Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

- [x] *Coloured covers/* Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- [x] Bound with other material/ Relié avec d'autres documents
- [x] Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- [ ] Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- [ ] Coloured pages/ Pages de couleur
- [ ] Pages damaged/ Pages endommagées
- [ ] Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ *Transparence*
- [x] Quality of print varies/ Qualité inégale de l'impression
- [ ] Continuous pagination/ Pagination continue
- [ ] Includes index(es)/ Comprend un (des) index

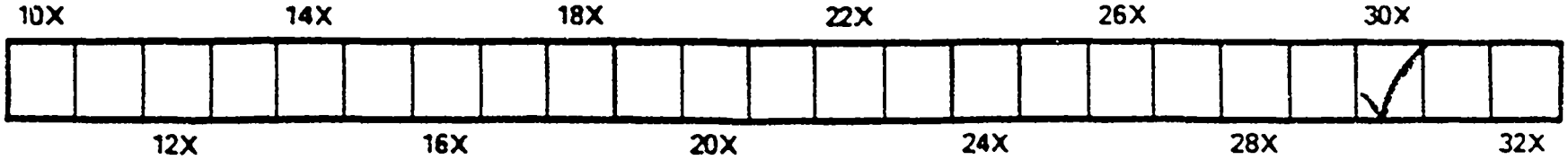
  Title on header taken from:/ Le titre de l'en-tête provient:

- [ ] Title page of issue/ Page de titre de la livraison
- [x] Caption of issue/ Titre de départ de la livraison
- [ ] Masthead/ *Générique (périodiques) de la livraison*

- [ ] Additional comments:/ Commentaires supplémentaires:

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

10X 12X 14X 16X 18X 20X 22X 24X 26X 28X 30X 32X



VOLUME XVII. NUMBER 8. | TORONTO, ONT., AUGUST, 1896 | TERMS, $1.00 PER YEAR Single Copies, 10 Cents.

THE CANADA LUMBERMAN

VOLUME XVII. NUMBER 8. } TORONTO, ONT., AUGUST, 1896 { TERMS, $1.00 PER YEAR Single Copies, 10 Cents.

MANUFACTURING CYPRESS LUMBER IN BRITISH COLUMBIA.

(Special Correspondence of the CANADA LUMBERMAN.)

AMONG the new milling industries in British Columbia is that of the manufacture of cypress lumber, for which a new mill is being built at Takush Harbor, on the south shore of Smith's Sound, on the mainland coast, some miles north of Vancouver Island. For expert purposes this is the most extreme limit of the lumber industry.

Last year several local capitalists of Vancouver, who had secured a concession of cypress limits on the north-west coast, were successful in disposing of it to a British syndicate at a large figure, and now it is in contemplation to operate on an extensive scale.

Cypress, or yellow cedar (Thuya Excelsa), commercially is of great value, though limited in area on the coast. It is expected that it will rank in the markets of the world with mahogany. It is found in quantities on Queen Charlotte Islands and in the interior of Vancouver Island, but is not so generally or easily accessible. Up to the present it has not entered into commercial operations to any material extent, and the present enterprise being a new departure, its success is looked forward to with some degree of interest.

The Thuya Excelsa does not grow so large as the Gigantea, but it is a harder, heavier and choicer wood. It has a specific gravity about equal to the Douglas fir, will bear an equal strain, and is as durable as oak. In addition, however, to these qualities it takes the finish of mahogany, and is not unlike it in general appearance. There is nothing richer looking among our woods in exterior, unless it be the red cedar, which, however, is much more susceptible to injury and "dinges," and scratches easily.

The limits in question are situated in the vicinity of Takush Harbor, and are owned by the Takush Harbor Timber Trading Co., Ltd., the head office of which is at 15 and 16 George street, Mansion House, London, E. C. It is proposed to manufacture spruce and red cedar as well.

The mill, externally and interiorly, will be one of the most complete and modern on the coast, and is being fitted up entirely by the Wm. Hamilton Manufacturing Co., of Peterborough, Ont., and Vancouver, of which Mr. Robert Hamilton is manager for British Columbia. The building is 200 × 50 ft., 14 ft. high, with engine and boiler house 56 × 56 × 20 feet, the latter being rendered fire-proof by a covering of corrugated iron. The engine is a heavy Corliss frame, high speed, with automatic governors, and when running 600 ft. piston speed will develop 380 h. p. There are four 60" diameter boilers, 14 ft. long, return tubular and a w. pressure of 125 lbs. to the sq. inch; tubular heater of latest design suitable for heating feed water; fired automatically, the fuel being fed by an endless chain running over the boiler.

With regard to the fixed and moveable machinery and the operation of the same: The logs are hauled from the water in the usual way by endless chains with cast steel bunks, having spuds inserted therein. The log carriage has the latest cast steel bunks opening 60" from the saw rig, capable of cutting logs 64" in diameter, 50 ft. long, by using a double circular saw-rig, having two vertical saws standing one above the other, the diameters of which are 58" each, inserted hoe teeth being used in both saws. From the saw-rig to the extreme end of the mill there is a line of cast-iron rolls called "line rolls" for moving the lumber to the outer end of the mill. The carriage on the log side of the mill is driven to and fro with a Cunningham twin engine steam feed. On the opposite side of the mill there is a resaw machine capable of cutting up a cant 40" wide and 36 ft. long, the carriage being operated by a Prescott steam or "shot-gun" feed. There is also on the resaw side a line of cast iron line rolls for moving lumber. When the lumber passes from the double circular, any portion of it to be resawed is carried across the mill by an endless chain transfer. The mill is equipped with a Pacific coast gang-edger, two trimmer saws, conveyors for slabs and debris, etc., etc. The capacity of the mill will be 75,000 ft. in ten hours.

BLOCKED AGAIN.

UNCLE SAM:—"Judge Wheeler's decision smashed the first gate, but by the time you get through that obstruction my friend here will have a gate that you can't smash."

A LEGAL DECISION.

THE Supreme Court of Minnesota held, in the recent case of Breault vs. Archambault et al., that under the provisions of the log lien law, General Statutes 1894, sections 2451 to 2464 inclusive, a cook and his assistant employed at a logging camp for the purpose of cooking for the men actually and directly engaged in cutting, hauling and banking logs, are entitled to liens upon such logs for the amount due for such services; that a blacksmith employed at such camp in shoeing the horses, in repairing the sleds, and in mending and keeping in order tools used by the men actually and directly engaged in the common enterprise, is also entitled to a lien upon the logs, and that the manual labor for which a lien is given under section 2451 is not merely the personal labor of a lien claimant, but includes labor performed by his teams and servant under a contract for a gross price per month for both.

With some kinds of piston-rod packing, when the engine stands still over night, there is a deposit of packing and rust on the rod where the packing comes in contact with it. This evil may be greatly lessened by locating a sight feed oiler so that it will drop cylinder oil on the rod continually while running.

HON J. M. GIBSON,

COMMISSIONER OF CROWN LANDS FOR ONTARIO.

THE formation of the new Liberal government at Ottawa, and the appointment therein of Sir Oliver Mowat as Minister of Justice, has necessitated the reconstruction of the Ontario cabinet. Hon. A. S. Hardy, Commissioner of Crown Lands for Ontario, becomes Attorney-General, while Hon. J. M. Gibson takes charge of the Crown Lands Department, and is succeeded as Provincial Secretary by Hon. W. D. Balfour, the late speaker of the House.

The appointment of Mr. Gibson to the position of Commissioner of Crown Lands is a matter of great interest to readers of this journal,

HON. J. M. GIBSON.

and we therefore take pleasure in presenting herewith a capital likeness of the new head of the department. Having had charge of the public finances of the province for a number of years, he is well qualified to manage the department of which he has been given control, and from which is derived a large share of the provincial revenues.

Lieut.-Col. Hon. John Morrison Gibson was born in the Township of Toronto, County of York, Province of Ontario, on the 1st of January, 1842. He is a son of the late Wm. Gibson, farmer, who came to Canada in 1827 from Glamis, Forfarshire, Scotland, and a cousin of the late David Smith, who formerly represented North York in the old Parliament of Canada, and who was prominently associated with the late W. Lyon Mackenzie in the troubles of 1837.

Educated at the Central School, Hamilton, and University College, Toronto, he took the degree of B. A. in 1863, carrying off the Prince's prize of that year, together with the silver medal in classics and modern languages and the prize in Oriental languages. In 1867 he was called to the bar, and entered the law course at Toronto University, receiving the degree of L. L. B. and a gold medal in 1869, and was afterwards made examiner in that faculty for the years 1871-72. For many years he was a member of the Board of Education in Hamilton and for two years chairman of the board. He was elected a member of the Senate of Toronto University in 1873, and re-elected in 1878 and 1883.

Mr. Gibson, as lieutenant of the 13th Battalion of Hamilton, was with his regiment at Ridgeway in 1866, and now commands that corps. He has attained a high reputation as a marksman, and has won many valuable prizes, one of which was the Prince of Wales' prize of £100 and a badge in 1879.

Mr. Gibson is a prominent member of the Masonic order, having been Grand Master of the Grand Lodge of Ontario during the years 1893 and 1894.

The political career of the newly appointed Commissioner commenced in 1879, when he was elected to the Legislative Assembly at the general election. In 1883 and in 1886 he was re-elected, and sworn a member of the Executive Council and appointed Provincial Secretary on the 18th January, 1889, when he was again re-elected by acclamation. Since that time the finances of the province have been in his keeping.

Mr. Gibson is endowed with a wise business head and a large capacity for hard work. By his friends he is said to be a charming companion; to his political opponents he is ever courteous and considerate, and to strangers one of the kindest and most obliging of men.

Under his direction the affairs of the Crown Lands Department will no doubt be successfully administered.

TIMBER CULLERS.

THE following have passed the examination for timber cullers in the province of Quebec:

F. W. Mahon, Hintonburg; J. W. Fraser, Ottawa; J. F. Presley, Ashton; Robt. Laing, Ottawa; John Graham, Arnprior; H. J. Long, Mattawa; S. B. Wallace, Rockland; D. R. Macfarlane, Ottawa; J. Flechette, Buckingham; W. Burns, Mattawa; E. Quackenbush, Ottawa; G. Griffith, Pembroke; Thomas Bramley, Pembroke; J. C. Bartram, Ottawa; Thos. Coburn, Pembroke; Michael Villeneuve, Ottawa; W. H. Gonegan, Point Alexander; C. Hennessey, Ottawa; J. F. French, Deux Rivie[illegible]; John Ryan, Quio; J. A. Campbell, Galetta; Nelson Hartman, Bason du Lievre; J. Brown, Buckingham; J. E. Varin, Hull; A. McGillivray, Thurso; A. McQuins, Thurso; W. J. Kennedy, J. Campbell, H. Martin, J. J. Goulet, A. Murphy, Buckingham; F. H. Wallace, Ottawa; Oscar Brooks, Lowe; P. McCabe, Buckingham.

CORRESPONDENCE

Letters are invited from our readers on matters of practical and timely interest to the lumber trades. To secure insertion all communications must be accompanied with name and address of writer, not necessarily for publication. The publisher will not hold himself responsible for opinions of correspondents.

CENTRETOWN, Kentucky, U. S., June 23rd, 1896.

Editor CANADA LUMBERMAN:

DEAR SIR,—Will you please give me the following information: Is not black oak (Quercus tinctoria) an inferior kind of timber, and not in demand in the general trade? If it sells at all, does it not sell as and under the name of red oak (Quercus rubra)? If not, what is the difference in price and demand for red oak and black oak in the general trade?

Yours truly,
WM. M. WARDEN.

[Black oak is not by any means an inferior kind of timber. In fact, it is considered superior to red oak for finishing purposes, and commands about $3 more per thousand feet. So far as Canada is concerned, the supply of black oak is extremely limited, which necessarily limits the demand therefor. A small quantity of it is to be found in Ontario, in the vicinity of the Georgian Bay district.—ED. CANADA LUMBERMAN.]

The Sneezewood tree (so-called) is a native of South Africa. The dust from the wood has the same effect as strong snuff and is very bitter to the taste. The wood is valuable because so lasting.

SIR HENRY GUSTAVE JOLY,

CONTROLLER OF INLAND REVENUE FOR THE DOMINION.

THE LUMBERMAN takes pardonable pride in again presenting to its readers the portrait of one whose name has been connected with the conservation of the forests of Canada for many years, in the person of Sir Henry Gustave Joly, who has recently been appointed Controller of Inland Revenue in the Dominion Government.

Mr. Joly was born in France on the 5th of December, 1829, and educated in Paris and Geneva, Switzerland. He was called to the bar of Lower Canada, March, 1855, and appointed a Q.C. in 1878.

His political career commenced in 1863, when he was returned for Lotbiniere, and after Confederation continued to represent the county in the local legislature. He sat in both houses until the general election of 1874, when he retired from the Commons and retained his seat in the assembly. He was re-elected at the general elections of 1875, '78, '82 and '86, but retired from public life in that year, when the Riel troubles arose in Quebec. He declined a portfolio in the Dominion cabinet and elevation to the senate in 1877.

