.6 per cent., piles, telegraph poles, railway ties, charcoal, etc., 3.3 per cent., and all other products 8 per cent. Of the sawed lumber

MR. M. P. KINSELLA.

75.2 per cent. consisted of conifers and 24.8 per cent. of hardwoods. The cut of yellow pine was 27.8 per cent. of all lumber, white pine 21.5 per cent., hemlock 9.8 per cent., and spruce 4.2 per cent.

Wisconsin furnished 10 per cent. of the product of the country; Michigan, 9.6 per cent.; Minnesota, 7.10 per cent.; Pennsylvania, 7.3 per cent.; Washington, 5.3 per cent. These five states collectively furnished nearly two-fifths of all the lumber produced.

The average stumpage in the United States had a value of $2.18 per thousand. The figures differ widely in different parts of the country, owing to the different conditions of labor and the species of lumber. In the white pine region of the Great Lakes the average value of white pine stumpage was $3.30 per thousand feet, and the average value of saw logs $7.63, leaving $4.33 for logging operations. In the Southern pine states the average cost of stumpage was $1.20, while the average cost of saw-logs was $4.77, leaving $3.57 to represent logging operations. In Washington, where the timber consists mainly of fir, the stumpage is given as 80 cents per thousand and the value of saw logs $5.14, leaving $4.34 as the value of logging operations. This latter item is considerably larger in relation to the cost of stumpage and saw logs than in the Eastern States.

Eastern white pine had, on the whole, the highest stumpage value of any of the species, ranging between $3.50 and $4. Hemlock, which is becoming an important lumber in the east, reached a stumpage value of from $2 to $3. The range for eastern spruce is given as $2 to $3, elm $3.30, ash $3.03, maple $2.66, basswood $1.50.

During the year there were produced 12,102,017,000 shingles, with a value of $18,869,705, or $1.56 per thousand. Shingles were made mainly from cedars, the various species furnishing not less than 52.6 per cent. of all the shingles made, which was more than three times as much as was made from any other wood. Next to cedar, white pine and cypress were most largely used for shingles. Hardwoods were little used, the quantity being less than 2 per cent. of the total production. Washington produced 35.8 per cent. of the total shingle product, followed by Michigan with 16 per cent.

THE CONTENTS OF LOGS.

Mr. Thomas Gibson, of Wroxeter, writes to the American Lumberman: "Do you publish anything showing a mathematical process for reducing the contents of saw logs to the extent of the defects that are visible before logs are sawn into lumber? These defects may be rot in the end, shakes, splinters, offsides, etc. Is a log scaler supposed to use his judgment as to the probable amount to be "culled," or has he to figure the amount mathematically?

The reply is as follows: Broadly speaking, a merchantable log is any log that will pay for transportation and manufacture and leave a profit to the mill man. There is no mathematical process or rule by which they can be measured. The scaler has nothing to do with the grade of logs, unless it be specially included in the agreement with him. He measures the log, allowing, as best he can, and as his own judgment would dictate, for defects which will lessen the quality or the product. That is to say, he states in his tally how much lumber the log will produce. As to the grade of lumber he does not concern himself, or as to the grade of the log. No two inspectors may agree on a given log and any selected log may turn out a product entirely different from that estimated by the scalers, but in a day's work the result will be practically correct, and two scalers, although they may not agree on any one log, would come out substantially the same in their results.

A CONTEMPORARY'S OPINION.

Lack of space last month prevented us from extending our congratulations to our esteemed contemporary, the CANADA LUMBERMAN, Toronto, Ont., upon the excellent appearance of their July number, which was designed as a Western edition of their up-to-date paper. It contained 64 pages, the contents being of special interest to the lumber trade of Western Canada. In addition to descriptions and illustrations of many of the leading saw and shingle mills of the west, there appear nearly 100 portraits of members of the Western Retail Lumbermen's Association, the headquarters of which are at Winnipeg; also several articles bearing upon the conduct of a retail lumber yard.—National Cooper's Journal.

THE MANUFACTURE OF DOWELS.

The layman will scarcely think that dowels—the little round wooden pins used by the furniture and carriage trade and a few other industries—would require the output of several large factories; but such is the case. The demand for dowels runs into the millions. The modern finished dowel is a round hardwood pin, of various sizes of mathematical accuracy of diameter, with rounded or pointed ends, and is usually made with a series of parallel grooves to permit the escape of air and surplus glue in the joint made by its use.

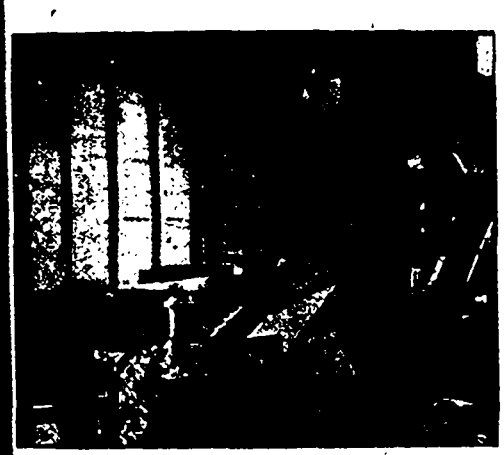
For years dowels have been turned from square stock sawed out for the purpose. According to the American Lumberman, a new dowel-making institution recently put in operation resorts to a new process of making, which provides for the utilization of what would otherwise be waste material left in the woods after the logs are taken out or at best used for firewood.

Comparatively straight grained sections of bodies or branches of maple, birch and beech are sawed into

SAWING THE BUTTS TO LENGTH.

bolts about two feet in length in the woods, following the logging operations, and transported to the factory. The bolts are split to convenient sizes and cross-cut on an ordinary saw table to the length of dowels desired. A machine chopper then reduces the blocks to vertical strips, eliminating the defective and cross-grained wood. These strips are then fed to an automatic machine of recent invention, which chips off a section of sufficient size to form a dowel and drives the piece of wood through a hollow knife-edged die, at the astonishing rate of 6,000 pieces an hour. Thus the blank for the dowel is made.

These blanks are dumped from the barrels into which the machine drops them into trays, which are slid into a rack, carrying corresponding trays, and then are wheeled into the dry kiln, where they are thoroughly seasoned. The next process consists in grooving the



GROOVING THE PINS.

blanks, and this is accomplished by another ingenious little machine which works with wonder-speed and accuracy. The next and corresponding machine rounds the ends of the pins into perfect dowels. Lastly the dowels are dumped into a revolving tumbling box, where they are polished, and then are ready for shipment. Views are shown of some of the operations.

This new departure in dowel-making illustrates the fact that many economies in woods and saw mill waste can be accomplished if a little thought and experiment be brought to bear on the subject. In the case in point the addition of a modicum of low-priced labor to a mechanical outfit that cost but a few thousand dollars—probably not to exceed $3,500—has made a

POLISHING THE DOWELS.

high-class commercial commodity out of material that would at best have produced only firewood.

THE HARDWOOD INDUSTRY.

The use of hardwood has increased enormously for building purposes in Canada during the past few years. In England the demand is constantly growing for Canadian hardwood products required to take the place of oak. The fact that there is a scarcity of hardwood in the United States and other countries is well known.

Some persons claim that in the near future the great bulk of our lumber will consist of hardwood, as the white pine is gradually disappearing. In the Muskoka district large quantities of hardwood have been left standing, owing to its being of too great specific gravity to float.

The Canadian Wood Manufacturing Company, Limited, has just been organized, with a capital of half a million dollars. Among those upon the Board are Messrs. R. S. Wood, Vice-President Imperial Loan Company, Angus McLeod, M.P., and Geo. McCormick, M.P., Dr. Beattie Nesbitt, M.P.P., President of the C. H. Hubbard Co., and J. D. Shier, Mayor of Bracebridge.

The company has been organized for the purpose of manufacturing hardwood flooring, blocks, veneers, broom handles, dowels and wooden novelties. The town of Bracebridge, which is situated in the heart of a large hardwood district, has voted a bonus of $20,000 without interest as an inducement to the company to establish its factory and mills at that place, and building operations are already well under way. Some of the stock is now being offered for sale by Messrs. J. H. Jewell & Co., 5 King street west, Toronto, who are the promoters of the company.

EMBARGO ON HEMLOCK.

BOSTON, MASS., Sept. 2, 1902.

Editor CANADA LUMBERMAN:

DEAR SIR,—I notice in your September edition that under the heading "Embargo on Hemlock," you give the comparisons of shipments of hemlock bark.

I would say that the shipments of hemlock bark have decreased from the Province of Ontario very largely since the Ontario Government passed a law prohibiting the exportation of hemlock bark to the United States from Crown lands. As there are only very small quantities of land that are actually owned by farmers and lumbermen, very little can be exported.

The bark on Crown lands must all be sold to local tanners or left to decay. This embargo on hemlock bark was put on for the protection of sole leather tanners in that locality. If it should be removed there would be a market in New England for all the bark that might be produced.

Yours truly,

FRANK A. CUTTING.

