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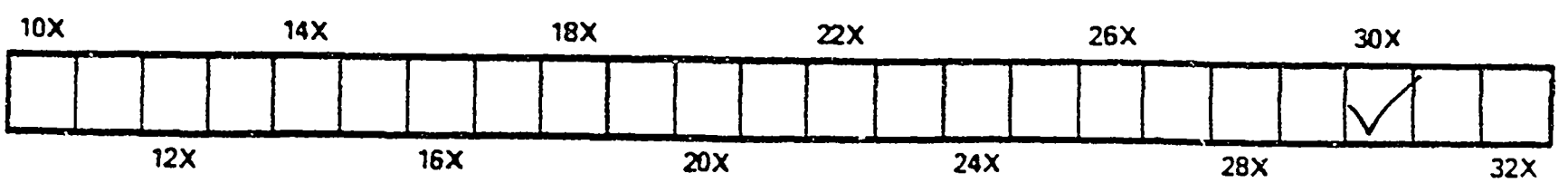

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FORESTAL EXPERIMENT STATIONS.

The following is a part of a paper entitled "Our next problem," read by Adolph Leue, Secretary of the Ohio State Forestry Association, at the Convention of the Ohio State Forestry Association, held in Cincinnati, April 25, 26, 27, 1883:—

The great importance of exact experiments in Forestry, was felt by two German foresters, Hundshagen and v. Wedekind, as early as 1826, in which year the latter proposed the organization of a society for forestal experments, but, as the proposition was not sufficiently endorsed, it was dropped for the time being. Several subsequent attempts to institute comparative experiments failed, until 1868, when, on 31st of August, at a Congress of German foresters, held at Vienna, a committee, consisting of Gutav Heyer, Franz Bauer, Ernst Ebermayer, Fr. Fudeich, and J. Wessely, was appointed to consider the question: *On what plan such* forestal experiment stations should be organized. This committee met on 22nd of November of that same year, agreed on a plan of organization, and questions to be subjected to investigations and experiments. The report was adopted by the German Foresters' Congress, and submitted to the several governments, which were to bear all the expenses of these stations.

The first station was organized in Baden on 16th April, 1870—Saxony, Prussia, Wurtemberg, Austria, Bavaria, Brunswick and Hesso, followed in the order mentioned. The stations in all of the just named states, with the exception of Austria, which has an organization of its own, have formed a union called "The Association of the German Forestal Experiment Stations."

The great aim of these stations is, to furnish a scientific foundation for a rational management of forest, based upon exact experiments and careful investigation. They are intended to determine the significance of forests in the economy of nature, to try the various methods of forest management, to examine the advantages which one method may have over another, and, finally to establish a plan of forest administration, which will enable the owners of forests to realize the greatest possible profit from forests, and at the same time reduce the expenses of their administration.

Among the many problems to be solved through the agency of these stations, are the following: to determine the influence of forests upon soil and climate; to investigate the relative value of the several methods of thinning; to establish reliable tables of increase, and methods of valuing forests; to study the foes of the forest, both animal and vegetable, and to devise means of successfully combating them; to determine the value of forest litter upon the growth of trees; to test the relative value of forest implements; the devise new methods of obtaining forest products, and to find new uses for the same; in short, they are intended to furnish the means by which to increase the wealth of the owners of forests, and thus that of the entire country, and to furnish legislative bodies with the foundation necessary for a just taxation of forests, and for a wise and beneficient code of forest-laws.

To fully appreciate the thoroughness of manner in which the work of solving these problems is performed in Germany, a glance at the organization of the Forestal Experiment Stations in that country, will be of some advantage.

These stations are State institutions, connected with schools of Forestry.

In Prussia, with the Forest Academy at Eberswalde.

In Bavaria, with the University at Munich.

In Saxony, with the Forest Academy at Tharandt.

In Wurtemberg, with the University at Tubingen.

In Baden, with the Poletechnicum at Carlsruhe.

In Thusingia, with the School of Forestry at Eisenach.

In Hesse, with the University at Giessen.