In May, 1878, he was called upon to form an administration upon the dismissal of the De Boucherville cabinet by the late Lieut.-Governor Letellier de St. Just. He occupied office until October 29, 1879, when he voluntarily resigned in favor of Mr. Mercier.

After a retirement of ten years, he again offered himself for public honors on June 23rd last, and was elected to represent the constituency of Portneuf, Que., defeating the conservative candidate, Mr. H. Stafford Lawrence.

Mr. Joly has always taken a deep interest in

SIR HENRY GUSTAVE JOLY.

forestry, and is the father of Arbor Day in the province of Quebec. He is a firm believer in the preservation of our forests, and devotes considerable time to the study of natural history. His lectures before scientific societies have been of much benefit to the cause to which he devotes himself, notable among which was one delivered last year in the Somerville course, in the Natural History Society's building, Montreal, on "The Value of Forest Trees, Individually and Collectively."

The subject of our sketch was knighted on the Queen's birthday, 1895. He married Miss de Lotbiniere, and some years ago was authorized to add that name to his own.

CHARACTERISTICS AND PROPERTIES OF WOOD.

Although wood has been universally in use for a great number of years, there is still said to exist a lack of knowledge by architects, lumbermen and woodworkers regarding its characteristics and properties. We print herewith some abstracts from Bulletin No. 10 of the Department of Agriculture of the United States, which contains some useful and valuable information regarding the nature of the various woods. The work is compiled by Mr. Filbert Roth, Special Agent in Timber Physics, under the direction of Mr. B. E. Fernow, Chief of the Division of Forestry.

METHOD OF SAWING TIMBER.

The manner in which the stick is sawed from the tree has a remarkable influence upon its qualities and behavior, and it should, therefore, either be specially sawed or selected with a view to its character and to the purpose for which it is used. This is a matter fully appreciated among only a few wood users, like the wheelwrights, piano makers, etc., but it needs to be observed much more than it is, even in building. Quarter or rift sawing, i. e., cutting sticks or boards out of the log in such a manner that the annual rings are cut through as nearly as possible radially, has lately been practised largely for the sake of the beauty of the even grain thus obtained, and also for flooring on account of the better wear which the even exposure of the grain (hard bands of summer wood on edge) secures; but it should be much more widely applied to secure greater strength and more uniform seasoning and thus to reduce to some extent the one drawback to wood as a material of construction, that is, its liability to "working" (shrinking and swelling). The reason for the superiority of quarter sawed pieces, as well as the general fact that the manner of sawing out a stick affects the general character and behavior of the same, will appear from the following considerations:

A square column or beam cut so as to contain the heart or pith of the tree in its centre—which, by the way, is the weakest part on account of

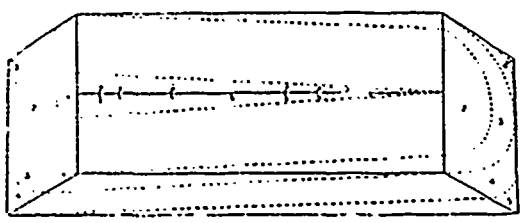


Fig 1.—A piece of sawn timber cut through along the pith, illustrating its structural aggregates

the many knots which it invariably and necessarily contains—consists in the main of five structural aggregates (see fig. 1), namely: (1) In the centre a cone of wood fibers with the base in the butt end and the apex in the top end, the base representing the rings of as many years as it took the tree to attain the height of the column; none of the fibers belonging to these rings appear in the top section excepting those of the last ring which forms the apex of the cone; (2) a hollow cylinder of material surrounding the cone, all fibers of which are found in both sections and continuously through the whole length of the column; all the entire rings at the bottom belong in this cylinder, and undoubtedly form the strongest part of the column, (3) surrounding this cylinder a partial cylindrical envelope of wood fibers, all of which are represented in the top section, but only a part appear at the corners of the bottom; most of them, therefore, do not run through the whole length, but are cut through at varying lengths, thereby presenting the "bastard faces" on the sides of the column; (4) a partial envelope whose radial extent is limited by the corners of the basal section, imperfect at both ends; (5) the corners at the top, three-sided pyramids with the base in the top section, the fibers running out at varying lengths.

Now, it will be readily admitted that each of these "structural aggregates" has a different value in the combined strength of the whole. If the stick be cut with the center or pith in one side (see fig. 2) all these aggregates will be halved; if the stick be cut out differently, for instance, with the heart entirely out, or if it be made longer or shorter, or rectangular instead of

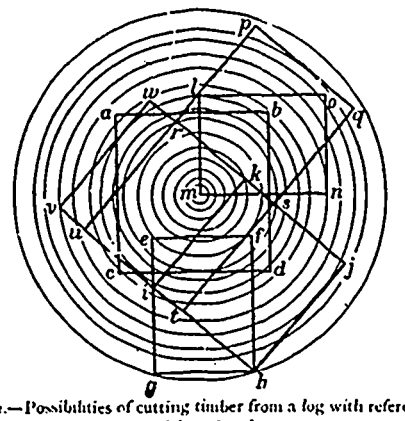


Fig. 2.—Possibilities of cutting timber from a log with reference to position of grain.

square, in each case the proportion of each of the aggregates changes, and hence it stands to reason that the strength of the column, or beam, or stick, changes according to the manner in which it is cut from the tree. This most evident and important fact has, it seems, escaped our best engineers and experimenters, who have tested beams without taking account of this disturbing element, and it is certainly overlooked most generally by builders and carpenters in their selection of material.

While it may perhaps not be expected that the sawing at the mill will be done with more care so as to secure the best results in application, or that the special advantage of quarter sawing will soon be sufficiently appreciated so as to extend its use in such a manner that the greater efficiency of the quarter-sawed material will compensate for the greater expense of the operation, wood users may at least be expected to make their selections from the sawed material in the yard, and shape it for their particular use with greater care.

WEIGHT OF WOOD.

A small cross section of wood, as in fig. 3, dropped into water, sinks, showing that the substance of which wood fiber or wood is built up is heavier than water. By immersing the wood successively in heavier liquids, until we find a liquid in which it does not sink, and comparing the weight of the same with water, we find that wood substance is about 1.6 times as heavy as water, and that this is as true of poplar as of oak or pine.

Separating a single cell, as shown in fig. 4, a, drying and then dropping it into the water, it floats. The air-filled cell cavity or interior reduces its weight, and, like a corked empty bottle, it weighs less than the water. Soon, however, water soaks into the cell, when it fills up and sinks.

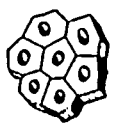


Fig. 3 Cross section of a group of wood fibers.

Many such cells grown together, as in a block of wood, sink when all or most of them are filled with water, but will float as long as the majority are empty or only partly filled. This is why a green, sappy pine pole soon sinks in "driving" (floating). Its cells are largely filled before it is thrown in, and but little additional water suffices to make its weight greater than that of the water.

In a good-sized white pine log, composed chiefly of empty cells (heartwood), the water requires a very long time to fill up the cells (five years would not suffice to fill them all), and therefore the log may float for many months. When the wall of the wood fiber is very thick (five-eighths or more of the volume), as in fig. 4, b, the fiber sinks whether empty or filled. This applies to most of the fibers of the dark summerwood bands in pines, and to the compact fibers of oak or hickory, and many, especially tropical woods, have such thick-walled cells and so little empty or air space that they never float.

Fig. 4.—Isolated fibers

Here, then, are the two main factors of weight in wood: The amount of cell wall, or wood substance, constant for any given piece, and the amount of water contained in the wood, variable even in the standing tree, and only in part eliminated in drying.

In general, it may be said that none of the native woods in common use in this country are, when dry, as heavy as water, i. e., 62 pounds to the cubic foot. Few exceed 50 pounds, while most of them fall below 40 pounds, and much of the pine and other coniferous wood weighs less than 30 pounds per cubic foot.

Weight of Kiln-dried Wood of Different Species.

	Specific weight.	Approximate. Weight of 1 cubic foot.	Approximate. Weight of 1,000 feet of lumber.
		Pounds.	Pounds.
(a) Very heavy woods: Hickory, oak, persimmon, osage orange, black locust, hackberry, blue beech best of elm, and ash	0.70 0.80	42-48	3,700
(b) Heavy woods: Ash, elm, cherry, birch, maple, beech, walnut, sour gum, coffee tree, honey locust, best of Southern pine, and tamarack	.60 .70	36-42	3,200
(c) Woods of medium weight: Southern pine, pitch pine, tamarack, Douglas spruce, western hemlock, sweet gum, soft maple, sycamore, sassafras, mulberry, light grades of birch and cherry	.50 .60	30-36	2,700
(d) Light woods: Norway and bull pine, red cedar, cypress, hemlock, the heavier spruce and fir, redwood, basswood, chestnut, butternut, tulip, catalpa, buckeye, heavier grades of poplar	.40 .50	24-30	2,200
(e) Very light woods: White pine, spruce, fir, white cedar, poplar	.30 .40	18-24	1,800

In general, it may be said that none of the native woods in common use in this country are, when dry, as heavy as water, i. e., 62 pounds to the cubic foot. Few exceed 50 pounds, while most of them fall below 40 pounds, and much of the pine and other coniferous wood weighs less than 30 pounds per cubic foot.

The weight of the wood is, in itself, an important quality. Weight assists in distinguishing maple from poplar. Lightness, coupled with great strength and stiffness, recommends wood for a thousand different uses. To a large extent weight predicates the strength of the wood, at

least in the same species, so that a heavy piece of oak will exceed in strength a light piece of the same species, and in pine it appears probable that, weight for weight, the strength of the wood of various pines is nearly equal.

Since ordinary lumber contains knots and also more water than is here assumed, and also since its dimensions either exceed or fall short of perfect measurement, the figures in the table are only approximate.

Thus, 1,000 feet, B. M., of longleaf pine weighs:

	Pounds.
Rough and green	4,500
Boards, rough but seasoned	3,500
Boards, dressed and seasoned	1,000
Flooring, matched, dressed and seasoned	2,500
Weatherboarding beveled and dressed	1,000

MOISTURE IN WOOD.

The wood next to the bark contains the most water. In the species which do not form heartwood the decrease towards the pith is gradual, but where this is formed, the change from a more moist to a drier condition is usually quite abrupt at the sapwood limit. In longleaf pine, the wood of the outer 1 inch of a disk may contain 50 per cent. of water, that of the next, or second inch, only 35 per cent., and that of the heartwood only 20 per cent. In such a tree the amount of water in any one section varies with the amount of sapwood, and is therefore greater for the upper than the lower cuts, greater for limbs than stems, and greatest of all in the roots.

Different trees, even of the same kind and from the same place, differ as to the amount of water they contain. A thrifty tree contains more water than a stunted one, and a young tree more than an old one, while the wood of all trees varies in its moisture relations with the season of the year.

Contrary to the general belief a tree contains about as much water in winter as in summer. The fact that the bark peels easily in the spring depends on the presence of incomplete, soft tissue found between wood and bark during this season and has little to do with the total amount of water contained in the wood of the stem.

Even in the living tree a flow of sap occurs only in certain kinds of trees and under special circumstances; from boards, timber, etc., the water does not flow out, as is sometimes believed, but must be evaporated.[1]

The rapidity with which water is evaporated, that is, the rate of drying, depends on the size and shape of the piece and on the structure of the wood. An inch board dries more than four times as fast as a 4-inch plank and more than twenty times as fast as a 10-inch timber. White pine dries faster than oak. A very moist piece of pine or oak will, during one hour, lose more than four times as much water per square inch from the cross section, but only one-half as much from the tangential, as from the radial section.

In a long timber, where the end or cross sections form but a small part of the drying surface, this difference is not so evident. Nevertheless, the ends dry and shrink first, and being opposed in this shrinking by the more moist adjoining parts, they check, the cracks largely disappearing as seasoning progresses.

High temperatures are very effective in evaporating the water from wood, no matter how humid the air. A fresh piece of sapwood may lose weight in boiling water, and can be dried to quite an extent in hot steam.

Kept on a shelf in an ordinary dwelling wood still retains 8 to 10 per cent. of its weight of water, and always contains more water per pound than the surrounding air. Nor is this amount of water constant; the weight of a pan full of shavings varies with the time of day, being on a summer day greatest in the morning and least in the afternoon.

Dissicating the air with chemicals will cause the wood to dry, but wood thus dried at 80° F. will still lose water in the kiln. Wood dried at 120° F. loses water still if dried at 200° F., and this again will lose more water if the temperature is raised. So that absolutely dry wood can not be obtained, and chemical destruction sets in before all the water is driven off.