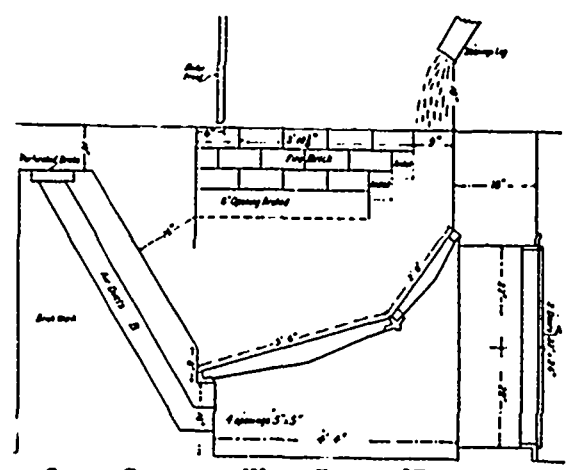
THE SMOKE NUISANCE.

Recent inquiries and replies regarding this subject that have appeared in these columns recall that there are several so-called "smoke consumers," which can no doubt be found by consulting a good engineering journal.

Two such systems have come under the observation of the writer, one of which was nothing more than a perforated pipe injecting live steam over the fire near the front of the firebox, and operated with a valve in the boiler room, being used only immediately after a fresh firing. *The effect of the steam was to precipitate* the soot and thus cause it to burn, instead of passing out of the chimney.

The other system consists of the peculiar manner of constructing the bridgewall and setting the grate-bars. It is particularly adapted to a wood-burning furnace. The enclosed sketch will explain the principle and the construction better than words can do. This system has some advantages not found in other styles of firing.

It will be noted that the floor of the boiler room is above the level of the grates. This permits of firing by dropping the fuel into the fire without the exertion of raising it, as is required in shoveling into an ordinary firebox. If the shavings exhaust is convenient, one or two legs may be dropped from the discharge pipe to about 18 inches to 2 feet above the floor of the boiler room, and the shavings may be dropped directly into the fire, giving an even heat as well as a saving of labor. The fire can not get up into the exhaust system, as there is no back suction, the only force being the attraction of gravity causing the shavings to drop, and it is never cut off, if the engine does shut



SMOKE CONSUMING WOOD BURNING FURNACE.

down. A closely-shutting valve for regulating the feed should be arranged up near the junction with the separator, so that when not required on the fire the shavings may be run into the vault.

The draft may be regulated by opening or closing the feed hole in the floor above, or by manipulating the draft doors under the floor, as shown. Note that the bridgewall is built with several flues, which admit air into the smoke chamber though the centre of this wall. The oxygen coming in direct contact with the dense, hot smoke, combines with the carbon in it, adding to the heat of the direct fire, at the same time purifying the smoke. Another advantage is the ease with which the grates may be gotten at, to be cleaned or repaired, or the ashes removed. —The Wood-worker.

A NEW LUMBERING CENTRE.

Midway between Shawville and Waltham, on the Pontiac line of the Canadian Pacific Railway, is located the new town of Davidson, established by the well known lumber firm of Davidson & Thackray, of Ottawa, and so named by the railway company. The new town, or village rather, has an ideal location at the junction of the Coulonge and Ottawa rivers and Coulonge lake.

Last season a dimension mill was erected, which has been in operation since May 1st and is shown on this page. It has the orthodox equipment, including trimmers, butters, steam feed, circular saw, double edgers, steam nigger and shingle machines. It is operated by steam power, and this season two dutch ovens were erected, permitting of the use of saw-dust as fuel, serving a two fold purpose, the disposal of the refuse and the reduction of the fuel bill. These ovens were erected at a cost of $1,000 apiece. Since the mill was started it has cut 3,500,000 feet of dimension timber and 2,500,000 feet of shingles. This summer a shingle mill was built and made ready for operations, and will be started shortly.

At the close of next season the company's two mills on the Quyon river, in Bristol township, near the Pontiac line of the Canadian Pacific Railway, will be closed down and all sawing concentrated at Davidson. For this purpose the erection of a double cutting band mill, with all other necessary machinery, is under contemplation. This mill will practically start in on the cutting where the Bristol township mills leave off.

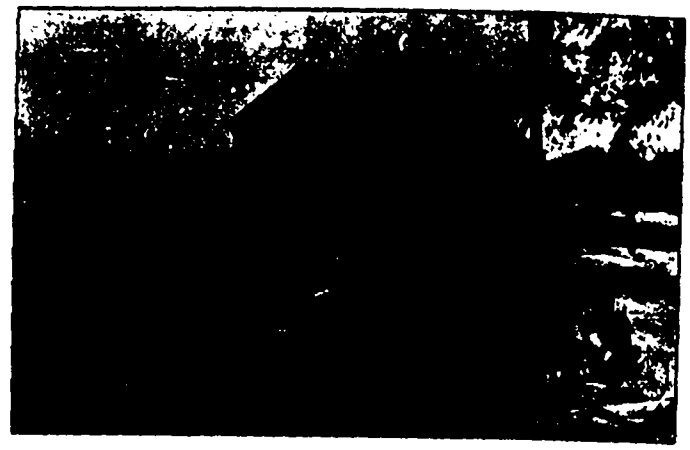
A word as to the auxiliary work already completed at Davidson might not be amiss. The firm has erected the following buildings—substantial and commodious office, blacksmith shop, boarding houses, sleeping camp, detached five room cottages for the married men, railway station and stables. The station was erected by the railway company, and is an attractive looking building, as are the office, residences and other quarters, all finished in wood.

The Canadian Pacific Railway has laid nearly a mile of sidings through the yards, enabling the lumber company to load direct from the pile to the car. A haul of a mile had to be made at the Bristol township mills, entailing a considerable expense, which will be avoided at Davidson. Streets have been laid out and raised platforms erected. Last winter 650 cords of stone were placed in the piers in the river, and during the coming winter 700 cords will be secured. The object of the work being carried on in this direction is to increase the capacity of the log pond.

The company is conducting extensive operations on the limits and a large supply of logs is assured. Two camps have been established, each with 37 men and 16 teams. The company also has seven jobbers at work, each with a camp of about 15 men and five teams.

Altogether fully 200 men are employed at the mills and on the limits. When the new mill is completed next year, employment will be given to 60 more. Ald. James Davidson and ex.-Ald. Robert Davidson, of Ottawa, members of the firm, have ambitious plans for the new town of Davidson. It promises to become in a few years one of the most prosperous in the direction.

OFFICE ERECTED BY DAVIDSON & THACKRAY AT NEW TOWN OF DAVIDSON, QUE.



PARTIAL VIEW OF DIMENSION SAW MILL ERECTED BY DAVIDSON & THACKRAY AT NEW TOWN OF DAVIDSON, QUE.

HOOPS AND THEIR MANUFACTURE.

The great majority of hoops for slack barrels are made according to the sizes required by either sugar barrels or flour barrels. There are hoops made both longer and shorter than these, but these represent the bulk of the trade, and the others are generally made on individual specifications. The Slack Cooperage Stock Manufacturers' Association has outlined the following as specifications for the two classes of hoops most generally used :

Sugar barrel hoops shall be 6ft. 4in., 6ft. 6in. and 6ft. 9in. long, cut so as to be not less than 5/16 in. and 3/16 in. in thickness when finished and seasoned, and not less than 1⅜-in. wide when seasoned.

Flour barrel hoops shall be 5½ ft. and 6 ft. long, and shall measure, when seasoned, not less than 5/16-in. to 3/16-in. in thickness, and not less than 1⅜-in. wide.

There has been some effort to separate hoops into grades, for it is pretty generally recognized that there is a wide distinction in the quality of hoops, but no distinct classes have so far been pointed out, the only action by the association being to specify that No. 1 hoops shall be of good, sound timber, fully up to specifications, free from broken hoops in the coils and well finished.

TIMBER REQUIRED FOR HOOPS.

When you want to start a hoop factory, the first point is, obviously, to secure a supply of timber that will make hoops. It is not the purpose of this discourse to deal with that end of the subject to any length, but the prevailing scarcity of timber that will turn out hoops to advantage calls for at least a few words on the subject before taking up the matter of building a hoop factory.

Elm is the timber generally used for hoops; in fact, its use so greatly exceeds that of all other woods combined to-day that hardly anything else is thought of for making coiled hoops. But elm of a quality to make hoops is getting so scarce and high in price that to find a good location for a hoop plant—where there is a timber supply—has already become one of the serious problems of the trade. Not only must it be a good class of elm timber to begin with, but it is practically only the butt cuts that will work up to advantage.

Of course, any clear piece of good elm plank long enough for hoops is all right, and where one is operating a sawmill in elm there is an opportunity to get more or less of this plank, even from the top cuts, and, where there is not a sawmill or something of that nature to help the cause along, it is pretty generally necessary now to make staves or something else along with hoops in order to get a reasonable close clean-up of the stumpage.