As all these stations are, with only some immaterial differences, organized on the same general plan, and as the examination of but one will answer our present purpose, I would now ask your attention to the organization of that in Prussia:

According to an ordinance issued by the Minister of Finance, on the 14th of March, 1872, the Forestal Experiment Station of Prussia was organized, and connected with the Forest Academy at Eberswalde, and placed under the control of the Central Forestry Division of the Ministerium of Finance. This station consists subjectively of five divisions, namely: a forestal, a chemico-physical, a meteorological, a vegetable physiological, and a zoological; locally it consists of the chief station at the Forest Academy, and a number of secondary stations in appropriate Chief Forest apportionment. The chief station embraces all of those five divisions, while the secondary stations have either a forestal and meteorological, or only one of them.

The general superintendence of the experimenting is vested in the director of the Academy, who acts as Commissary of the Central Forestry Division. He makes all the estimates of the expenses for experimenting, and, after due consultation with the chiefs of the several divisions, determines what experiments are to be undertaken and how they are to be made. At the end of the fiscal year, he submits, in an annual report to the Central Forestry Division, the results of the work done at the station.

Each of the afore-named five divisions has its chief, whose only duty is to carry out the work assigned to his division. Yet, according to the magnitude of the work, he has one or more assitants.

The secondary or sub-stations, which are unlimited in number, are under the direction of the chief forester, in whose division they are located. The importance of these sub-stations can not be estimated too highly. The problems assigned to them are, as a rule, of an exceedingly great practical value to practical forestry. In order to obtain reliable results, only the most competent and conscientious of the Chief Foresters are selected for making the experiments, which are performed after certain definite plans.

The expenses of maintaining the Experiment Stations in Germany, vary greatly, but always in proportion to the forest area of the respective State. For the year ending 1882 the expenses of the

Station in Prussia, amounted to 27,000 marks—$7,750.

Station in Bavaria, amounted to 44,000 marks—$11,000.

Station in Saxony, amounted to 14,000 marks—$3,500.

Station in Wurtemberg, amounted to 7,000 mark—$1,500.

The entire amount of money expended for the maintenance of Forestal Experiment Stations in Germany, amounts to about $30,000 annually.

These stations have, as already stated, formed an association whose great aim is to facilitate the objects of experimental forestry, by joint plans of experimenting, by a proper division of labor, and by publishing the comparative results. The business management of this association has been confided to the Station at Eberswalde.

I cannot dismiss this subject without having alluded to the plans of labor, or the manner in which the experments are conducted. A detailed account of these experiments would lead too far; I shall therefore confine myself to the main features of but two.

EXPERIMENT WITH FOREST LITTER.—The aim of this experiment is to determine the objective value of forest-litter, and its value to the growing forest. In order to obtain reliable results, the experiment is now being made at a number of stations in various parts of Germany. A tract of a forest section of five acres, stocked with only one kind of trees, which are all of the same, or nearly the same, age, is selected. This area is divided into five equal parts, which are laid out in squares.

From part I., no litter is removed.
" " II., litter is removed annually.
" " III., litter is removed every 2nd year.

From part IV., litter is removed every fourth year.

From part V., litter is removed every sixth year.

This process is continued for a period of about fifty years. The object of this method is. 1. To ascertain the exact quantity of litter which one acre produces, which is done by actually weighing it, first at the time when taken from the ground, and then when it is perfectly dry. It then sold at market price, and the amount obtained credited to that part of the experimenting area from which it was taken. 2. To ascertain the influence which the removal of litter has upon the increase of wood, which is determined by a repeated accurate invoice of the growing wood.

The significance of litter to the growing forest has long been felt, but never before in the history of Forestry, has this question been subjected to so rigid a process of investigation, which is certainly well calculated to settle the forest-litter problem.

EXPERIMENT IN THINNING.—Though we in this country have practised thinning to an alarming extent, it is nevertheless a subject on which we are badly in need of more light. With a few exceptions, the American idea of this part of forest management has been very ruinous to our country, in that, in many instances, it has left nothing that could remind us of a forest, except stumps of trees and a barren soil

The object of experimenting in this part of forest management, is to determine the influence of the various modes of thinning upon the growth of individual trees, and to find out the difference in the production of wood. An area of about three acres is selected, and divided into three equal parts.

In part I., only the dead trees are removed.

In part II., also the defective are removed.

In part III., every tree that does not keep up with the average growth is removed, so that in this part none but choice specimens are met with.