On removal from the kiln the wood at once takes up water from the air, even in the driest weather. At first the absorption is quite rapid; at the end of a week a short piece of pine, 1½ inches thick, has regained two-thirds of, and, in a few months, all the moisture which it had when air dry, 8 to 10 per cent., and also its former dimensions.

In thin boards all parts soon attain the same degree of dryness; in heavy timbers the interior remains moister for many months, and even years, than the exterior parts. Finally an equilibrium is reached, and then only the outer parts change with the weather.

With kiln-dried wood all parts are equally dry, and when exposed the moisture coming from the air must pass in through the outer parts, and thus the order is reversed. Ordinary timber requires months before it is at its best; kiln-dried timber, if properly handled, is prime at once.

Dry wood, when soaked in water, soon regains its original volume, and in the heartwood portion it may even surpass it; that is to say, swell to a larger dimension than it had when green. With the soaking it continues to increase in weight, the cell cavities filling with water, and if left many months all pieces sink. Yet even after a year's immersion a piece of oak 2 by 2 inches and only 6 inches long still contains air, i. e., it has not taken up all the water it can. By rafting, or prolonged immersion, wood loses some of its weight, soluble materials being leached out, but it is not impaired either as fuel or as building material. Immersion and, still more, boiling and steaming reduce the hygroscopicity of wood and, therefore, also the troublesome "working" or shrinking and swelling.

Exposure in dry air to a temperature of 300°F. for a short time reduces, but does not destroy, the hygroscopicity and with it the tendency to shrink and swell. A piece of red oak, which has been subjected to a temperature of over 300° F., still swells in hot water and shrinks in the kiln.

In artificial drying, temperatures of from 158° F. to 180° F. are usually employed. Pine, spruce, cypress, cedar, etc., are dried fresh from the saw, allowing four days for 1-inch boards; hard woods, especially oak, ash, maple, birch, sycamore, etc., are air-seasoned for three to six months, to allow the first shrinkage to take place more gradually, and are then exposed to the above temperatures in the kiln for about six to ten days for 1-inch lumber. Freshly cut poplar and cottonwood are often dried directly in kilns.

By employing lower temperatures, 100° to 120° F., green oak, ash, etc., can be seasoned in dry kilns without danger to the material. Steaming the lumber is commonly resorted to in order to prevent checking and "case-hardening," but not, as has frequently been asserted, to enable the board to dry. Yard-dried lumber is not dry, and its moisture is too unevenly distributed to insure good behavior after manufacture. Careful piling of the lumber, both in the yard and kiln, is essential to good drying. Piling boards on edge or standing them on end is believed to hasten drying. This is true only because in either case the air can circulate more freely around them than when they are piled in the ordinary way. Boards on end dry unequally; the upper half dries much faster than the lower half, and horizontal piling is, therefore, preferable.

Since the proportion of sap and heart wood varies with size, age, species, and individual, the following figures must be regarded as mere approximations:

Pounds of Water Lost in Drying 100 Pounds of Green Wood in the Kiln.

	Sapwood or outer part	Heartwood or interior
(1) Pines, cedars, spruces, and firs	45-65	16-25
(2) Cypress extremely variable	50-65	18-60
(3) Poplar, cottonwood, basswood	60-65	40-60
(4) Oak, beech, ash, elm, maple, birch, hickory, chestnut, walnut, and sycamore	40 50	30-40

The lighter kinds have the most water in the sapwood, thus sycamore has more than hickory.

SHRINKAGE OF WOOD.

Shrinkage of wood is due to the fact that the cell walls grow thinner on drying. The thicker cell walls and therefore the heavier wood shrinks most, while the water in the cell cavities does not influence the volume of the wood. Owing to the great difference of cells in shape, size, and thickness of walls and still more in their arrangement, shrinkage is not uniform in any kind of wood. This irregularity produces strains, which grow with the difference between adjoining cells and are greatest at the pith rays. These strains cause warping and checking, but exist even where no outward signs are visible; they are greater if the wood is dried rapidly than if dried slowly, but can never be entirely avoided.

Temporary checks are caused by the more rapid drying of the outer parts of any stick; permanent checks are due to the greater shrinkage, tangentially, along the rings than that along the radius. This, too, is the cause of most of the ordinary phenomena of shrinkage, such as the difference in behavior of entire and quartered logs, "bastard" (tangent) and "rift" (radial) boards, etc., and explains many of the phenomena erroneously attributed to the influence of bark, or of the greater shrinkage of outer and inner parts of any log.

Once dry, wood may be swelled again to its original size by soaking in water, boiling, or steaming. Soaked pieces, on drying, shrink again as before; boiled and steemed pieces do the same, but to a slightly less degree. Neither hygroscopicity, i. e., the capacity of taking up water, nor shrinkage of wood can be overcome by drying at temperatures below 200° F. Higher temperatures, however, reduce these qualities, but nothing short of a coaling heat robs wood of the capacity to shrink and swell. Rapidly dried in the kiln, the wood of oak and other hard woods "case-harden," that is, the outer part

[1] The seeming exceptions to this rule are mostly referable to two causes, namely: (a) Clefts or "shakes" will allow water contained in them to flow out. (b) From sound wood, if very sappy, water is forced out whenever the wood is warmed, just as water flows from green wood in the stove.

dries and shrinks before the interior has a chance to do the same, and thus forms a firm shell or case of shrunken, commonly checked wood around the interior. This shell does not prevent the interior from drying, but when this drying occurs, the interior is commonly checked along the medullary rays, as shown in fig. 5. In practice this occurrence can be prevented by steaming the lumber in the kiln, and still better by drying the wood in the open air or in a shed before placing in the kiln. Since only the first shrinking is apt to check the wood, any kind of lumber which has once been air dried (three to six months for 1-inch stuff) may be subjected to kiln heat without any danger. Kept in a bent or warped condition during the first shrinking, the wood retains the shape to which it was bent and firmly opposes any attempt at subsequent straightening.

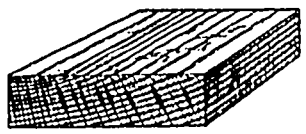


FIG. 5.—"Honeycombed" board. The checks or cracks form along the pith rays

Sapwood, as a rule, shrinks more than heartwood of the same weight, but very heavy heartwood may shrink more than lighter sapwood. The amount of water in wood is no criterion of its shrinkage, since in wet wood most of the water is held in the cavities, where it has no effect on the volume.

The wood of pine, spruce, cypress, etc., with its very regular structure, dries and shrinks evenly, and suffers much less in seasoning than the wood of broad-leafed trees. Among the latter, oak is the most difficult to dry without injury. Small-sized split ware and "rift" boards season better than ordinary boards and planks.

To avoid "working," or warping and checking, all high-grade stock is carefully seasoned, preferably in a kiln, before manufacture. Thicker pieces may be made of several parts glued together; larger surfaces are made in panels or of smaller pieces covered with veneer. *Boring* is sometimes resorted to to prevent the checking of wooden columns.

Since repeated swelling increases the injuries due to seasoning, wood should be protected against moisture when once it is dry.

Since the shrinkage of our woods has never been carefully studied, and since wood, even from the same tree, varies within considerable limits, the figures given in the following table are to be regarded as mere approximations. The shrinkage along the radius and that along the tangent (parallel to the rings) are not stated separately in the following table, and the figures represent an average of the shrinkage in the two directions. Thus, if the shrinkage of soft pine is given at 3 inches per hundred, it means that the sum of radial and tangential shrinkage is about 6 inches, of which about 4 inches fall to the tangent and 2 inches to the radius, the ratio between these varying from 3 to 2, a ratio which practically prevails in most of our woods.

Since only an insignificant logitudinal shrinkage takes place (being commonly less than 0.1 inch per hundred), the change in volume during drying is about equal to the sum of the radial and tangential shrinkage, or twice the amount of linear shrinkage indicated in the table.

Thus, if the linear average shrinkage of soft pine is 3 inches per hundred, the shrinkage in volume is about 6 cubic inches for each 100 cubic inches of fresh wood.

APPROXIMATE SHRINKAGE OF A BOARD, OR SET OF BOARDS, 100 INCHES WIDE, DRYING IN THE OPEN AIR.

	Shrinkage.
	Inches.
(1) All light conifers (soft pine, spruce, cedar, cypress	3
(2) Heavy conifers (hard pine, tamarack, yew), honey locust, box elder, wood of old oaks	4
(3) Ash, elm, walnut, poplar, maple, beech, sycamore, cherry, black locust	5
(4) Basswood, birch, chestnut, horse chestnut, blue beech, young locust	6
5) Hickory, young oak, especially red oak	Up to 10

INFLUENCE OF WEIGHT AND MOISTURE ON STRENGTH.

It has been stated that heavy wood is stronger than lighter wood of the same kind, and that seasoning increases all forms of resistance. Let us examine why this is so.

Since the weight of dry wood depends on the number of fibers and the thickness of their walls, there must be more fibers per square inch of cross section in the heavy than in the light piece of the same kind,* and it is but natural that the greater number of fibers should also offer greater resistance, i. e., have the greater strength.

The beneficial influence of drying and consequent shrinking is two-fold: (1) In dry wood a greater number of fibers occur per square inch, and (2) the wood substance itself, i. e., the cell walls, become firmer. A piece of green longleaf pine, 1 by 1 inch and 2 inches long, is only about 0.94 by 0.96 inch and 2 inches long when dry; its cross section is 10 per cent. smaller than before, but it still contains the same number of fibers. A dry piece 1 by 1 inch, therefore, contains 10 per cent. more fibers than a green piece of the same size, and it is but fair to suppose that its resistance or strength is also about 10 per cent. greater.

The influence of the second factor, though unquestionably the more important one, is less readily measured. In 100 cubic inches of wood substance the material of the cell walls takes up about 50 cubic inches of water and thereby swells up, becoming about 150 cubic inches in volume. In keeping with this swelling the substance becomes softer and less resistant. In pine wood this dimunition of resistance, according to experiments, seems to be about 50 per cent., and the strength of the substance, therefore, is inversely as the degree of saturation or solution.

SOME PRACTICAL CONCLUSIONS.

In framing, where light and stiff timber is wanted, the conifers excel; where heavy but steady loads are to be supported, the heavier conifers, hard pine, spruce, Douglas spruce, etc., answer as well as hardwoods, which are costlier and heavier for the same amount of stiffness. On the other hand, if small dimensions must be used, and especially if moving loads are to be sustained, hardwoods are safest, and in all cases where the load is applied in form of "shocks" or jars, only the tougher hardwoods should be employed. The heavier wood surpasses the lighter of the same species in all kinds of strength, so that the weight of dry wood and the structural features indicative of weight may be used as safe signs in selecting timber for strength.

In shaping wood it is better, though more wasteful, to split than to saw, because it insures straight grain and enables a more perfect seasoning.

For sawed stock the method of "rift" or "quarter" sawing, which has so rapidly gained favor during the last decade, deserves every encouragement. It permits of better selection and of more advantageous disposition of the wood; rift-sawed lumber is stronger, wears better, seasons well, and is less subject to "working" or warping.

All hardwood material which checks or warps badly during seasoning should be reduced to the smallest practicable size before drying, to avoid the injuries involved in this process; and wood once seasoned should never again be exposed to the weather, since all injuries due to seasoning are thereby aggravated. Seasoning increases the strength of wood in every respect, and it is therefore of great importance to protect wooden structures, bearing heavy weights, against moisture.

Knots, like crossgrain and other defects, reduce the strength of timber. Where choice exists, the knotty side of the joist should be placed uppermost, i. e., should be used in compression.

Season checks in timber are always a source of weakness; they are more injurious on the vertical than on the horizontal faces of a stringer or joist, and their effect continues even when they have closed up, as many do, and are no longer visible.

*This imperfect assumption is used only for comparison.

Rafted timber, kiln-dried or steamed lumber are, so far as our present knowledge extends, as strong as other kinds, and wherever any of these processes aids in a more uniform or perfect seasoning, it increases the strength of the material.

Pine "bled" for turpentine is as strong as "un-bled."

Time of felling, whether season of the year or phase of the moon, does not influence strength, except that summer-felled hardwood rarely seasons as perfectly as that felled in the fall, and to this extent an indirect influence may be observed, as well as by the fact that fungi and insects have a better opportunity for developing.

DURABILITY AND DECAY.

All wood is equally durable under certain conditions. Kept dry or submerged, it lasts indefinately. Pieces of pine have been unearthed in Illinois which have lain buried 60 or more feet deep for many centuries. Deposits of sound logs of oak, buried for unknown ages, have been unearthed in Bavaria; parts of the piles of the lake dwellers, driven more than two thousand years ago, are still intact.

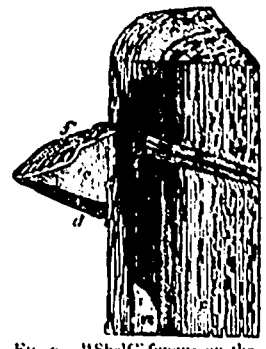


FIG. 6.—"Shelf" fungus on the stem of a pine. (Hartig.) a, sound wood; b, resinous "light" wood; c, partly decayed wood or punk; d, layer of living spore tubes; e, old filled up spore tubes; f, fluted upper surface of the fruiting body of the fungus, which gets its food through a great number of fine threads (the mycelium), its vegetative tissue penetrating the wood and causing its decay.