The manufacturer of hoops is not entirely confined to elm, but it seems that the trade prefer elm, and do not take kindly to substitutes, even of oak. Still oak is being used to quite an extent, and there is really nothing to prevent it being used more, and being accepted right along with elm, except that in many instances the timber is too valuable for other purposes to be made into hoops to advantage. Others substitutes have been tried more or less, but while any wood that is reasonably tough and can be bent into a hoop should answer the purpose, there does not seem to be any that has come into use to any great extent. That is not saying they will not, however, and the near future may bring several kinds of wood into notice in this connection. But whatever the wood may be, the first step towards starting a hoop factory is to secure timber from which to make the hoops.

The first point to be decided when you make up your mind to build a hoop factory is the process of manufacture that will answer your purpose best — cut or sawed. There is some variety and choice of machines in carrying out the work in either cutting or sawing hoops, but the first question is : "Will you cut or saw your hoops ?" Nor is this question as easy

to answer as you might think. Cutting is the process most generally used, and, taking all things into consideration, it is probably the best, generally speaking, but what you want is not a general idea, but a specific idea of what is best in your individual case.

WHAT 1,000 FEET OF LUMBER WILL MAKE.

It is generally conceded that 1,000 feet of timber, board measure, will make, on an average, 4,000 hoops if cut, and about 3,000 if sawed. With such an estimate as this, one may wonder what excuse there can be for ever making hoops by the sawing process when it involves a waste of 25 per cent. of timber as compared to cutting hoops, but the system can and does exist. In the first place, it is cheaper to equip a factory for making sawed hoops, and then the hoops are better, and are supposed to bring a better price, though this is not always a fact. Probably the deciding factor that puts in most of the sawing systems comes from the fact that a system of this kind is particularly adaptable for operation in connection with a sawmill, where it is not the desire to make hoops on a large scale. One can equip a complete system for sawing hoops with a capacity of from 10,000 to 20,000 hoops a day, while if you buy a good hoop cutting machine it has a capacity of near 60,000 a day, and it would look like a waste of time and money to hire a skilled operator to operate such a machine if local conditions only called for an output of from 10,000 to 20,000. There are a number of other points here and there to be taken into consideration, together with local conditions, in deciding on what system to use, but the object here is to point out how to equip and operate a plant, rather than present arguments to and for the different systems, so, as the cutting system is the one most generally used, it is in order to outline briefly the equipment of a plant of this kind.

EQUIPPING A CUT-HOOP PLANT.

The average hoop plant on the cut system is built to manufacture something like an average of 40,000 hoops a day. Some of the machines have a higher capacity than this, and some plants are so equipped as to turn out more than that amount, but this is the figure that is usually taken as the basis for equipping a plant of this kind.

The first step in the manufacture of hoops by this system is to produce planks of the thickness to make the width of the hoops desired and the cross cut of the length desired. This work may be done as a part of the work in any sawmill, or a special short-log mill for this purpose can be provided. The plank is not necessarily edged down to the square edge, but cut with a view of getting as many good hoops as possible out of the log.

THE CUTTING MACHINE.

The next step is the boiling in vats for a few hours, depending much on the timber and the heat supplied from the vat. The first step proper in manufacturing is when you start to make these boiled planks into hoop strips with a cutting or slicing machine, which is usually so located as to cut from the edge of the plank hoops with alternate thick and thin edges automatically. The capacity of a good machine of this kind is usually given by manufacturers as 60,000 hoops in ten hours, but, for general purposes, it is only called on to make about 40,000 good hoops a day, for that represents, in fact, a fraction above the average output, as will be seen further along. It may be well to mention here, however, that the limit of capacity usually comes from other machines than the cutters.

PLACING THE PLANERS.

The next step is to get the hoops to the planers and finish them up smoothly to exact specified sizes. There is a variety of machines of this kind, which carry from one to three cutter heads, and of course their capacity is governed accordingly.

The usual practice is to have two planers with two or three heads, which should handle the output of one cutter. In setting these planers in the factory, they should be set up with two points in view to get the hoops to the planer from the cutter, and to get them from the planer to the pointer and lapper with the least possible amount of handling. Probably the best arrangement that can be made, ordinarily, is to set them with the feeding-in end toward the back of the cutter and just far enough away so that the men taking away from the cutter and the planer feeders will not interfere with each other in their work.

THE POINTER AND LAPPER.

From the planer the next step is to the pointer and lapper, and the same idea of getting there with the least possible amount of handling should be kept in mind. Usually the pointer and lapper is made to handle as many hoops as the cutter will make, so while they generally have two planers we come back to one machine again to do the lapping.

In placing this machine one must be guided somewhat by local conditions, and take into consideration that the material goes from the lapper to the coilers, with the steam box intervening, and as the coiler is the last step in the process, it is necessarily placed so as to discharge into the storage sheds or yard.

Where it can be done a good arrangement is to have the material go sidewise from the discharge end of the planers to the pointer and lapper, and from it direct into the steam box to prepare it for coiling. Local conditions may determine which side to work from, and may even call for the material being worked straight along instead of sidewise at this point.

A POINT OF IMPORTANCE—THE COILERS.

The wind up of the process is at the coiler, and, strange as it may seem, this machine and its operator frequently make up the most important part of the work. In the first place, it is a general practice to have two of these machines to a plant built for approximately 40,000 hoops a day, and as the machines are only rated at a capacity of 15,000 to 18,000 hoops, it is obvious that they may either have to be worked overtime or else they are likely to limit the capacity of the plant.

It is at this point that the final grading of the hoops is done; they are graded to a certain extent as they are put into the steam box, but the final culling out depends on the coiler. The careless man may not only break the hoops in coiling, but may be so careless in selecting or throwing out poor stock that the cooper using the hoops will have just cause for complaint. There is not much chance to examine the hoops thoroughly after they are once in the coil, and it involves trouble and expense to get one out when found and reconstruct the coil. It is, therefore, very important to give close attention to the selecting and coiling of hoops, and there should be a good man at this point of the factory, even if you have but indifferent help at all other points, if you expect to make a success of the hoop business.

It seems that it would be advisable to have more coiling machines; say, for example, three machines for a hoop plant of 40,000 capacity, so that there would be no unusual rush to furnish an excuse for not properly grading the stock. This may seem like adding expense to the process of manufacture, as it also calls for another man to operate the extra machine, but this good care is what counts in getting a price for hoops, and sometimes a little additional expense here will bring more than its equivalent in the better price you will be able to obtain for your product.

A chute is usually made from the coiler to the storing shed with an incline to it, so that the hoops will roll down this way with being touched by the operator.—Barrel and Box.

REGARDING A LOGGING CONTRACT.

In the case of Royle vs. Musser-Sauntry Land, Logging and Manufacturing Company, decided by the Supreme Court of Minnesota, it appeared that a logging contract provided that the contractor should have the option of adopting the official scale at Lake St. Croix as the final basis for settlement instead of the scale where the logs were banked—a place distant more than 100 miles up the St. Croix river and its tributaries. For the first three years' operations the contractor accepted the bank scale as the basis of settlement, and during those years the bank scale exceeded the official scale by 1,760,000 feet. During operations for each of the subsequent years the contractor adopted the official scale. The court held that the option provided for should be exercised each year with reference to the work annually accomplished; that from the terms of the contract, in view of the nature of the business, the parties contemplated not only that some of the logs cut and banked each year would fail to arrive in time for the annual official scaling, and would come in during subsequent drives, but also that some of them might be lost, stolen or detained and never reach their destination; that the annual official scale established prima facie the number of feet cut per annum and was the proper basis upon which to estimate compensation, and that the contract provided for annual settlement and interest upon unpaid balances, to be computed from the date fixed in each year for final settlement.

THE Canada Lumberman

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ADVERTISING RATES ON APPLICATION.

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

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

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

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

THE PROSPERITY OF CANADA.

The publication of figures showing the value of imports and exports for the fiscal year ending June 30th last has drawn attention with renewed emphasis to the wonderful prosperity now prevailing throughout the Dominion of Canada. The total value of the import and export trade of the country amounted to $414,517,358, exceeding the previous year by $36,827,673. The value of imports was $202,791,595, and of exports $211,639,286. The statisticsshow a remarkable growth of Canadian manufactures during the past six years, the iron aud steel production alone increasing from $10,000,000 in 1896 to over $28,000,000 last year. The cement industry expanded from $252,882 to $784,747 during the period mentioned.

The commercial and industrial development of the country is expanding at a rapid rate. Manufacturing industries of all kinds are taxed to their utmost capacity to meet the demand for goods, and notwithstanding large extensions during the past few years, orders are now on the books of manufacturers which will keep the mills and factories running for months to come.

The abundant harvest in Manitoba and the Territories assures a continuance of this prosperity throughout Western Canada for another year at least. Returns for their crops will enable the farmers of the west to erect needed buildings and to carry out the many improvements which are required in the development of new territory. The mining and timber resources of Canada are being developed in a manner as never before. The railways have this year found their supply of rolling stock more inadequate than ever to move the merchandise of the country, and are building new equipment as speedily as possible.

The question suggests itself, are the prosperous conditions of the present near an end, and we are reminded that periods of prosperity and depression have occurred in the past at regular cycles. But Canadians need little fear anything in the nature of serious depression, particularly for the reason that the development of Canada is yet in its infancy. With a territory large enough to accommodate ten times as many people, and with an abundance of natural resources, all predictions of a yet wonderful nation seem warranted. We may have a temporary lull in trade, but the future of Canada is likely to be gradual growth and expansion. With the greater development of the country ample scope will be provided for the labors of our young men, many of whom now migrate to the United States in search of a larger field.

Indicative of future development are the investments that are now being made by United States capitalists in Canadian timber limits. The International Paper Company own an immense area of timber land in Canada and are constantly adding to their resources. More recently C. P. Easton & Company, of Albany, have invaded Canadian territory by the purchase of timber limits in the Province of Quebec estimated to contain over 300,000,000 feet of pine and spruce. A similar step has been taken by Stetson, Cutler & Company, of Boston. Capitalists such as these are not concerned about tariff questions, but recognize that the country in which the raw material is located holds the whip hand.

COST OF LABOR AND SUPPLIES.

The extraordinary wave of prosperity referred to in the above article is responsible in part for an increased demand for human labor. From all parts of the Dominion an urgent call for laborers is heard. This condition has affected lumbermen seriously, for it has been impossible to secure all the men required for work in the woods this winter. When work is plentiful, as at present, the laborer who in other times has been compelled to be idle in the summer months while working in the woods in winter, gives up the charm of the woods and seeks steady employment in other branches of industry. It has been found necessary, as a result thereof, to employ many inexperienced men who, until they become accustomed to methods of lumbering, do not render very efficient service.

In British Columbia, where logging operations are carried on to some extent throughout the year, the scarcity of men for logging operations has handicapped the mills all summer, some of them being obliged to close down for lack of a supply of timber. The wages offered there to white men range from $2.50 to $3.50 a day, but even the maximum figure has failed to command the services of a sufficient number. The wages offered in Ontario and the eastern provinces are unusually high—for some classes of workmen higher than they have ever been in the past.

The supplies required by lumbermen for logging operations are relatively higher than last year. Canned goods, especially tomatoes and corn, and raisins are higher, whereas sugar, currants and apples are cheaper. There has been a considerable advance in beef and pork, the former being $2 and the latter $3 per barrel higher than last year. Taking lumbering supplies as a whole, the advance in prices is probably equal to ten per cent.

The scarcity of labor and cost of logging operations is certain to affect the log production of the coming winter. Of course, when the mills cease operations and the harvest in the North-West is gathered, the supply of labor will be more abundant, but it will not be possible to make up entirely for the decreased operations consequent upon the present stringency in the labor market. Although the lumber market is proverbially strong and likely to continue so for some time, we do not anticipate that the cut this winter will be unsually large.

DISPOSAL OF WASTE PRODUCT.

What is known as the waste product of saw and shingle mills has always been a source of expense to lumbermen. In steam mills it is possible to utilize a portion of the sawdust and other waste as fuel, but the balance must be disposed of in some other manner. With water power mills the refuse is not required for fuel and is usually consumed by large burners erected for the purpose at a considerable cost. To find some method of profitably utilizing the waste product is a question to which much consideration has been given, but which has not as yet been satisfactorily solved.

Some progress has been made in the direction of reducing the quantity of waste material. The saws used to-day are much thinner than those used ten years ago. Caution is exercised in sawing the logs, making the lumber no thicker than is actually required; and the sawyer who knows how to handle a log so as to get the most out of it is always in demand.

Occasionally is heard the complaint of the theorist as to the wasteful methods of lumbering. A little investigation would convince such persons that the waste around saw mills has been reduced to the minimum, and that as far as is commercially practicable all material is utilized. It should not be forgotten that material can only be worked up to the extent that the returns therefrom are equal to or greater than the expenditure for machinery and labor. Unless there is a profit as a result of the work the lumberman is not likely to devote his time to working up bi-products. That he disposes of his refuse at some expense by means of a burner is a condition over which he has no control, as the amount of sawdust and other waste material around a mill is so great as to render its disposal in some manner an absolute necessity.

Lumbermen are not entirely hopeless that some method will yet be found of profitably working up the waste of their mills. Gradually they seem to be getting nearer to the solution of the problem. A few years ago Messrs. Edwards, Booth and Egan, of Ottawa, started a manufactory for this purpose under the auspices of Mr. Emerson, chemist, and while it was not altogether successful, enough was accomplished to

plainly that it is possible to produce a great many valuable products from sawdust and waste material. At the present time the high cost of labor is an obstacle in utilizing such material. We know that some manufacturers have investigated the prospects for a factory to utilize short blocks cut off the lumber by the trimmers and pieces of slabs and edgings that are too small for lath, but when the expense incurred in picking out the material and curing it was considered, it was difficult to show a margin of profit in the present condition of the labor market. Other manufacturers have put in machinery to manufacture piece stock out of hardwood slabs, but as the highest price for clear piece stuff is about $10 per thousand feet at the mill, little encouragement is offered and the manufacturer feels inclined to burn the material.

The waste is proportionately greater in the manufacture of hardwoods than of the coniferous woods, but there seems to be a larger field for disposing of bi-products of hardwood waste. Many hardwood specialties find a ready market both at home and abroad. In Michigan hardwood slabs are converted into slack barrel staves and heading to advantage. The slabs are dropped over a slasher, which cuts them into lengths corresponding to the desired length of staves, which is from 30 to 33 inches. The short slabs are then bored, and by means of a conveyor are forwarded to the stave machine, which works automatically and makes staves any width from 1½ to 3 inches, depending upon the width of the bolt. The heading for these barrels is also a slab product; the slabs are sawed to the proper length, and an ordinary slab resaw makes the heading.

EDITORIAL NOTES.

In compiling statistics concerning the lumber industry the United Government has evidently been no more successful than has the Dominion Government. Many of the statistical tables issued from the Government bureau are of a misleading character. The United States census of 1900 undertakes to give figures representing the value of the timber stumpage of the country. The highest average given to white pine is $4 per thousand. This is somewhat below the actual value, but fancy a price of $5 per thousand being placed on walnut stumpage. Reliable statistics are doubtless valuable, but it seems almost impossible to make correct estimates by means of any system that has yet been adopted. The consumer of lumber who perchance glances at the figures representing the stumpage values of the different woods, as given in the census returns, will indeed conclude that he has contributed too much to the prosperity of lumbermen.

The news comes from Berlin that the German customs authorities will in future require certificates of origin in the case of American grain. This is regarded as a retaliatory slap at Canada for having granted preferential duty on British goods coming into this country. The Dominion should now demand a certificate of origin in the case of all imports from Great Britain. This would have the effect of shutting out large quantities of German goods which now find their way into Canada as British imports and get the benefit of the preference which was intended to apply only to British manufactures. The statement is made on what appears to be good authority, that many German manufactured goods are shipped into England, where the assembling of the parts is done, after which the goods are exported to Canada and receive the benefit of the preference. At present there is nothing to prevent such a practice either by Germany or other countries. Means should be adopted to prevent the preference being accorded to any but bona fide British goods.

The insurance companies have contended for some time that the premiums paid for fire insurance by the lumber and shingle mills of British Columbia were too low in comparison to the risks. Several prominent European and American companies, unable to secure unanimity in raising the rates, recently refused to renew their risks. The remaining companies have issued a new schedule, under which well-constructed and properly-protected mills will be accepted at the old rate and higher premiums charged for faulty construction. It is said that the increase will in some cases be equal to 50 per cent. The mill men are not opposed to the proposed method of grading the risks, but they claim that the average premium is excessively high. It is not improbable that some of the mills will either carry their own insurance or take out a policy with one of the lumber mutual insurance companies in the Eastern States. The National Wholesale Lumber Dealers' Association some time ago made an investigation regarding the ratio of losses to premiums paid on lumber risks, and they were shown to be only about 17 per cent. Lumbermen in the United States have also encountered higher rates of insurance. The question was discussed at a meeting of the Box and Box Shook Manufacturers' Association in Milwaukee last month, when it was pointed out that the rates had been advanced so that for a risk taken last year at $3.50 a rate of $5.10 was now demanded. Reference was made to the Lumber Underwriters, of New York, and the Lumbermen's Mutual, of Boston, which have paid large dividends to their stockholders, sentiment being in favor of taking insurance with these companies.

RULES FOR LUMBER CAMPS.

The regulations to govern employers of labor and employees in unorganized districts of Ontario, with a view to preventing another smallpox epidemic, have been issued by Dr. Bryce, Secretary of the Provincial Board of Health. The regulations follows:

Shantymen, miners and other employees of lumbering camps, mining camps, saw-mills, smelting works and other industries or any railway construction camp, are hereby notified and cautioned by the Provincial Board of Health, under the Act respecting the sanitary regulations in unorganized territories. It is required:

1. That all owners, managers, agents or foremen, or other persons in charge, employ only vaccinated persons; that all employees are equally required to comply with the regulations.