On the radial section of a piece of pine timber, with one of the shelf-like, fungus growths, as shown in fig. 6, both bark and wood are seen to be affected. A small particle of the half-decayed wood presents pictures like that of fig. 7. Slender, branching threads are seen to attach themselves closely to the walls of the cells, and to pierce these in all directions. Thus these little threads of fungus mycelium soon form a perfect network in the wood, and as they increase in number they dissolve the walls, and convert the wood substance and cell contents into sugar-like food for their own consumption. In some cases it is the woody cell wall alone that is attacked. In other cases they confine themselves to eating up the starch found in the cells, and merely leave a stain (bluing of lumber). In all cases of decay we find the vegetative bodies, these slender threads of fungi, responsible for the mischief. These fine threads are the vegetative body of the fungus, the little shelf is its fruiting body, on which it produces myriads of little spores (the seeds of fungi). Some fungi attack only conifers, others hardwoods; many are confined to one species of tree, and perhaps no one attacks all kinds of wood. One kind produces "red rot," others "bluing." In one case the decayed tracts are tubular, and in the direction of the fibers the wood is "peggy." In other cases no particular shapes are discernible.

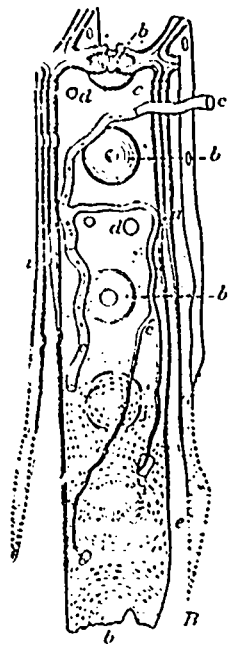


FIG. 7. Fungus threads in pine wood (Hartig.) a, cell wall of the wood fibers; b, bordered pits of these fibers; c, thread of mycelium of the fungus; d, holes in the cell walls made by the fungus threads, which gradually dissolve the walls as shown at e, and thus break down the wood structure.

It appears that warmth, preferably between 60° and 100° F., combined with abundance of moisture (but not immersion), is the most important condition favoring decay, and that the defense lies in the proper regulation or avoidance of these conditions, or else in the use of poisonous salts, which prevent the propagation of fungi.

CANADA LUMBERMAN
WOOD WORKERS MANUFACTURERS AND MILLERS' GAZETTE

MONTHLY AND WEEKLY EDITIONS
C. H. MORTIMER
PUBLISHER
CONFEDERATION LIFE BUILDING, TORONTO
BRANCH OFFICE:
NEW YORK LIFE INSURANCE BUILDING, MONTREAL

The LUMBERMAN Weekly Edition is published every Wednesday, and the Monthly Edition on the 1st day of every month.

TERMS OF SUBSCRIPTION:
One Copy, Weekly and Monthly, One Year, in advance..... $1.00
One Copy, Weekly and Monthly, Six Months, in advance..... .50
Foreign Subscriptions, $2.00 a Year.

ADVERTISING RATES FURNISHED ON APPLICATION

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

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 on which it can rely in its operations.

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

Advertisers will receive careful attention and liberal treatment. We need not point out that for many the CANADA LUMBERMAN, with its special class of readers, is not only an exceptionally good medium for securing publicity, but is indispensable for those who would bring themselves before the notice of that class. Special attention is directed to "WANTED" and "FOR SALE" advertisements, which will be inserted in a conspicuous position at the uniform price of 25 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.

TO VISITING LUMBERMEN.

Lumbermen visiting Toronto are invited to use the office of the CANADA LUMBERMAN as their own. We shall take pleasure in supplying them with every convenience for receiving and answering their correspondence, and hold ourselves at their service in any other way they may desire.

AN ENCOURAGING OUTLOOK.

THERE are many indications to be seen pointing to a more prosperous condition of affairs in Canada in the near future. The collapse of the South Africa boom, the unsatisfactory conditions prevailing in Australia, together with the unsettled state of affairs in the United States, as the result of which a large amount of British capital has recently been withdrawn from that country, and the possibility of the adoption of a silver coinage, which would lead to a still further withdrawal of British investments, all point to Canada as one of the most desirable fields for the investment of foreign capital in the future.

The recent gold mining developments in British Columbia are certain also to prove a most important factor in our future prosperity. We have the assurance of experts of the highest authority that the gold mines of British Columbia are the richest in the world. At the present time millions of foreign capital is being invested in these mines, and the prophecy is being made that a large influx of population will result within the next few years. Owing to the disappointing experience of British capitalists who invested largely in Grand Trunk securities, Canada has hitherto been shunned by the British investor, and other fields which were less promising have benefitted at our expense. It now seems probable that our turn will come in the immediate future. We have one of the richest countries, in point of natural resources, upon the face of the globe. We have also a favorable climate and unrivalled transportation facilities. We only lack capital and population, and it seems probable that these necessities are now about to come to us. If so, we may expect to witness improvement in every line, in which event the lumber industry will be among those which will be most benefitted.

POLITICS AND BUSINESS.

IT is subject for regret that a general election should take place in both the United States and Canada this year. There were indications at the commencement of the year of an improvement in business conditions, but these indications appear to have been dispelled, for the present at least, as the result of the elections which have just taken place in Canada and are now pending in the United States. These elections promise to cause a continuance of the business depression for some time to come.

The change of Government in Canada, and the probable change in the United States are further disturbing elements in the business situation. There is in the United States not only the probable change of Government to be considered, but the possibility, though no doubt a remote one, of the adoption of a silver coinage. In Canada there is the uncertainty consequent upon the belief that alterations of a more or less important character will be made in the existing tariff. We do not think that there is much cause for alarm on this score. There may be, and probably will be, some re-adjustment of the tariff, but we feel assured that Mr. Laurier and his colleagues have become fully aware that injury would be likely to result to the business interests of the country, and to themselves as a party from any radical changes. It must be borne in mind that a very large revenue is needed to meet the running expenses of Government, and unless some important savings can be effected, it will be impossible for the Government to revert to anything like a revenue tariff.

We trust, therefore, that the business community will not be deterred from pushing forward any enterprises which they may have already entered upon, or which they may have had in contemplation, from the fear that there will be any important disturbance of existing conditions. We have already experienced too long a period of business depression and inactivity, and it should now be the aim of everyone to assist in bringing about a more satisfactory condition of affairs at the earliest possible date.

With the incoming of a new Government it may not be out of place to point out that in the past the efforts of both political parties seem to have been too largely directed to securing or maintaining power, while the development of the country's resources has not received that measure of attention which its importance demands. The most important question which any Government can turn its attention to, is that of bringing into the country population of the proper class. The lack of population is at the foundation of many of our business difficulties. We have spent money liberally in the construction of public works to facilitate the transportation of passengers and merchandise, and in this respect are well equipped and have ample facilities to meet the requirements of a population many times as great as that which we possess. The interest charges arising out of the expenditure for these public works rests heavily upon our present small population, but would be lightly borne if we were able to add a few millions to our population. There is also a great disadvantage in doing business in so large a country so sparsely populated. It becomes necessary to travel long distances between centres of population. Had we a population of say from fifteen to twenty millions, business possibilities would be vastly increased, while the expense of getting this increased business would be little more than at present. We are pleased to see the success which is attending the effort to establish a fast steamship service between Canada and Europe. It is now all but certain that such a service will be established in the near future. This service should prove a most important factor in adding to our population and in the development of our resources.

CANADIAN TRADE WITH GREAT BRITAIN.

THE many inquiries which we receive from time to time from dealers in Great Britain for the address of Canadian dealers in various kinds of lumber strongly emphasizes the necessity of steps being taken to introduce our lumber more thoroughly in the British market. It is pleasing to know that the agitation in this journal some months ago along this line has not been without result, several manufacturers having intimated their intention of investigating the prospects for a remunerative export trade.

It should not be that prospective customers are obliged to make unusual efforts to be placed in communication with those from whom they desire to purchase goods. On the contrary, such arrangements should be made, by the establishment of a Canadian lumber bureau or otherwise, as would enable the purchaser to obtain without delay the names of manufacturers in Canada who are in a position to supply the desired stock.

The question of sending a representative to Great Britain, in the interest of the hardwood manufacturers, has not as yet borne fruit. The view is held by some dealers that it would be some time before there would result sufficient trade to cover the expense of such a move, partly owing to the conservatism which characterizes business men in the old country. But this argument is weakened by the fact that they are constantly enquiring for Canadian goods, with the view of opening up trade. And if Canadians are slow to appreciate the fact, it is quite probable that others will pre-empt the field.

The healthy condition of the British market at the present time with respect to Canadian goods should encourage manufacturers to take immediate action, especially as it is now almost certain that present values will be maintained throughout the season. Notwithstanding that the lumber receipts from Canada have thus far this year been greatly in excess of the same period last year, the consumption has been correspondingly large, with the result that available stocks are very light. Another encouraging feature is to be found in the increase in shipments of thin lumber to the British market during the present

season as compared with former years. Heretofore deals have been about the only manufacture of pine in demand across the Atlantic, but the experience of this year augurs well for the placing upon the British market in future of considerable lumber from one to two inches in thickness.

EDITORIAL NOTES.

A TRIAL shipment of Canadian red pine sleepers was recently made to Great Britain, a portion of which were used by the Great Western Railway. They are said to have been of excellent quality, thoroughly well creosoted and carefully manufactured. Heretofore Baltic fir has been largely used for railway sleepers, but a competitor has been found in Canadian pine. This trial order may prove to be the opening of quite an extensive trade for the Dominion.

THE Toronto Board of Trade is credited with having a branch called the "Lumber Section." For some time past it has not been active, and the removal from Toronto of Messrs. John Donogh and Joseph Oliver, two of its strongest members, the last-named being President, has caused it to become well nigh extinct. We trust the remaining members will make an effort to infuse new life into the organization, especially in view of the recognized necessity of an association of lumbermen for Ontario. Just at the present time, when the lumber trade is enjoying a period of quietude, the members should make a united effort to enlarge the scope and usefulness of this section.

WITH regret THE LUMBERMAN learned of the temporary financial embarrassment of Messrs. J. W. Howry & Sons, of Fenelon Falls, Ont. For a number of years the firm operated in Michigan, but a few years ago transferred operations to Canada, purchasing timber limits in the vicinity of Fenelon Falls to the extent of 300,000,000 feet. The enterprise shown in investing such a large sum of money in timber limits and plant is commendable. Manufacturing operations have been conducted on an extensive scale, much of the product finding a market in foreign countries. The members of the firm are recognized as conservative business men, who, no doubt, will prove themselves to be perfectly solvent and be able to so re-adjust their affairs as to continue in business.

IN an effort to extend their trade with Great Britain, Canadian lumber manufacturers should give greater attention to questions of manufacture and shipment. Messrs. J. & P. Coates, of Paisley, Scotland, who are large users of spool wood, write to the High Commissioner of Canada on the subject as follows: "In our opinion, the only means of increasing the demand for Canadian spool wood in this country is for the producers thereof to be more careful about quality. Those producers on the southern shore of the River St. Lawrence should be especially careful in this respect, because in the absence of a sheltered loading-place and consequent liability for demurrage on vessels employed exceeding their lay-days, the hold they have upon the business is a very slender one." In order to insure an increased demand the chief points to receive attention are said to be that the wood be thoroughly well-seasoned, white and solid, free from redheart and knots, and accurately sawed both in diameter and length. Defects in the above particulars are said to have resulted in the refusal of some consumers to place orders with Canadian dealers.

THE Huntsville Lumber Co. state that their advertisement in the WEEKLY LUMBERMAN has brought them more satisfactory returns than any advertisement they ever had. The WEEKLY LUMBERMAN not only circulates in every part of Canada, but reaches buyers in the leading foreign markets, hence its value as an advertising medium. We have no hesitation in saying that many Canadian lumber manufacturing firms might, with much advantage to themselves, announce in the advertisement columns of the WEEKLY LUMBERMAN particulars of the stocks they wish to sell. We are continually being asked by foreign buyers if we can put them in communication with the holder of a particular kind of stock. The WEEKLY LUMBERMAN reaches both buyers and sellers and is the best means of announcing stocks required or for sale.

THE final decision in the now famous dressed lumber case between the United States and Canada promises to be further prolonged, the attorney-general of the United States having ordered that an appeal be taken to the higher court from the recent decision of Judge Wheeler, by which dressed lumber was permitted to enter the United States free of duty. Pending the result of the appeal the customs authorities will collect the duty of 25 per cent. on the class of lumber in dispute, and should the final decision be in accordance with the view held by Judge Wheeler, the duty will be refunded to the exporters. In all probability the final decision will not be given without considerable delay, and the appeal will at least partially impede the importation of Canadian dressed lumber during the interval. On what grounds the appeal is based it is difficult to understand, as the propriety of the decision recently given is acknowledged by the majority of lumbermen on both sides of the line. The proceeding bears, to some extent, the appearance of a scheme to close the United States market to the Canadian dressed product until after the Presidential election.

Warm countries and sunny exposures generally produce heavier and stronger timber, and conditions favorable to the growth of the species also improve its quality. But exceptions occur; neither fast nor slow growth is an infallible sign of strong wood, and it is the character of the annual ring, rather than its width, and particularly the proportion of summer wood, which determines the quality of the material.

A very rough and probably very liberal estimate of the amount of timber standing in the various regions of the United States ready for the axe would give the following figures:

	Feet, Board Measure.
Southern states	700,000,000,000
Northern states	500,000,000,000
Pacific coast	1,000,000,000,000
Rocky mountains	100,000,000,000
Total	2,300,000,000,000

The total annual cut, including all material requiring bolt or log size, is estimated at 40,000,000,000 feet, board measure. The lumber industries employ capital to the extent of over $1,000,000,000.—Maritime Register.

SALE OF GOVERNMENT TIMBER LICENSES.

THE auction sale of timber limits in the districts of Nipissing, Rainy river and Alberta took place, as advertised, at Messrs. Dickson & Townsend's rooms, 22 King street west, Toronto, on the 23rd ultimo. The limits were offered with the object of closing up the partnership existing between Messrs. Beck, Spohn and McSherry, and consisted of upwards of 110 square miles.

At the hour appointed for the sale there had gathered upwards of fifty interested persons, among whom were noticed the following: Wm. Irwin, Peterboro; C. Beck, Penetanguishene; A. H. Campbell and Mayne Campbell, of the Muskoka Mill & Lumber Co., Toronto; Dr. Spohn, Penetanguishene; P. McSherry, Stayner; H. H. Cook, of the Ontario Lumber Co., J. Welch, of Cook Bros., Peter Ryan, John Gray, Toronto; H. S. Brennan, Hamilton; T. Sheppard, Orillia; Maurice Quinn and D. L. White, Saginaw, Mich.; Mr. Fyfe, Port Arthur, and Mr. Wiley.

Mr. Townsend, who wielded the auctioneer's hammer, explained that a reserve bid had been fixed for each parcel, which was enclosed in a sealed envelope and opened at the termination of the bidding. The competition for the first two parcels was somewhat keen, but as the sale advanced it became evident that there were few eager purchasers present, and the result was that only one limit was disposed of.

The first ten lots offered consisted of licenses granted by the Ontario government. For parcel No. 1, comprising 10¾ square miles in the Township of Finlayson, District of Nipissing, the bidding reached $6,000 per square mile, but this was claimed to be below the reserve bid and the berth was withdrawn.

The following parcels were withdrawn in the same manner: No. 2, comprising 11½ square miles, District of Nipissing, $1,700 per mile; No. 4, five square miles on Rainy River, including islands in Crow Lake, bid $800 per mile; No. 5, four square miles of islands in Rowan Lake, bid $800 per mile; No. 6, eleven square miles on Split Rock River, bid $720 per mile (the reserve bid was $727); No. 7, seven square miles, east side Manitou River, no offer; No. 8, seven square miles on Little Turtle River, bid $1,850 per mile; No. 9, one and one-half square miles, same locality, no offer; No. 10, ten square miles, near Trout Lake, $1,740 per mile; No. 11, a Dominion Government limit, 47 8-100 *square miles in Alberta District, 100 miles south*west of Calgary, no offer.

Parcel No. 3 was sold to C. Beck, of Penetanguishene, at $500 per mile. It consisted of 11 44-100 square miles in the district of Rainy River, on the north side of Sturgeon Lake and east of Indian Reserve.

While the offers received for the parcels withdrawn were below the reserve bids, it will be observed that for three of the parcels a considerable advance was offered on the prices paid therefor at the government sale in 1892. The Finlayson berth, for which $6,000 per mile was offered, was sold in 1892 at $4,400 per mile, the McCraney berth, bid up to $1,700, at $900, and No. 68, in the Rainy River district, bid up to $475, at $1,740. This fact indicates a substantial increase in the values placed upon Canadian timber limits within the past few years.

After the sale of timber limits in Toronto on the 23rd ultimo, I talked with several lumbermen on the outcome of the sale, and the consensus of opinion was that, while timber limits were recognized as valuable assets, the moneyed men were averse to increasing their holdings until there was an improvement in trade and the financial aspect across the line had brightened up a little. One who is prominent in lumber circles said: "There were a number present who might be considered prospective buyers, but they were evidently there from the cause as myself—curiosity. But, notwithstanding the quiet times, fair prices were offered for many of the berths, and I think the reserve bid in some cases was fixed a little too high. The presence of a couple of Michigan capitalists indicated that their eyes are still on Canadian limits."

* * *

So much is heard of late about the re-imposition of the duty on Canadian lumber by the United States government, that I have felt quite refreshed by the expressed views of an enterprising Nova Scotia mill man. He stated that he believed it would be better for the mills in the Lower Provinces to have the duty on lumber restored, and gave two reasons for his belief. One was that greater prosperity would follow a higher tariff on all manufactures of the United States, and this of itself would make a better market for lumber. Again, a second reason was that Canadian lumber entering the American market free of duty was obliged to discount to the American dealer all the benefits and advantages from free lumber. In other words, the purchaser would say to the manufacturer, "Oh, you don't have to pay any duty now, so you must sell your lumber $2.00 per thousand feet cheaper than you used to, and you can afford to sell it $2.00 less than the American manufacturer, who pays higher wages and stumpage."

* * *

The other day when in the office of Thomas Meaney & Co., in Toronto, the question of lumber freight rates came up for discussion. On this score the complaints from lumbermen are not numerous, as, generally speaking, rates are not considered too high. But a point of some dissatisfaction is that a higher rate is charged on hardwoods than on pine. "I cannot understand," remarked Mr. Meaney, "why the railway companies charge 7½ cents per hundred pounds on hardwoods from northwestern points to Toronto, and only 6½ cents on pine. Of course, the companies are adopting the American rule, but it should not be done. In the United States, where they have considerable mahogany, quarter-sawed oak, walnut, and other expensive hardwoods, it is all right, but here our pine is more valuable than our hardwoods. Our supply of oak is a mere drop in the bucket." At first glance the difference in freight would not seem to cut much of a figure, but as a matter of fact it means about 40 cents on a thousand feet, which is a good slice out of the profits of handling the lumber. I also observe that special rates are charged in Canada on all expensive hardwoods, such as cherry, rosewood, walnut and mahogany. It would therefore seem that only on the less expensive hardwoods could even the 7½ cent rate be obtained.

* * *

"I have noticed that when a year starts out with everone anticipating a good trade, the opposite result is often experienced, and vice versa." This was the significant remark made to me by an Ottawa lumberman, who believes that the lumber trade is not yet quite on the verge of "blue ruin," and that the present year will close its books showing a satisfactory balance sheet. In this conviction lumbermen sincerely hope there will prove to be more truth than poetry. I believe that the first six months of the year have not done much towards making our lumbermen millionaires, yet visit any of them at their offices or mills and you will at once conclude that the turmoil of business life is resting lightly upon them. Many of our greatest lumbermen have reached the enviable position which they hold to-day by pursuing a policy of honesty and industry. Starting as a woodsman in their early days, they have gradually climbed the ladder of success until now they are recognized as a "power in the land." They are self-made men, and have learned to accept both the "ups" and "downs" of this world in the same cheerful spirit. An instance of the success which many lumbermen have attained is well illustrated in the case of the recent Dominion elections, when there were elected as representatives of the people a large number of men prominently connected with the lumber industry. "Eli" sincerely hopes that the representation may succeed in keeping the Government's head level on all matters pertaining to the welfare of our country and especially to the lumber trade.

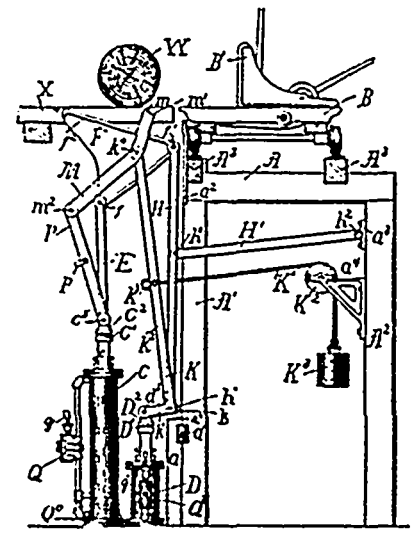
FOREST PRESERVATION IN MINNESOTA.

The State of Minnesota, U. S., previous to the year 1895, had suffered greatly from forest fires, and in the Hinckley fire on September 1, 1894, there perished four hundred and eighteen persons. In April, 1895, an act was passed by the Legislature of the State for the prevention of forest and prairie fires. The first annual report of the Chief Fire Warden is to hand, and contains upwards of two hundred pages, in which is given much valuable information in regard to the system of protection and causes of the fires. The number of forest fires reported in 1895 was twenty-seven, burning over 8,265 acres and doing damage to the extent of $3,125. The causes were. Clearing land, 5, railroad locomotives, 4, hunters and fishers, 4; other causes, 5; unknown, 9. Of prairie fires there were 105, burning over 73,000 acres and causing damage to the amount of $34,277. The causes of prairie and field fires were. Railroad locomotives, 28; burning straw, 10; burning stubble, 10; threshing engines, 8, other causes, 8, unknown, 13.

Letters are printed from the Baldwin Locomotive Works, Philadelphia, and the London & North Western and London & South Western Railway companies showing the devices in use for preventing the escape of sparks from locomotives. It is stated that the system of spark arrester which is found most efficient in locomotives is for coal-burning locomotives, the device known as the extended smoke box with straight smoke stack, netting, deflecting plate and spark arrester. No spark-arresting device is absolutely efficient. The degree of efficiency of any device depends upon the care with which it is maintained in good condition. Fine sparks will escape from either of the above devices when in the best condition, and coarse sparks will escape when in an improper condition. The fine sparks are not dangerous, the coarse sparks are. The chief adds: "If the most efficient spark-arresting device practicable is used and kept in the best condition there will be very few fires caused by locomotives. The question arises, Are locomotive engineers sufficiently conscientious in keeping their netting in good condition? Do they not too often allow holes to exist in the netting? Are inspections sufficiently frequent and rigorous? Do railroad managers hold their locomotive engineers to as strict accountability in this matter as they ought? It appears to me that the public have reason to expect some decrease in the number of fires set by railroad locomotives."

LOG LOADER AND TURNER.

Peter McNerney, of Marinette, Wis., has been granted a patent for Canada for a log loader and turner, as shown by the accompanying illustration. In the claim therefor is embodied the following points: An apparatus for turning logs



Log Loader and Turner.

on saw-mill carriages, comprising a canting arm pivoted mediate of its length with a vertically and laterally movable pivot, a piston rod D, and connections for raising and lowering the pivot of said canting arm and for swinging said pivot laterally, and a piston rod C' and bar P for swinging the canting arm about said pivot, with movable support consisting of the bent bar K, having the short arm k, the piston rod D' pivotally connected to said arm k' and the piston rod C' and bar F connecting piston rod with canting arm, etc. In a log loading and turning apparatus, the combination with a pivoted loading arm F and a plurality of pivoted canting arms, M, of two stationary cylinders C and D with piston rods C' and D', and connecting rods from one of the said cylinders, for raising or lowering the pivots of all said arms, and connecting rods from the other of said cylinders, as C, for swinging all of said arms about their pivots, etc., substantially as described.

EFFECTS OF KILN-DRYING.

AFTER a long-range investigation of the subject, the Forestry Division of the Agricultural Department at Washington, sums up the evidence as to the effects of kiln-drying native woods as follows :

Although kiln-drying has become quite universal, opinions are still divided as to its effects upon the strength of the material and other qualities. Many objections and claims as to physical and chemical changes produced by the treatment remain unsubstantiated. The method most widely used and most severely criticised is that of the "blower" kiln, where hot air (180° F.) is forced into the drying room by means of powerful fans. Besides the many, in part, unreasonable and contradictory claims about closing or opening of pores, chemical or physical influence on the sap and its contents, albumen, gum, resin, sugar, etc., substances whose very existence in many cases is problematical or doubtful, the general claims of increased checking and warping, "casehardening," "honeycombing," etc., as well as reduction of strength, are still prevalent even among the very manufacturers themselves. The manner and progress of the kiln-drying may render this otherwise useful method of seasoning injurious. Rapid drying of the heavier hard woods of complicated structure, especially in large sizes and from the green state, is apt to produce inordinate checking and thus weakening of the material.