2. That all employers of labor shall contract with a medical practitioner for their emloyees and works and are authorized to deduct from the pay due to any employee a sum not less than 50 cents and not exceeding $1.00 per month.

3. That a hospital for the care of the sick must be provided by every employer, and that the men are entitled not only to regular treatment therein, but also to have the camps and surroundings inspected regularly and maintained in good sanitary condition.

That failure on the part of any person to comply with any regulation of the Provincial Board of Health renders him liable to the penalties provided in the Act.

THE TRUE SITUATION.

Unless the signs fail the mill men of British Columbia may confidently look forward to no distant time when the local demand and the demand from the eastern portions of Canada will take from them all their output. One who looks over the great areas yet undeveloped in Canada cannot fail to be impressed with their promise for the future. With a population of less than six millions, but with a country capable of sustaining ten times as many, nothing but rapid growth can be anticipated. These vast unsettled areas will be peopled by a class of heavy timber consumers. It is in the northern latitudes that lumber is a necessity. In the warmer climates it is more of a luxury. The great timber belts of British Columbia and Eastern Canada will prove valuable preserves for their owners. The legislation that now prevents the logger in British Columbia from exporting his logs—though instigated by selfishness—will by time be proven to be wise and beneficent. The restrictive laws in the United States will doubtless be continued and will be offset in a great degree by kindred laws in Canada. The spirit of independence in Canada is growing and the desire for annexation dying out. A future day may develop a more liberal policy in the exchange of trade, but now trade seems to set toward selfishness in national law. In the growth of the cargo trade of this coast the British Columbia lumberman must always share. It is probable that an over-production will soon be felt and some time may be needed to re-adjust the demand to the supply, but that condition is always to be anticipated and is, perhaps, in a measure wholesome and curative. The British Columbia mill man is, as a rule, more conservative than his competitor south of the great international divide. He is not slow to invest, as many large plants attest. He is loth to adopt new methods until they are no longer new. The logging engine and the band mill he accepts after mature and lengthy consideration. But the leaven in the lump is at work, and the spirit of the new century is permeating the land from the Crow's Nest to Comox.—West Coast and Puget Sound Lumberman.

NEW METHOD OF TOWING LOGS.

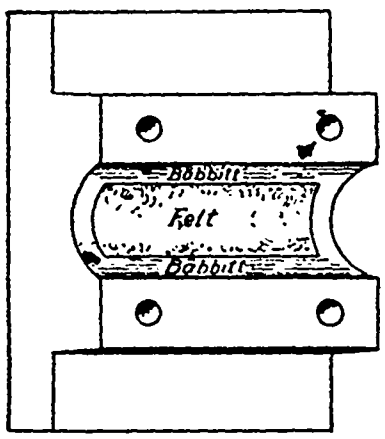
It is claimed that at last a new method of towing logs has been found which reduces to a minimum the chances of the loss of the logs during rough weather. The new idea received a test recently.

The Vancouver tug Albion towed a boom of 215,000 feet of logs from San Juan Harbor to Port Ludlow, Washington, through a heavy westerly sea without the loss of a single stick. The boom was made up according to the new method by which the logs are individually attached, by means of short chains, to the central cable which runs to the towing bits of the tug. During the trip the seas ran quite high, but not the slightest difficulty was experienced in taking the boom through.

In contrast to the success of the Albion's method, was the failure of the tug Rabboni to tow a boom made up in the old way with boom sticks and chains from Port Crescent to Port Ludlow on the same day that the Vancouver made the run. The Rabboni enconntered the same sea met by the Albion, and she lost every log in her boom.

BABBITTING BAND RESAW BOXES.

I have had considerable experience with band resaws and band rip saws, says "G.A.P" in The Wood-Worker. At present have three



BABBITTING BAND RESAW BOXES.

band resaws under my charge, but can't say I have the same trouble as some readers of this journal. I use 18-gage saws, 6 inches wide, 32 feet long. The wheels on my machines are 5 feet 6 inches diameter and make 490 revolutions per minute. I use nothing but engine oil.

To babbitt the boxes on these machines, I wrap the journals with writing paper and pour cap and lower half of box at same time, using wooden liners. On lower (or driving) wheel I babbitt only a strip an inch wide around edges and ends of box—see sketch. The cap I babbitt full. The wear is on the cap. In lower half I use thick felt, usually cut from the top of a felt boot. In the top box I babbitt the lower part full and use felt in the upper half. I scrape all boxes to a good fit.

To pack my boxes I use two pairs of cardboards for top and bottom on each side of box, using writing paper for rest of packing. I screw bolts down until there is no play of shaft and just so it can be turned by hand. I babbitted these machines sixteen months ago and have only taken out one liner on each side. My machines will run five minutes after the belt is thrown off the tight pulley.

Our stock is mostly cull cottonwood for boxes. The average daily run for the three machines is 49,000 feet, working ten hours. The machines run every day, as our mill never shuts down except for Sundays and legal holidays.

BRITISH AND COLONIAL INDUSTRIAL EXHIBITION.

Mr. J. G. Jardine, Canadian Trade Commissioner for South Africa, in a recent communication, refers to the British and Colonial Industrial Exhibition which will be held at Cape Town during the months of November, December, January and February, 1903-4, under the patronage of His Excellency Lord Milner, G.C.B., G.C.M.G., High Commissioner for South Africa. Mr. Jardine is of the opinion that the time fixed for the Exhibition is certainly an opportune one for Canadian manufacturers desirous of doing business in that country, giving them as it does ample time to enter exhibits. Mr. Jardine states that such a Canadian exhibit should embrace samples of the forest wealth of Canada and industries in which large quantities of wood are required; all descriptions of canned goods, dairy and food products, apples, agricultural implements, furniture, boots and shoes, leather, trunks and valises, cotton and woollen textures, models of railway and tramcars, locomotives and traction engines, carriages, stoves and heating apparatus, tin and enamelled ware, axes and mechanics' tools generally, and musical instruments, including cabinet organs.

The cost of such an exhibit, he says, need hardly be considered, as every article of the kind mentioned could be sold at a reasonable advance on cost of manufacture and transportation, etc., besides such an exhibit from Canada, side by side with industries from all parts of the Empire, cannot but lead to extensive and profitable business and the opening up of new and permanent trade outlets to Canadian industries generally.

THE TORONTO INDUSTRIAL EXHIBITION.

The success which this year attended the Toronto Industrial Exhibition shows that its usefulness is still generally recognized and that it will continue to grow in importance in proportion to the efforts that are put forth by the management to improve it. Inducements should be offered to secure a greater representation of manufactured products from all parts of the Dominion. This year there was really no exhibit of sawmilling machinery, an omission which must have been disappointing to lumbermen visitors.

The Northey Manufacturing Company, Toronto, had their usual interesting display of gas and gasoline engines and pumping machinery, including their triplex power pumps, for which they report a great demand.

A full line of shafting and power transmission machinery in operation was exhibited by the Dodge Manufacturing Company, of Toronto. The exhibit included wood split pulleys, friction clutch pulleys and couplings, Dodge system of rope driving, etc.

The exhibition of the Bradley, Levy & Weston Machinery Company, of 102 Front street west, Toronto, attracted the attention of lumbermen and persons interested in power and machinery. They exhibited the Hardill engine in two sizes, 50 and 25 h.p. This engine, for which they are agents, is worthy the notice of any one interested in power. There were shown a self-feed rip saw, manufactured by the Goldie & McCulloch Company, calculated to decrease labor and increase the manufacturer's output, two sizes moulding machines of entirely new design, with the latest devices for time and labor saving, and a complete line of wood-working tools. This firm are gradually extending their business and are in a position to supply machinery of all kinds, including engines, boilers, planers, matchers, etc.

The Goldie & McCulloch Company, of Galt, Ont., exhibited two engines in operation, and several wood-working machines.

A splended exhibit of canoes and rowboats was made by the Peterborough Canoe Company. One of the collection was a canoe weighing only fifteen pounds which they claimed to be capable of carrying two men.

R. Bell, of Seaforth, Ont., exhibited traction and stationary engines.

The only belting concern represented was D. K. McLaren, of Montreal and Toronto. The exhibit comprised English oak tanned belting, card clothing and cotton mill supplies, Lancashire, balata and cotton belting, and belt hooks and appliances in all sizes.

STAVES WANTED IN AUSTRALIA.

Mr. J. S. Larke, Canadian Commissioner at Sydney, Aus., in his last report to the Department of Trade and Commerce, says: "I have again had applications for oak staves for wine casks. Nothing so far has been done in direct shipments from Canada. The requirements have been, so far, too small to warrant full cargo lots being sent through, and purchases for Australia are, therefore, made in New York. There are considerable shipments each month from New York of pine, oak and basswood to Australia and New Zealand, which can be supplied direct by Canada upon the establishment of direct ships. A vessel recently brought a quarter of a million feet.