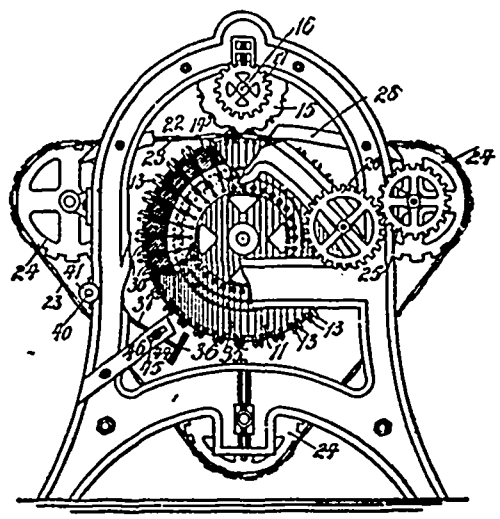
Well-constructed "blower kilns," where the hot air is blown in at one end and escapes at the other (this latter always the entrance end for the material) are giving satisfaction. The best kiln, however, seems to be one in which ample piping in the kiln itself insures sufficiently high (up to 180° F.), uniform temperature in all parts of the kiln, and where the circulation, promoted by a suction fan, is moderate and under perfect control. In such kilns even timbers of large size can be dried satisfactorily with a temperature not over 150° F.

The valve-gear of an engine should be oiled more than once for a five hours' run. The steam warms it up so that we can not tell whether it is running dry or not by feeling of it, and it should be oiled frequently in order to be on the safe side.

If you have a good direct-acting steam pump that will run at a slow speed, do not let your water level fall as low as safety will allow and then pump it up rapidly, but keep it at about the same height in the glass all day, except just at night, when it should be raised as high as is safe, in order to provide for waste during the night.

RECENT WOODWORKING PATENTS.

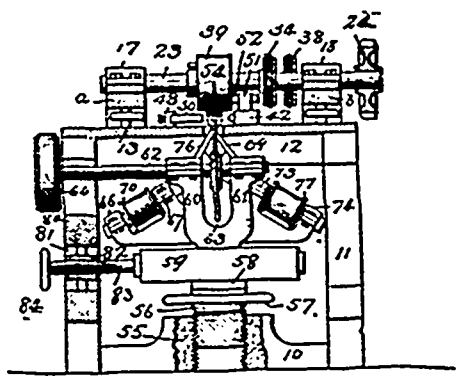
PATENTS for wood-working machinery have recently been granted in Canada as follows :



STAVE MACHINE.

Patentee : The American Barrel Stave Machine Company, assignee of Wm. F. Hutchinson, both of New York, U. S., granted 1st April, 1896 ; 6 years.

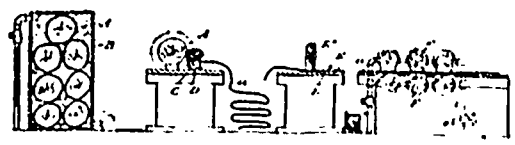
Claim.—A stave machine, comprising a revoluble cutting drum having circumferential knives, a bearing for the knives, and a flexible belt-like carrier moving tangentially across the face of the drum, the said carrier having cross bars to fit between the knives and serve as ejectors, rollers journalled on the carrier, and guides at the drum ends to support the rollers, with means for preventing the tipping of cross bars. The combination with the cutting drum, having peripheral knives, of the radially movable ejectors between the knives, the arms pivoted to the drum and the ejectors, the rods secured to the arms and projecting from the ends of the drum, and means, as the circular cam tracks and the tracks on the rods, for actuating the arms and ejectors by the turning of the drum, substantially as described.



WOOD-WORKING MACHINE.

Patentee : John Richard Schelosky, St. Louis, U. S., granted 21st April, 1896 ; 6 years.

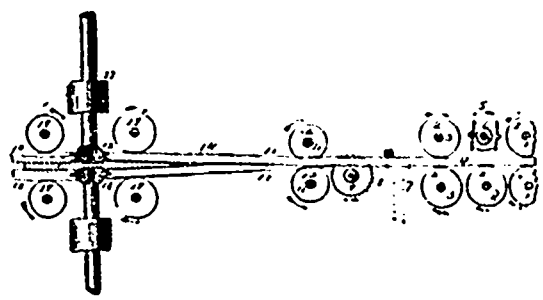
Claim.—The improved dovetailing machine constructed with a series of circular saws (as two or three) mounted in differential planes, and a single saw frame upon which all the arbors of said saws are mounted, and said saw frame simultaneously adjustable, vertically and horizontally with respect to the main stationary frame of the machine, in combination with a suitable main stationary frame, whereby all of the saws and their arbors may be simultaneously adjusted either vertically or horizontally, substantially as herein specified.



MANUFACTURING CLOTH BOARDS.

Patentee : Wm. H. Marcon, Toronto, Ont., granted 21st April, 1896 ; 6 years.

Claim.—The method of producing cloth boards herein shown and described, consisting in first slicing the wood from the periphery of a log rendered soft in a continuous wavy or undulating flexible form of length of desired thickness, then gauging and cutting cross-wise into strips of desired width the flexible length of wood, and then subjecting each strip so separated cross-wire from end to end to pressure, then applying suitable cutters to the edge of the board, so as to round off the corners and finally sandpapering the board as set forth.



MATCHING MACHINE.

Patentee : Wm. H. Bullock, Oswego, N. Y., granted 28th April, 1896 ; 6 years.

Claim.—The combination with suitable cutters arranged alternately above and below a given plane of suitable separating rollers whereby alternate strips of lumber are spread vertically into the planes of the cutters, whereby the opposite edges of the respective strips are simultaneously tongued and grooved, with a slitting saw to cut the lumber into strips, and guides 22, which engage with the edges of said strips to hold them relatively to said cutters against lateral deflection.

When feeling of a crank-pin of an engine, while in motion, stand at the end of the frame and let it touch your hand as it passes. Never try to catch it when at about one-half stroke, for there is danger of getting caught on a set-screw, or of letting the hand pass in between the crank and the connecting-rod, where it will be injured.

Because an engine shows a fine exhaust, throwing out the puffs of steam with sharply defined lines of division, it is not conclusive evidence of a sharp cut-off, for one of the best looking exhausts that I have ever seen came from an engine that took steam from center to center. If an unequal amount of steam is admitted to the two ends of the cylinder, the exhaust will show it by throwing out puffs of unequal size, or what is known among the craft as a "short leg and a long one."

When packing the manhole cover of a boiler, it is a good plan to cover the inner edge of the plate around the hole with graphite, so that the iron may be kept from coming into contact with the gasket. Then when it is desired to remove it, it is quite possible to save the gasket and use it over again. I have pieces of a gasket that were used ten times by taking this precaution. Put none on the cover, but allow the packing to stick fast to it, which will prevent it from blowing out. If no graphite is at hand, use common white chalk.

OTTAWA LETTER.

[Regular Correspondence of the CANADA LUMBERMAN.]

DURING the past month a new lumber concern has been organized in the Ottawa valley, which will be known as the Hull Lumber Company. It will take over the business now being carried on by the firm of Buell, Hurdman & Co., as well as that formerly carried on by Buell, Orr, Hurdman & Co., of Hull. Application has been made for letters patent of incorporation, the applicants being A. A. Buell, of Burlington, Vt., W. G. White, of Albany, N.Y.; F. W. Avery and C. E. Read, of Ottawa, and J. M. McDougall, of Hull. The capital stock of the company is placed at $600,000.

The Ottawa, Arnprior and Parry Sound and the Parry Sound Colonization railways have been amalgamated under the name of the Ottawa, Arnprior and Parry Sound railway. The Parry Sound Colonization Railway extended from Emsdale to Parry Sound and is about sixty miles in length. It was built by Mr. J. R. Booth some years before the O., A. & P. S. Ry. was mooted for the purpose of opening up the interior of the Parry Sound district to colonization, and also with the object of giving access to the lumber woods and bringing out the cut of logs from the interior to Georgian Bay, where they are towed to the American markets.

A sawdust explosion occurred under Wm. Mackey's raft of square timber while lying in the Ottawa river at the foot of the Chaudiere slides. Five men were sleeping at the lower end of the raft, which was composed of 95 cribs. The cribs were torn apart, breaking the huge boom chains, and the portion the raftsmen were on was floating down the river. After some difficulty ropes were thrown around posts on the raft above, from which they swung during the rest of the night.

Mr. J. W. Todd, who has been looking after the interests of Messrs. Watson & Todd in the Ottawa valley for the past couple of months, has returned to England.

Mr. J. B. McLaren, the noted lumberman, has been investing in British Columbia mines, having recently purchased 1,300 shares in the Le Roi mine, Rossland, for $6,500.

The square timber which passed down the Ottawa river en route to Quebec was of excellent quality. Mr. Mackey's raft is from Mattawa and Mr. Klock's from the Quinze.

The lumber exported to the United States during the past twelve months was valued at $1,835,758.31, as compared with a value of $1,742,265.84 during the previous twelve months. The figures for the quarter just ended were $565,361.96, as compared with $510,683.70 during the corresponding quarter of last year.

OTTAWA, Ont., July 24, 1896.

NEW BRUNSWICK LETTER.

[Regular Correspondence of the CANADA LUMBERMAN.]

GOOD progress is being made this season with log driving by Mr. Fred Moores, who has the contract from the St. John River Log Driving Company. About one hundred and fifteen millions of lumber were driven into the corporation limits this spring, and of this quantity about one hundred and twelve millions are in the Fredericton booms. There are still about three millions between here and Grand Falls, which he expects to get in within a few weeks. The boom company has already rafted sixty-seven millions, and will easily accomplish the work within the season if the lumber is forthcoming.

S. H. White & Co., of Sussex, may now be said to be among the largest lumber operators in the province. They have recently purchased the extensive mill and lumbering property of the Alma Manufacturing Company in Albert County, which, it is said, in addition to the fine water power mills in excellent order, contains a large store, warehouse and five comfortable dwellings and thirty-five thousand acres of excellent wood land. The price paid is said to be in the vicinity of $35,000. Messrs. White & Co. also purchased a short time ago the mill property at Point Wolf, which was owned by Geo. J. Vaughan.

Mr. J. W. Todd, of the lumber firm of Watson & Todd, Liverpool, Eng., was recently in this city. Mr. Todd states that his firm are shipping lumber from Montreal by seven or eight lines of steamers. He was not in a position to say whether they would make any shipments from St. John during the coming winter or not, but if the Beaver line are given a subsidy to come here, his firm will probably ship by way of this port.

BITS OF LUMBER.

The new Purvis mill at St. John has commenced running night and day.

Messrs. Smith & Wright have begun sawing in their new steam mill at Memel, Albert Co.

All the mills at Campbellton are running full time, while K. Shives is running night and day. Mr. Shives has lately added a new boiler, and has electric light for night work.

The exports of lumber from St. John in June was valued at $333,079, compared with $528,965, in June of last year, or a decrease of $195,886. The falling off was in both British and U. S. trade.

E. G. Evans, of Hampton, E. C. Elkin, C. T. Bailey and C. J. Wasson, of St. John, and Mark Gellert, of Waterville, Me., have applied for incorporation as the Cold King Mining & Milling Co., Ltd., with a capital stock of $500,000. The head office is to be at Fairville.

J. T. Sharkey, United States consular agent at Fredericton, gives the following statement of lumber exports from Fredericton, for the quarter ending June 30th, 1896: Hemlock boards, $27,242.78; pine and birch boards, $3,803.29; laths and spruce scantling, $709.50; shingles, $35,791.57; hemlock bark and sundries, $2,230.62.

ST. JOHN, N.B., July 24, 1896.

BRITISH COLUMBIA LETTER.

[Regular Correspondence of the CANADA LUMBERMAN.]

LUMBER COMBINES.

THE logger's combine of the Pacific coast are considering the advisability of proposing to the recently-formed lumber trust that logs shall not be purchased by members of the trust from others than members of the loggers' association. It is claimed that the small loggers, non-members of the association, are selling at prices so low as to demoralize the trade, and as combines seem to be the order of the day, their claims seem well founded that such combines should enact a reciprocity system. There are only four mills in the Northwest that refused to join the lumber trust, which is effective until January 1, 1897, when the membership is to determine the advisability of perpetuating the trust for a period of five years. The outside mills are located at Shamakowa, Or., Olympia, Moodyville and Chemainus, B. C.

THE BOARD OF TRADE ON LUMBER.

The annual report of the Board of Trade, presented on July 11th, says of lumbering on the coast: There was a steady improvement in the lumber industry during the year 1895, the quantity cut being 112,884,640 ft., or about 40 per cent. more than in the previous year. The foreign demand was more widely distributed than for some years past, but prices were low. The foreign demand has continued to improve during the past six months at advanced prices. A combine of nearly all the exporting mills on the Pacific Coast has been effected and a uniform scale of prices arranged. Attention is again called to the importance of grading all lumber for export. Such specific grading would protect our mill men and simplify the work of purchasers when placing orders. The sawmill being erected at Takush Harbor will be one of the best equipped in the province, and will be occupied mainly in cutting cypress. The cypress is one of our most valuable woods and commands a price almost equal to mahogany.