The tendency to a wider and slightly heavier saw for use on resawing machinery of the band saw type has been very rapid, and to many operators who have had charge of the saws with 3, 4, and even 5-inch blades, the change to a 7 or as much as an 8-inch blade for resaw will explain much of the reason for the rapid feeds that have been reported as having been made with this class of machinery. A 20-gage blade taking a kerf of less than 1/8 inch with a width of 7 or 8 inches of well-tensioned steel behind it, is an entirely different proposition to that of the smaller saw with slower running and spring-set blade. The band resaw of to-day is a stronger and better tool than was the band log saw of a very few years ago, both in the frame and in the width and strength of the blade. — The Wood Worker.

THE NEWS

—F.E. Griffin has established a lumber yard at Penhold, Alta.

—James Johnson, of Minto, Man., has sold out his lumber business.

—A. Slack & Co., planing mill proprietors, Ottawa, have gone out of business.

—It is the intention of Binkley Bros. to rebuild their saw mill at Neustadt, Ont.

—The Rathbun Company, of Deseronto, are preparing to manufacture box shooks.

—D. Larue, of Pointe aux Trembles, Que., is rebuilding his saw mill and butter factory.

—A. Tait, of Orillia, Ont., intends installing an electric motor in his mill for resawing purposes.

—The Shuswap Shingle and Lumber Company are building a shingle mill near Sicamous, B. C.

—Mr. Philips has commenced work on the building of a new planing mill at Toronto Junction, Ont.

—Goulet, Premont & Premont have registered a partnership as lumbermen at Chateau Richer, Que.

—The Brodhagen Lumber Company, of Brodhagen, Ont., has been incorporated, with a capital of $50,000.

—The new saw and shingle mill of D. & J. Haddon, of Cloverdale, B. C., commenced work last month.

—W. H. Hennings and C.P.D. Dundas have registered proprietors of the Victoria Cooperage, Victoria, B.C.

—It is reported that the South River Lumber Company are preparing to greatly increase the capacity of their saw mill at South River, Ont.

—Conroy Bros., of Aylmer, Que., are about to build a large saw mill at Deschenes. A bonus of $25,000 is being asked for from the town.

—It is the purpose of Trusler Bros., of Trout Creek, Ont., to build a new saw mill on Black Creek, in which they will cut hemlock and pine.

—The Kennedy & Davis Milling Company, of Lindsay, Ont., are building a large addition to their mill and installing a 125 h.p. boiler.

—The Ottawa Board of Works has decided that J.R. Booth must remove by November 1 the lumber piles which encroach on Spruce street.

—The Firsthrook Box Company have completed their new saw mill at Penetanguishene, Ont., which is equipped with a double-cutting band mill.

—C.Lloyd, Son & Company, of Wingham, Ont., have asked the council for a bonus of $6,000 to enable them to extend their plant for the manufacture of doors.

—The Lake of the Woods Milling Company are building a barrel factory at Keewatin, Ont., capable of turning out between 1,000 and 1,500 barrels per day.

—Fred H. Hale's mill at Plaster Rock, N.B., is turning out shingles at the rate of 150,000 a day, while the mill is cutting 40,000 feet of spruce deals per day.

—The Turner Lumber Company, of Midland, Ont., are preparing to do a large business in the woods this winter. They are building a large warehouse at South Bay.

—The Muskoka Wood Manufacturing Company are busily at work on their new buildings at Bracebridge, and will shortly commence to install the machinery.

—Jan Gillies, lumber manufacturer, Braeside, Ont., has made a proposition to establish a new industry at Renfrew, Ont., the nature of which has not been announced.

—The South River Lumber Company are improving and enlarging their mill. They are putting in a circular and gang saw, 400 h.p. in boilers and 300 h.p. engines.

—Perley & Sons, of St. Stephen, N.B., have ordered a new gang-saw and other machinery, so as to increase their output of box shooks, for which they find a growing demand.

—Wright & Company, a Saginaw concern operating in Ontario, with a mill at Cutler, have recently added something like 100,000,000 feet of stumpange to their holdings.

—Jacob Braun, of Ayton, Ont., has secured the contract of making the barrels required by the Wiarton Beet Sugar Company. About 40,000 barrels will be required annually.

—A subscriber asks for information as to the market for latchet blocks used by shoemakers. We would be glad to receive any information from persons familiar with this trade.

—A.H. Dale has purchased the saw mill of S. Stevens at Fort William, Ont. He will make extensive improvements and put in machinery for doing all kinds of sash and door work.

—The new factory of the Georgian Bay Box Shook Mills, of Midland, has been in operation for some time, turning out dressed lumber, box shooks, sash and door frames, mouldings, etc.

—The saw mill pioneer, William Powers, of Midway, B.C., has bought out Bernard Lequime's interest in the Midway Sash and Door Factory and will carry on the business on his own account.

—It is reported that the Hettinger saw mill at Prescott, Mich., which cuts 300,000 feet of pine daily, is to be removed to Georgian Bay district, Canadian side, as the timber in the present locality is nearly exhausted.

—Bay City, Mich., is to have a plant for the manufacture of wood alcohol by a new process, which will use up waste, such as sawdust, shavings and slabs, coming from mills where hardwood lumber is manufactured.

—The Ontario-Slocan Lumber Company, in which J.B. Tudhope, M.P.P., of Orillia, and George Chew, of Midland, are interested, expect to commence the building of their mill at an early date. It will likely be located at Slocan, B.C.

—Keenan Bros., of Owen, Sound, Ont., have secured from the C.P.R. an excellent dock frontage which they will use for receiving and shipping lumber by vessel. They are putting down a siding to accommodate rail shipments.

—It is reported that Theodore Ludgate has not yet given up the intention of building a saw mill at Vancouver, B.C. When in that city recently he inspected several sites, presumably for the purpose of building a mill thereon.

—C. F. Linkmark and C. B. Hume, of Revelstoke, are reported to have purchased a controlling interest in the Big Eddy saw mill on the Columbia river. Under the new management extensive improvements are contemplated.

—The Cedar Valley Improvement Company, of Fernie, B. C., expect to have their large mill completed this month. It will be the largest saw mill plant in the province east of Nelson, having a capacity of over 40,000 feet per day.

—Incorporation has been granted to the St. Gabriel Lumber Company, with a capital of $250,000. The promoters are H. M. Durant, V. E. Mitchell and E. F. Surveyor, of Montreal, and F. P. McManus and L. M. Garrison, of Jersey City.

—We have to acknowledge receipt of a sample bag of Manitoba No. 1 hard wheat from the publishers of the Winnipeg Free Press. This paper has always been a consistent advocate of the great resources of Manitoba and the Territories.

—It is reported that J. G. Woods and other capitalists purpose conducting extensive lumbering operations on the Capilano river in British Columbia. A flume eight miles in length will be constructed for the purpose of getting out the timber.

—The Huron Lumber Company, of Spanish River, Ont., intend installing a modern slash table system in their mill and erecting a burner. They are at present doing contract sawing only for the Spanish River Lumber Company and Pitts & Charlton.

—W. M. Drader, of Chatham, Ont., has been given a contract to supply barrels for the Dresden Sugar Company, at Dresden. The latter company are constructing a cooper shop and barrel plant, and next year will manufacture their own barrels.

—The Saskatchewan Lumber Company has received a Dominion charter. The capital stock is placed at $500,000. The head office is at Prince Albert, N.W.T., and the directors are W. Cowan, J. H. Sanderson and E. H. Moore, of Prince Albert, and Kenneth McDonald and Hector McDonald, of Ottawa.

—The Pigeon River Lumber Company, of Port Arthur, will add new machinery to double the capacity of their mill, making it about 25,000,000 feet, and will arrange to run the year arouud. The company has made contracts with the Duluth, Port Arthur and Western road to bring logs by rail, and the road will put on a daily logging train service from the Whitefish camps. A hot pond will be built and logs will be dumped into it for winter sawing. The company will also add to its equipment a wood-working factory and will go into the sash, door and blind business on a considerable scale.

CASUALTIES.

—A Japanese named Nishimua was seriously injured by being caught in the cog wheels in Heaps & Company's mill at Cedar Cove, B. C.

—A logger named Andrew Anderson was killed in a logging camp at Loughborough Inlet, B. C. He was caught in the chains and carried under the heavy rollers on the skidway, where he was crushed to death.

—George Boshey, an employee of the Saginaw Lumber & Salt Company, of Sandwich, Ont., was seriously injured recently. In some manner the steam cylinder was blown out, a portion of the flying debris hitting him on the head. At last report his recovery was doubtful.

TRADE NOTES.

The Jenckes Machine Company, of Sherbrooke, Que., find that their business has increased to such an extent that larger works are required. They will probably build.

Messrs. Geo. T. Houston & Company, of Chicago, announce the removal of their main office to the Tribune Building, Suite 824 to 830, Eighth Floor, where communications will be received in connection with company business, including their branches, Houston Bros., Cairo, Ill., Memphis, Tenn., Bigbee, Miss., Columbus, Miss., and Vicksburg, Miss.

J. L. Neilson & Company, of Winnipeg, Man., have recently supplied two complete barrel factories for the Ogilvie Flour Mills Company and a barrel factory and two compartment dry kilns for the Lake of the Woods Milling Company, Keewatin. The cooperage machinery was manufactured by the E. & B. Holmes Machinery Company, of Buffalo, and the dry kiln by the American Blower Company, of Detroit.

PERSONAL.

Mr. Charles E. Hamilton, of the Rat Portage Lumber Company, is gradually recovering from the accident which befell him about two months ago. A piece of steel about one-half inch long lodged in one of his eyes while engaged at work on a band saw. An operation was performed in the Winnipeg General Hospital, the steel being extracted, and it is hoped that the sight of the eye may be retained.

Mr. J. E. Murphy, late of Hepworth, is now permanently located at Meaford, where he is connected with the Meaford Manufacturing Company, which manufactures special lines of furniture, tables, etc. It is probable that Mr. Murphy will build a saw mill at Meaford, although he still operates his mill at Murphy, near Owen Sound.

The Lumbermen's Credit Association, of Chicago, in their July Edition of the Red Book, have made several additions and revisions which mark the book as the best yet published. It is the recognized authority on lumber credits.

WOOD PULP DEPARTMENT

EXPORT DUTY ON PULP WOOD.

A resolution was passed at the annual meeting of the Canadian Manufacturers' Association in Halifax last month in favor of an export duty of $4 per cord on pulp wood shipped from Canada. The resolution was adopted for the sole purpose of having our raw material manufactured in Canada. Mr. Eddy, of Hull, declared that Canada was rapidly being robbed of her forest wealth by the exportation of pulp wood to the United States.

It is difficult to secure accurate figures showing the quantity of pulp wood exported to the United States, but one of the best authorities gives it as his opinion that from 60 to 65 per cent. of the pulp used to manufacture paper in the United States is made from timber grown in Canada. Owing to the existing duty on pulp, this percentage is represented very largely by pulp wood, as the quantity of pulp shipped across the border is, in comparison, a mere bagatelle. In the last twelve years there have been exported from Canada between eight and ten million cords of pulp wood, which, when manufactured into pulp, would represent an outlay or an expenditure in cash of from twenty to twenty-five millions of dollars. It is not surprising, therefore, that there is a strong public sentiment in favor of applying to pulp wood a policy which would secure to Canadians the benefits of home manufacture of the raw material. Why should we allow pulp wood to go out of the country free of export duty and give the United States all the advantages accruing from its manufacture, in the place of having this money circulated in Canada?

A tax of $4 a cord would doubtless be prohibitive, as is intended. Pulp wood cannot now be exported from Ontario and British Columbia, but from the other provinces of the Dominion the business of exporting the wood goes on unhampered, except for a discrimination of twenty-five cents in the Province of Quebec, which is really of no effect in preventing exports. Should the Dominion Government fail in its duty to impose an export tax, it will be up to the Provincial Governments to pass a prohibitory law as was done by Ontario and British Columbia.

We are told that the Treasury Department proposes not to recede from its position in imposing an additional duty on pulp as the result of the discrimination by the Province of Quebec against the export of pulp wood to the United States. We were inclined to regard this action as a bluff, but this characteristic cannot fairly be attributed to the Treasury Department, and we must look upon the officials as sincere until evidence to the contrary is produced. It matters little, however, whether this additional duty is imposed or otherwise. If the relations between the two countries should become such that Canadian pulp and pulp wood could not be exported to the United States, one of the ideal conditions will have been reached, as by this means a wonderful stimulus would doubtless be given to the manufacture of paper, and thus the greatest possible benefit would come to Canadians from the manufacture of the raw material. But we do not expect that this condition will be experienced. If a prohibitory export duty should be placed on pulp wood, the paper makers of the United States would bring such pressure to bear upon their Government that no doubt the duty on wood pulp would be taken off entirely. Then capital would be freely invested in this country for the erection of pulp mills and there would be a demand for labor such as we have not yet seen.

With such an abundance of spruce timber admirably suited for the manufacture of pulp, our Government should disregard entirely all retaliatory measures which may be temporarily put into force by the United States, and should legislate solely with a view of building up manufacturing industries within our borders, which can never be accomplished so long as we allow our raw material to furnish the supply for pulp and paper manufacturers in other countries.

THE SEVEN ISLANDS PULP MILL.

The North Shore Power, Railway and Navigation Company, who are building a large pulp mill at Seven Islands, on the St. Lawrence River, have decided to increase the capacity of the mill from 150,000 tons to 250,000 tons, having satisfied themselves that there is a market for the larger output. Messrs. Ross & Holgate, consulting engineers, of Montreal, who were entrusted with the engineering work, have now been given entire charge of the construction work also, the company having found that sufficiently rapid progress was not being made. The engineers have, with much difficulty, secured several hundred workmen, principally Italians, who are living under canvas and have to be supplied not only with food but with every necessary of life, as there is no town or village within reach from which to obtain what is required. Supplies are brought down by boat from Quebec, but at the close of navigation operations must be suspended. It has been decided to locate the mill alongside the water power, which is situated seven miles from Seven Islands Bay, it having been found by calculation that it would be much cheaper to carry the product of the mill by railway to the shipping point than to locate the mill at the Bay and transmit electric power from the Falls with which to operate it. To do this would require a very large expenditure for copper, as a heavy current would be required.

One of the first undertakings, therefore, was the construction of a steam railroad seven miles in length, which pending the completion of the mill, will be used to carry in supplies and afterwards to convey the product of the mill to the shipping point. The company also own another water power, two or three miles farther distant from the water. These two water powers will have a capacity of about 80,000 h. p. It is proposed, at present, to develop 22,000 h. p. at the mill site. There are now under construction at the bay necessary wharves, and a sufficient number of houses will be built near the mill to accommodate 500 operatives and their families. These features of the undertaking are being pushed forward as rapidly as possible. The next to be commenced will be the construction of the dam, but this will probably not be started this year.

Seven Islands Bay is a natural harbor, being almost land-locked and about seven miles in diameter. It provides accommodation for vessels of 30 feet draught and is open all the year. A comparison last winter showed the temperature to be several degrees higher than at Peterboro, Ont.

This bay is 350 miles nearer Great Britain than is Quebec. It is therefore not improbable that it will, in the future, become an important ocean port.

The North Shore Power Company have purchased 1,000 miles of spruce limits in the neighborhood of the mill site. In the same locality are iron deposits giving by analysis 60 per cent of pure iron. The whole of this northern section of the province of Quebec is believed to be rich in minerals, as well as in timber, and abounds with excellent water powers, so that a great development is looked for within the next decade.

In reporting on the wood pulp market in France, M. A. L. Grondal, of Paris, states that that the demand is slow and prices show a downward tendency.

PULP NOTES.

The Acadia Pulp & Paper Mills Company, of Halifax, N.S., have declared a semi-annual dividend of 3½ per cent., payable September 15th.

The Chicoutimi Pulp Company, of Chicoutimi, Que., are building a large addition to their mills, which will increase their capacity to 27 grinders, capable of turning out 60,000 tons of pulp per annum.

A report has been going the rounds of the press that J. C. Kelly, of Ottawa, has under way the organization of an immense paper combine, to include eleven of the largest paper mills in England, with over $25,000,000 capital. Rumor states that large pulp and paper mills will be erected on the Ottawa river.

Mr. D. Lorne McGibbon, manager of the Laurentide Pulp Company, of Grand Mere, Que., states that the exports of pulp from Canada will be smaller this year than for some time, owing to the fact that last year low water curtailed the production in Norway and Sweden, a condition which has not been experienced this year.

A new pulp company will probably locate at North Bay. Recently Messrs. Warren and Gray, of Toronto, and Labrecke, of Philadelphia, discussed the project with members of the town council. For certain privileges, including exemption from taxation, they promised to expend $250,000 within the next twelve months and pay out $200,000 yearly in wages.

A Swedish chemist is now in Canada superintending the erection of a plant to manufacture peat fuel. In working up the by-products he proposes to produce a fibre for paper making. From this fibre he says that he has made in England a paper that cost £2 10s. per ton and that sold at £6 a ton. He also says that using 80 per cent. of peat, with other paper making materials, he can produce news and writing papers.

The British market, says Paper and Pulp, continues depressed, and mechanical is now freely offered at 40s per ton c.i.f. U.K. ports (50 per cent. moist.) Papermakers would do well to contract at this price, as a rise in price during the winter and spring months is inevitable. Chemical pulps are also very low at present, and contracts have been closed for next year at prices very favorable to papermakers.

Mr. George Cahoon, jr., for many years a director of the Glen Falls Paper Company at Glen Falls, N. Y., and one of the division superintendents of the International Paper Company, has been appointed vice-president and managing-director of the Laurentide Pulp Company, of Grand Mere, Que. It is understood that Mr. Cahoon will have entire control of the manufacturing end of the business. He is recognized as one of the ablest paper manufacturers on the continent, and is stated to have acquired a substantial interest in the stock of the Laurentide Pulp Company.