SAMPLES OF B. C. TIMBER.

The Royal City Mills, New Westminster, sawed recently two beautiful sticks of timber. They were cut by Messrs. Gilley Bros., at their camp on the Vancover road. These sticks are each 70 feet long, and square 36 inches. One tree was over 160 feet long, and, in addition to the 70 foot timber it produced three logs of 22, 24 and 32 feet in length, respectively. An idea of the very gradual taper in the girth of these trees may be had from the fact that one end of the longest log was about six feet in diameter, and the other end was trimmed off at 50 inches through. In the whole length there was not a single knot.

COAST CHIPS.

The Victoria Lumber and Manufacturing Co. are running their mill at Chemainus night and day.

There are at present loading lumber at the various ports eleven vessels for foreign shipment, having a combined capacity of 99,643 tons.

Forest fires are causing considerable destruction along the Salmon river. At Rossland and Trail Creek the heavy timber has been cut away to save the villages.

NEW WESTMINSTER, B. C., July 20, 1896.

MICHIGAN LETTER.

[Regular Correspondence of the CANADA LUMBERMAN.]

THERE is little encouraging to write of the lumber trade in the Saginaw Valley so far as sales are concerned. Notwithstanding that some of the mills are closed down, stocks are accumulating and the docks are filled with lumber. The shipments by water from the Saginaw river during the month of June shows the smallest for the same month in the history of the business. The following are the figures. Shipments from Bay City, 8,177,000 feet, shipments from Saginaw, 2,760,000 feet. Political matters are receiving the bulk of attention, as dealers now believe there will be little trade until after the Presidential election.

Logs are coming in freely from the Canadian side. Some of the rafts crossing the lake are having a rough time. Early in July a raft was broken by a gale and the logs scattered for a distance of a mile. Another raft, in tow of the Howard, got into difficulties, and six tugs were sent to her assistance, but their combined power could not cope with the storm. The raft drifted into the mouth of the Kawkawlin river and caught on a cluster of piles without breaking.

R. G. Peters, the Manistee lumberman, whose affairs became involved five years ago, is nearly out of the woods. By clever management he has paid obligations of $1,500,000, and already the greater part of his business interests have been declared solvent. At the end of this season the receiver, the Michigan Trust Company, will be discharged and Mr. Peters will continue the manufacture of lumber and salt.

The gradual but positive decline of the cargo trade, here as elsewhere on the lakes, is shown by the shipments by water from the Saginaw river during the past five years, up to July 1, as follows:

Year.	Lumber.	Shingles.	Lath.
1892.....	129,673,000	14,309,000	2,430,000
1893.....	75,410,000	10,750,000	5,063,000
1894.....	50,460,000	5,815,000	2,937,000
1895.....	49,231,429	170,000	650,000
1896.....	28,773,117	200,000	

There passed away on the 12th inst. one of Saginaw's best known lumbermen, Mr. Elzear J. King, from appoplexy. Few men in the valley were better known. In 1850 he commenced business as a lumberman in Ontario, removing to Sandusky in 1857 and to Saginaw in 1862. His age was 72 years.

SAGINAW, Mich., July 23, 1896.

LUMBER DEAL AT WEYMOUTH, N. S.

A RECENT despatch to the Halifax Chronicle states that a large lumber deal has taken place, whereby the Stehlin family of New France, Digby, bought the large lumber yards of G. D. Campbell, together with three large new buildings, wharves and nearly the entire south side of the Sissiboo river, which runs through the town. Two years ago the Stehlin family came out from France and opened up a settlement about fifteen miles back of Weymouth, and have named the place "New France." They have built a large saw mill at that place and a number of dwelling houses. Last year an electric plant was put in and now the settlement is lighted by electricity. They have one of the finest mills in the province. This year they applied for a right of way to build a railroad from New France to Weymouth. The road has been surveyed and work will begin at once. It will cost $20,000. This road will be used for bringing their lumber, etc., to Weymouth, for shipment. They have bought up thousands of acres of woodland in the interior. The land bought at Weymouth will be used as the terminus of the railroad. A number of large wharves will be built in addition to those they already have. This new enterprise will be a boom to Weymouth and will be the means of increasing the shipping of that port. The Stehlins have a large capital at their back and intend pushing their new enterprise for all it is worth.

THE NEWS.

—J. Moses, Vernon, Ont., has his new saw mill running.

Mr. West's new saw mill at Indiantown, N. B., has commenced operations.

C. Young, of Young's Point, Ont., has added a new planing machine to his outfit.

—J. Mundell & Co., Elora, Ont., will rebuild their furniture factory burned recently.

—Much valuable timber has been destroyed by forest fires in the island of Newfoundland.

—Smith & McLeod, saw mill owners, Vernon, B. C., are building a branch mill at Enderby.

—The Klock Lumber Co. intend rebuilding on a large scale to replace the mill recently burned at Aylmer.

—A sash and door factory is being erected at Halleybury, Man., and it is reported that a pulp mill may be built.

—Alphonse Tessier, Penetanguishene, Ont., will shortly rebuild his planing mill and equip it with modern machinery.

—George D. Prescott's steam rotary saw mill at West River, N. B., turned out recently 44,000 feet of lumber in 10 hours.

—A new post-office has been established at Gilmour's new lumber mills in Algonquin park, about thirty miles above Whitney.

—Kirkwood & McKinnon, of Sudbury, Ont., are building a pulp mill, which is to have a capacity of ten tons of dry pulp per day.

—Lovell & Son's saw mill at Coaticooke, Que., has been fitted with electric light, and has been running night and day for some time.

—The schooners Bavarian and Austin, loaded with pulp by the Sault Ste. Marie Pulp and Paper Co., of Sault Ste. Marie, Ont., have sailed for England.

—Mr. H. H. McLean, of Quyon, Que., whose mill was destroyed by fire recently, had insurance amounting to $10,000. The loss was in the vicinity of $15,000.

—A stone imbedded in a saw-log caused considerable damage in Messrs. Cockburn & Son's mill at Cache Bay, Ont. The circular saw and guides were destroyed.

—The Savanne Lumber Co., with headquarters at Penetanguishene, Ont., have lately purchased the mill at Budd's Mill, Ont., and transferred the machinery to their mill at Savanne.

—J. R. Eaton has enlarged the engine-house of his planing factory at Orillia, and put in a new boiler of one hundred horse power, with a Wheelock engine of seventy-five horse power.

—C. A. Moore, of Brandon, Man., has been appointed to the management of the new sash and door factory lately erected at Rat Portage by the Ontario and Western Lumber Company.

—A man named Wm. Kelly was caught in the machinery of a circular saw in the Deschenes mill a few days ago, and was on the point of being torn to pieces when the machinery was stopped.

—The logs for D. E. Sprague's saw mill at Winnipeg began to arrive down the Red river last week. They were cut in the district east of the Lake of the Woods and brought down the Rosseau and Red rivers to Winnipeg.

—An exchange states that Chicago parties are looking over the Georgian bay region with a view to getting control of large tracts of hardwood timber situated there. The timber is red oak, birch, hard maple, and some basswood, elm and ash.

—The largest raft of the season recently passed down the Longue Sault Rapids of the St. Lawrence river. It was owned by the Calvin Company, and was taken down by the oldest pilot on the river, Richard Dafoe. 61,000 feet of square timber was supposed to be in the draw.

—Messrs. R. H. Klock & Co., of Klock Mills, Ont., have sent up bush rangers to explore their new Quinze limits with a view of putting in several shanties this season. They are also cutting out a splendid waggon road from their Douglas farm on the shores of Quinze Lake to North Temiscamingue.

—Messrs. A. Charlebois and C. H. Maguire, of Quebec, and J. M. Fortier, T. Nadeau and T. Harkness, of Montreal, are applying for incorporation under the style of the Gascapedia Pulp and Lumber Company, with head office in Quebec, and a capital of $300,000, for the manufacture and sale of pulp and all kinds of lumber.

—Large as is the amount of Canadian lumber exported, it forms only one-quarter of the sawn lumber received in Great Britain, and only one-sixteenth of the square timber, the great proportion being the product of the north of Europe and the Southern States. Great Britain is the largest importer of timber among the nations of the earth, her own forest area being only about four per cent., and contributing but little towards the lumber requirements of the nation.

CASUALTIES.

—Three men were drowned off a raft of boom timber at Des Joachims, Ont., recently.

—Lewis Mills, son of Thomas Mills, of Wheatley, Ont., was drowned while bathing in the lake.

—A young man named James Davidson was struck in the side by a shingle bolt thrown from a saw in the Aberdeen mills at Fredericton, N. B. His injuries proved fatal.

—Arthur W. Gibbs was drowned at Humphreys' Bay, B. C., early last month. He had been working in Higgins' logging camp, and fell off a plank when crossing from a scow to the shore.

—The boiler in Robert E. Taylor's saw mill at Doyle's Pond, Tidnish, N. S., burst on the 4th inst. The boiler was thrown over the top of the engine. Fortunately the employees escaped injuries.

—Fred. Therriault, a native of New Brunswick, was drowned at Missoula, Montana, on the 14th ultimo, by falling off a log while working at the boom. He was in the employ of the Big Blackfoot Milling Company.

PERSONAL.

Mr. Andrew Thomson, a pioneer sawmiller of Oxford County, Ontario, is dead.

Mr. E. H. Lemay, wholesale lumber merchant, has been proposed for membership in the Montreal Corn Exchange.

Mr. J. E. Cox, son of Mr. Robert Cox, lumberman, of Ottawa, slipped on a banana peel recently and fractured his right leg.

Mr. W. C. Edwards, M. P., of Ottawa, has been re-elected by a large majority as member for Russell for the Dominion government.

Mr. John Murphy has been appointed by the Rathbun Company, of Deseronto, to fill the vacancy caused by the death of the late Mr. T. B. Butler.

Mr. Thomas Mackie, lumber merchant, of Pembroke, Ont., is now a member of the Dominion Parliament, having defeated the Hon. Peter White.

Mr. A. E. Dyment, son of Mr. N. Dyment, the extensive lumberman of Barrie, Ont., was elected for Algoma district on the Liberal ticket at the late Dominion elections.

Mr. C. Gauvreau, of Quebec, has gone to South Africa as the representative of Messrs. J. Burstall & Co., lumber merchants, of Quebec. Mr. Gauvreau is well known in the Canadian lumber trade.

Mr. James B. Klock, of the well-known lumber firm of R. H. Klock & Co., Klock's Mills, Ont., was the successful candidate in the Conservative interests at the recent Dominion election.

On the 7th of July Mr. J. L. Grahame Abbott, barrister, of New Westminster, B. C., was married to Miss Eliza Scott Alexander, daughter of Mr. R. H. Alexander manager of the British Columbia Mills, Timber and Trading Co.'s mill at Hastings.

Captain Hugh Chisholm, a pioneer shipbuilder of Mearford, Ont., died on the 6th of July, at the age of 72 years. He built, at Port Credit, the first centre-board schooner on the north shore of Lake Ontario. Deceased was a brother of Mr. K. C. Chisholm, ex-M. P. P., Brampton.

Mr. Daniel O'Hara died at St. John, N. B., on the 2nd ultimo, at the advanced age of 93 years. At the age of 16 years he came to Canada and engaged in lumbering on the St. John river. From that period up to the time he gave up active work Mr. O Hara had been engaged in connection with timber.

The Timber Trades Journal, of London, Eng., states that Messrs. E. J. B. Watts, of Pierce, Watts & Co., Cecil Persheuse, of the Hudson Dry Soap Company, and Harry Ashton, of Squire, Ashton & Co., left London on the 9th ultimo for a tour through the spruce-producing districts of New Brunswick and other timber territories of Canada. Their visit will probably extend over a period of two years.

TRADE NOTES.

It is stated that the Bain Wagon Co., of Brantford, Ont., will remove their entire plant to Woodstock on the first of September.

Mr. Thos. Pink, of Pembroke, reports a good demand for lumbermen's tools. MacNab Bros., of Orillia, are getting all their supplies from him.

Incorporation is asked for the McMillan & Haynes Company, of St. Catharines, Ont., to manufacture saws, axes and other tools, capital stock, $30,000.

A cordial invitation was received by THE LUMBERMAN from the Penberthy Injector Company, of Detroit, Mich., to be present at the celebration on the 25th ultimo of the manufacture and sale of 100,000 Penberthy injectors during a period of ten years, from June 5th, 1886, to May 12th, 1896. The employees of the company were given a holiday and excursion to "Beauvoir."