The Ottawa & Hull Power Company have decided to build their proposed paper and pulp mills on the Quebec side of the Chaudiere. William Kennedy, of Montreal, is now working on plans for the development of the power, and plans of buildings and machinery are in course of preparation. The J. R. Booth mill be erected about a quarter of a mile from the site of the Hull & Ottawa Company's mill. Mr. Booth has given the contract for water wheels and accessories to the Jenckes Machine Company, of Sherbrooke, Que. It will total 10,000 horse-power.

At the annual meeting of the French Papermakers, Association held at Paris last month, one of the members complained of the French customs authorities, who persisted in levying the tax of 20 francs per ton on all wood pulp imported, irrespective of whether it were dry or moist. In the case of moist pulps the duty is of course levied on the contained water as well as on the pulp, so that the actual duty on the latter is 40 francs per ton. It was suggested that, even if no distinction were made in this direction, mechanical pulps should be taxed at a much lower rate, say 10 francs per ton for dry and 5 francs for moist.

THE DOUGLAS FIR.

What the white pine is to Eastern Canada the Douglas Fir is to the Province of British Columbia, where magnificent forests of this tree still tower in majestic grandeur, reaching a height of two hundred or even three hundred feet. In such a forest, as in the shadow of the mountains, man begins to realize the great forces of nature which are working around him, and in his breast there rises that feeling of awe and reverence which must have influenced the worshippers of an earlier day when they chose the forests as the temple of their gods. Look up, and still further up, and still the great tree towers till the eyes are strained in vain seeking to measure its height. Think of the power of unwearied effort by which little by little, from the diminutive seedling, such an immense column has been raised, and think of the pulsating life by force of which the water needful for its existence is carried through all that height of trunk and spread of branch; and man, be he Christian, or pagan or unbeliever, must recognize that he is here in the presence of one of the greatest manifestations of that mystery of power which he may designate life, but which he does not therefore any the more clearly understand.

This tree is known most generally in Canada as the Douglas Fir, though it is also designated as the Red Fir and the Oregon Pine. The botanical name is Pseudotsuga Douglasii, or Pseudotsuga taxifolia, though the uncertainty about its classification before this name was settled upon may be seen from the other scientific names which have been applied to it, namely, Pinus taxifolia, Pinus Douglasii, Abies mucronata, Abies Douglasii. The generic name is derived from pseudo, false, and tsuga, hemlock, and the first specific name from that of the man who first described it and introduced it into Europe, while the second is from taxus, yew, and folium, a leaf. The flat leaves are scattered over the twigs, but they have this special character which distinguishes this tree, that they are set with the edges up and down instead of with the flat side uppermost as usual. It reaches its best development in the coast district, though it is found all through the southern part of British Columbia up to a height of 6,000 feet, where it appears in a stunted form. It passes over the Rockies as far east as the vicinity of Calgary. Its northern range is irregular and still somewhat uncertain. The great size of the trees is shown by the fact that as much as 500,000 feet have been cut from one acre, while the average is from 30,000 feet to 50,000 feet, although only the trees between two and seven feet in diameter are usually cut. The bark is largely used for tanning, and the wood is suitable for a great variety of purposes, such as house building, ship building, bridges, wharves, piles, masts, furniture, fencing, etc. When excluded from the air it is very durable, and is therefore useful for piles, and the great length of the timbers which can be obtained makes it specially valuable for bride building and similar purposes.

In the districts of British Columbia, where the winter is like that of the East, the logging is somewhat similar, but in the part where lumbering in Douglas fir is most important snow is unknown and winter unheard of. The usual method of cutting is for the axeman to cut a deep notch on each side of the tree at a height which can be conveniently reached. In these notches pieces of board, long and wide enough for standing room, with an iron prong pointing upward, are inserted. The weight of the men on the boards drives the prong into the wood and makes everything firm. From this vantage place a cut is made by the axe in the side of the tree to which it is to fall and the remainder of the cutting is done with a crosscut saw. The object of leaving so high a stump is apparently to get above the swell of the root. It will be easily understood that the felling of a tree two hundred feet in height is a difficult operation, and if not carefully handled may result in great damage to the timber either from splitting or from the impact of the fall. If the tree is growing on a slope it is usually felled upward, and in other cases it is felled so as to have the force of the fall broken by trees of inferior value, and sometimes even an artificial bed of branches is prepared. If long timber is not required the log is cut in lengths from twenty-four to forty feet, the bark is cut off or "rossed" so that the pieces will slip easily, and they are drawn over a skidway prepared by laying across the road at distances of a few feet round logs of a diameter up to fourteen inches. The skidway is sometimes made more slippery by greasing the logs. The motive power may be oxen or horses in teams of a dozen or more, the oxen being now largely superseded by the quicker-stepping horses, or it may be by a stationary engine working a cable on a drum, or even a steam tramway may be run into the scene of operations. Logs of such great diameter are not easily sawn, and at first the work was done by two circular saws, one working from above and the other from below, a method which required a very nice adjustment of the saws. Since the introduction of the band saw it has taken the place of the older method. The proximity of the good timber to the coast gives great facilities for shipping.

With such magnificent forests it might easily be concluded that the lumber industry in British Columbia should be in a flourishing condition. The want of a market is, however, a great difficulty. The local population is small, the North-West Territories are not yet sufficiently populated to make a large demand, the market to the south is practically closed by a heavy duty on lumber, and the shipping facilities for Australia and the far East are not sufficient as yet to make the business very extensive in competition with the American West Coast timber. Within the last few years conditions have commenced to show signs of improvement, but the average price last year was only about $10 a thousand.

*Contributed by the Officers of the Canadian Forestry Association.

DOUBLE CUTTING BAND SAWS.

By N. E. Hoff.

Commence with the band mill and line bottom wheel with track, no lead either way; then put top wheel in line with bottom, no crossline or overhang. The face of wheels should have a very slight and true crown from edge to edge. This done, commence with saws and see that they are straight, no long or short back. Commence in the extreme center of blade and open them just deep enough to fit nicely over the crown of wheels and have them hug the wheel the hardest, or the most strain, at the extreme edges of the face, with a gradual decrease in strain from each edge towards the center. This done, put saw on top of bench and level on inside of same that part of saw which is lying on leveling slab by going over it with straight edge reaching across full width of saw, and level it down so that the most light shows under straight edge in center of blade (where tension is deepest), with a gradual decrease towards the edges, until you come to the tires, which should not show any light under the straight edge. After which again go over this section with straight edge, first on one edge of saw, then on the other, by holding straight edge say ⅔ the way across the blade, looking for and hammering down any small

lumps which may appear on the particular edge and which you were unable to locate when holding the straight edge across the entire width of saw. When holding the straight edge ⅔ the way across the blade, the light should not show as deep under it as when holding it across entire width of blade, because when holding it across entire width of blade, both ends of straight edge are resting on the two tires or thickest part of saw, and when holding only two-thirds the way across the blade only one end of straight edge is resting on the tension or thin part of saw. In like manner go over the entire inside of saw, after which put it down on the bench "on the bottom" and go over the outside of saw in the same manner as with the inside, always bearing in mind how much light showed under the straight edge when you were leveling the inside and trying to equalize same when leveling the outside of saw, being especially careful to have no light show under straight edge on either side of saw from where the tension terminates at the edges. If you are not satisfied that you have the saw sufficiently level to insure its doing good work after going over each side, repeat the operation until you are satisfied.

The most important part of bench work is to have saws level. For this work I have a cast iron leveling slab about 3x12 inches by 6 feet. This slab has a perfectly straight and level face, both lengthwise and crosswise, and forms a part of my bench. I use a 14-inch straight edge to level by, which I am very particular to see is straight at all times.

When do I put the tension in a saw, or go over it to equalize the tension? Answer, after leveling my saw on the inside the entire length and while leveling the outside. I level a section on the outside and then try the tension gauge on that section. If any tight places appear, I roll them out, after which I again try my straight edge to that particular part, to see if in putting in the tension my roller has punched through or pulled up that particular part of saw rolled on. If pulled up, I again level and try tension; if punched through, I mark saw with chalk on the other side at that place, so I may know the cause of lump when I come to level on the other side again, which I would certainly have to do.

I have had men tell me it was not the fault of the roller that the saw was punched through or pulled up. To others of the same opinion I would advise them to try a saw on a roller which has a top roller with a more crowning face than the bottom, and see if the saw is not pushed through, or with the rollers vice versa, and also notice if the saw is not pulled up. I have my saw lying perfectly flat on the bench (the bench is in perfect line with the top face of bottom roller) when rolling in tension

In sharpening, a single cut sharpener equipped R and L hand is preferable to use of two separate sharpeners, for by using the same machine for sharpening each edge of saw, you are certain to obtain the same shape and hook in the teeth on each edge, consequently both edges, if properly gone over on the bench, ought to stand the same amount of feed. Moreover, in such case your swage will swage alike the teeth on both edges of saw. Always go over a newly swaged saw with a set gauge, making sure that the teeth are all perfectly straight.—From Baldwin, Tuthill & Bolton's Catalogue.