The advertisement of the A. R. Williams Machinery Co., Ltd., shows a cut of their new premises on Front St. west, Toronto, opposite the west wing of the Queen's hotel; also of their London Tool Works and Montreal branch, with the Union Station close by the Toronto premises. These premises are now fully fitted up, and the company are occupying their commodious business offices. The entrance, as stated above, is opposite the Queen's hotel. Users of machinery and machinery supplies will do well to call and inspect their stock as now arranged on these premises. The west side of their double warehouse is devoted to machinery supplies. Their show window in this line, showing twist drills, taps, stocks, dies, wrenches, oilers and other handy tools required in connection with mills of all kinds, is very attractive and worthy of notice. The eastern half of these warerooms makes a fine display of iron and wood-working machinery; in the window they have one of their "Eclipse" surface planers, similar to the "Eclipse" planer, matcher and moulder shown in these pages some months ago. They have also one of their Fox monitor lathes, with friction clutch in the head, in the same window, also a 17" swing x 8' bed engine lathe, one of their Barnes patent friction drills, a 20" drilling machine, a wing disc fan, a power-driven washing machine, etc. Their Sturtevant goods are displayed on the second floor of the building, and consist of pressure blowers, monogram blowers, shavings exhaust fans and hot blast apparatus for dry kilns. The company are anxious to see millmen and users of machinery, and a visit to their works will be appreciated by the proprietors.

FREE SITE FOR A MILL.

Mr. John Tapp, of Sheenboro, Que., writes as follows to an exchange:

"I hereby offer a free grant of twenty-five acres of my own deeded property at the mouth of Deep river, on the edge of a large bay, capable of holding two millions of logs, to any responsible lumberman or any other responsible man that wants to build a mill.

"I hope some such will accept of this offer, for there are a great number of young pine cut now-a-days that do not float over thirty or forty miles from where they were put in the water before going to the bottom, and any that does float are generally no larger than a broom handle when they get to Ottawa.

"No doubt the building of such a mill would encourage the construction of our North Shore railroad. And also if we get this railroad up to the mouth of Deep river it would encourage and strengthen us to pay this large bonus that we are taxed for yearly. This railroad would benefit any lumberman that would take hold of it on account of the small supply of logs. In our days the most of the logs are drifted down in booms and they wear and tear along the river, for every time they touch the shore they spill out two or three hundred logs, which lie beaten along the shore the most of the season until a fifteen inch log is worn down to about four inches. Another advantage I see is that there could be millions of feet of hard wood cut at the mouth of Deep river that could be brought in by farmers."

VIEWS OF A BANK MANAGER.

At the annual meeting of the shareholders of the Merchants' Bank of Canada, held in Montreal last month, Mr. George Hague, general manager, made the following remarks with respect to the forest products of Quebec:

"The unsettled condition of affairs in the States is affecting prejudicially our great export of lumber to the American market. Fortunately the other great branches of the trade in our forest products are in a really presperous condition. The English market is active and strong, and contracts for this year's sales in the United Kingdom have been made by the shipping houses at better prices than for years back, a state of things which has given rise to a feeling of satisfaction and hopefulness, especially in this province and throughout the Ottawa valley. There is one development of recent date that is coming into increasing prominence. I refer to the products of our spruce forests. Many of these forests have been neglected on the supposition that they were almost valueless. Now, however, they are becoming valuable for the production of pulp for paper making. It is estimated that 75,000 cords of spruce pulp wood, or about 1,000 canal boat loads, will be taken out of Canada this season through the Chambly and Champlain canals and delivered at Ticonderoga and mills on the Hudson. Perhaps it is a pity that so much immature timber is sacrificed and sent out of the country in this way, but developments may go on in the future of a character we can hardly estimate at present. Experiments are now being made in Europe, with a view to the production of a kind of silk from pulp wood, the process being a close imitation of that by which raw silk is produced by the worm. If our forests, besides producing lumber and paper, and numbers of things that are made of paper, can also be utilized to produce silk, we may be independent by-and-by altogether of the looms of Lyons. This, however, may only be a fanciful picture. Yet, quite as strange things have happened, and anyone who has observed the extraordinary developments of electrical engineering during the last decade may well be pardoned if he believes almost anything to be possible in the way of future development."

A BUSINESS NECESSITY.

Messrs. Duff & Stewart, Bluevale, Ont., in remitting their subscription, write: "We look upon THE LUMBERMAN as one of the necessaries in running our business."

While riding on his bicycle early last month, Mr. E. C. Grant, of the Ottawa Lumber Company, was run down by a horse and buggy. Mr. Grant was knocked unconscious, besides receiving several minor wounds.

An exchange says: "Two workmen were discussing serious subjects. Quoth the younger, 'I say, Bill, what are these here stock companies?' 'Well, I'll explain it to yer. You an' Jim an' arf-a-dozen more of your mates put up a penny each and buys two ounces of 'bacca and a clay, then I calls myself the managing director, and I sits down and smokes the pipe and 'bacca. D'ye see?' 'Yes, but where do we come in?' 'On! you're the shareholders; look on and spit.'"

SLABBING LOGS.

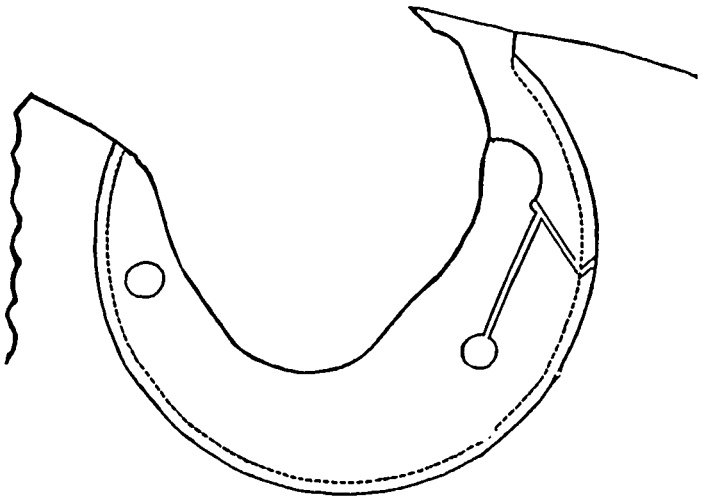
I SAW lately in "Pertinent Queries" something in regard to slabbing logs. Now did it ever occur to you that there is such a thing as too light slabbing; for instance, take a 24-inch clear, straight log, 12 feet long :

A four-inch face for first cut at two-thirds value, which is about all four-inch stuff will ever bring, equals 2⅔ feet. Allowing 19-16 for an inch board, which is about the usual band saw practice, and the next board will be 11 inches, full value, equals 11 feet; next board 15 inches, full value, equals 15 feet, total, 28⅔ feet, full value.

Next make six inch first face, full value, equals six feet; next, 12 inches second face, full value, equals 12 feet; leaving 15-16 on cant, 15½ inches wide, equals 12¼ feet, total, 30¼ feet.

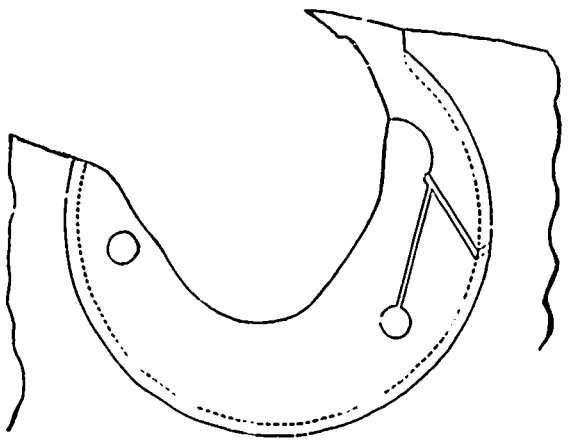
Next make eight-inch first face, full value, equals eight feet; 12¾-inch second face, full value, equals 12¾ feet, leaving 12/16 on cant, 16 inches wide, equals 10 feet, total 30¼ feet.

This shows a slight percentage in favor of the wider face the first time. Now, I do not care how deep the sawyer goes the first time, provided he does not take a board off in the slab, and I am satisfied that a great many mill men are trying to get a lot of narrow strips by light slabbing when they would get just as much money out of the log and have better lath stock if they would go for a wider face the first time. Let anyone diagram this and see if I am not pretty nearly correct. —S. D. Albright, in Hardwood.



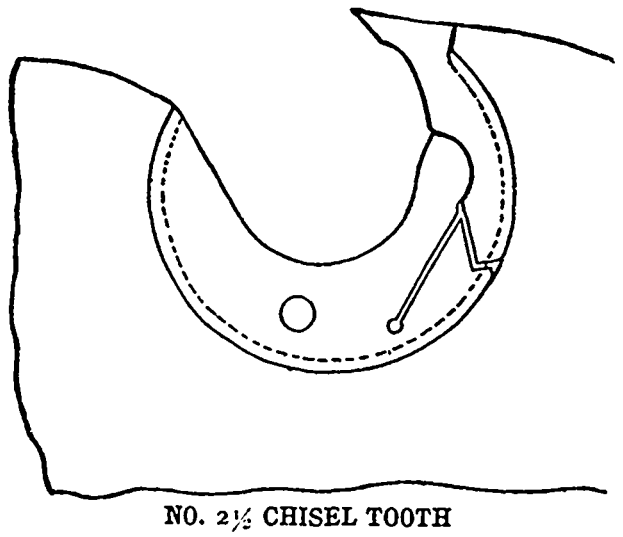
NO. 4 CHISEL TOOTH—FULL SIZE

Suitable for Soft, Pitchy Timber, where more throat room is required. A good all round tooth. Saws made with this tooth from 5 to 9 gauge.



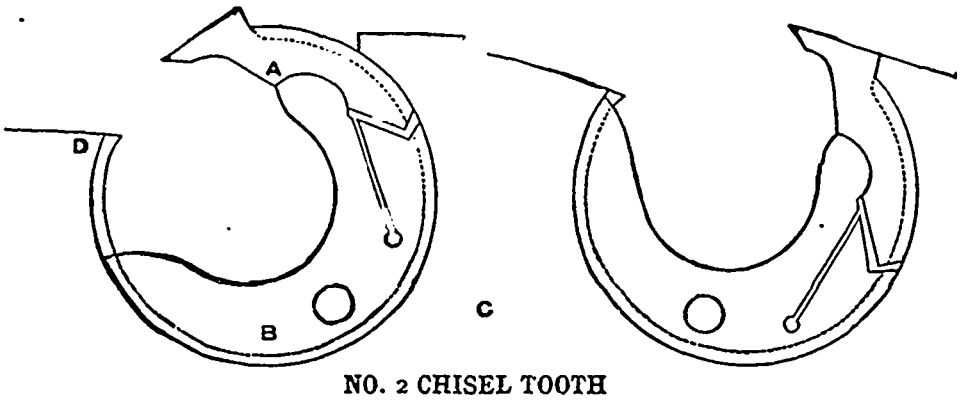
NO. 3 CHISEL TOOTH—FULL SIZE

Suitable for Hardwoods. Best Saw where all kinds of timber are cut. The standard tooth. Saws made with this tooth 6 to 11 gauge.



NO. 2½ CHISEL TOOTH

For Heavy Independent or Steam Feeds. Saws made with this tooth 6 to 9 gauge.



NO. 2 CHISEL TOOTH

For Edger and other small saws, and for very thin saws. Saws made with this tooth from 8 to 13 gauge.

Excessive Cost

has in the past prevented a more general use of

HOE'S GENUINE CHISEL BIT CIRCULAR SAWS

A Great Reduction

by Messrs. Hoe & Co. brings this Celebrated Saw within the reach of all.

THE **"CHISEL BIT" SAW** Requires Less Power Makes Better Lumber— Produces It at Less Cost than any other style of circular saw.

REQUIRES LESS SKILFUL OPERATOR

When new bits are inserted the saw is in much better shape than it is possible for the most expert sawyer to put a solid saw.

Each Bit, at a cost of 3½ cents each, will cut 1000 to 3000 feet of Lumber

They can be pointed up from 1 to 20 times. WRITE FOR NEW CIRCULAR.

Band Saws (Best Quality)

8 in. to 12 in.— Any Length— 14 and 15 Gauge—

Band Re-Saws

17 to 26 Gauge—6 inches and narrower—Best Shape Tooth for work to be done.

Narrow Band Saws

Hanchet's Square Body Swages

(For Circular, Gang, Band and Re-Saw.)

Swage Shapers or Formers

(These do away with Side Files.)

We make: Full Range BAND SAW TOOLS, SAW ANVILS, SAW HAMMERS; Special Quality SILVER SOLDER, ¾ in. wide, 7 ft. to the oz. Everything for Producing Lumber; all of the Latest and Most Improved Designs.

Waterous

Brantford - Canada

WHY BAND SAWS BREAK

SIXTEEN REASONS, AND HOW TO AVOID THEM

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

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

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

Address— CANADA LUMBERMAN, Toronto, Ont.