In newly formed plantations the process of thinning is repeated every fifth year, and later every tenth year. In forests consisting of oaks, or beeches, or pine trees, the experimenting period lasts fifty years, while but forty years are required for the softer kinds. An accurate record of the quantity of wood obtained at the different thinnings of each section is kept. After each thinning an invoice of the remaining trees is taken, and recorded. At the expiration of the experimenting period, when the final invoice is made, the most profitable mode of thinning must appear.

Other questions in forestry are treated in the same thorough manner, and the results obtained thus far are very satisfactory, so that those Forestal Experiment Station are constantly growing in public favor.

THERE is one thing about a house which seldom falls, but never hurts the occupant when it does—that is the rent.—*Texas Siftings.*

THE TIMBER TRADE OF AMERICA.

Prof. Rothrock, of the Pennsylvania University, in speaking of the danger of a timber famine, says that the area of the United States, including Alaska, is 2,306,560,000 acres. Of this, it is stated officially, 380,000,000 are in woodland chiefly belonging to private parties. In other words, taking our area as a whole, we have about 16½ per cent. remaining in forest growth. Of this, we must remember, that a large proportion represents lands which have been cut over, and are now covered with immature growth of good timber, or with trees of such kind as have no commercial value. It will, no doubt, be surprising to learn that as a whole, Europe has 28 per cent. of its area remaining in forest. This, however, is very unevenly distributed, and, to be of further use as a point of comparison, we must examine into the timber statistics of each important district. The percentage taken in this are: Sweden and Norway, 40; Russia, 39; Austro-Hungary, 23; Germany, 23; Switzerland, 19; Italy, 17; France, 16; Belgium, 12; Spain, 11; Portugal, 6, Great Britain and Ireland, about 3. None of those countries which have less timber land than above 17 per cent of their total area have sufficient wood to get along with. They have to import. Making, as far as I can, due allowance, and testing my results by various standards, I am now prepared to assert that we are in danger of a timber famine at any time our forests fall below 15 per cent. of the entire area of the country. At this hour, so far as I can estimate, we have not more than 16·47 per cent. Thi gives 1·47 per cent. between ourselves and want, so far as our industries are concerned. Of all civilized countries driven to make the largest use of iron and to exercise the greatest economy in wood, Great Britain heads the list. Here then we might suppose there existed the greatest ability to dispense with it. Her importations of wood were valued at $77,963,399 a year from 1872 to 1876, or $2.50 worth for each soul per annum.

LEATHER BELTS.

This subject is again being agitated by mechanics and engineers, and has not yet been decided. It would seem most natural to run the flesh side next the pulley, and believe this is the more common custom, though there are many practical men who use their belts with the grain side next the pulley. The *Scientific American* says:

"There are some questions in practical mechanics that never appear to receive a final and authoritative solution under whatever tests. To this class belongs the question, which side side of a leather belt shall run on the pulley face? In some establishments both ways are practiced, and it would seem that under these circumstances, so nearly uniform, the matter might be at last decided. But the foreman or superintendent who prefers the flesh side to the pulley face holds that his belts last longer than those run by the other forman in another part of the establishment who turns his belts inside out. Of course prejudice has much to do in these cases, and probably prevents a fair conclusion."

A writer in a recent number of the *Journal of Railway Appliances* says: "I advocate running the flesh side to the pulley for the following reasons: Leather is fibrous and curiously constructed, as revealed under a microscope, in the form of a triangle, being very fine and delicate, whereas the flesh part, or bottom of the triangle, has a coarser and thicker fiber, and if it is properly skived will be just as smooth as the grain, although a great deal tougher, and will, therefore, stand more wear and friction. If you will notice belts that have run grain to the pulley for any length of time you will find the grain cracked, and you wonder why. It is because you have subjected the tenderest part of the hide to the hardest usage; the friction has burned the grain, the burning brittled and hardened it; you can never restore it. If you let the flesh part do the work, the grain side bein elastic, it will bind the coarser fibrous parts and keep them together."

The principal proprietor of one of the oldest and most extensive manufactures of leather belting in the country recently declared himself as positively unequivocally in favor of running the flesh side to the pulley, as the result of more than thirty years' observation, and he offered, among other reasons, the quaint one that the belt run thus was in the natural position of the hide. Per contra, the superintendent of a large establishment, where heavy machine tools are built, runs all his belts grain side to the pulley faces, claiming a much longer life to the belts and a closer contact between belt and pulley faces. In his case, however, all the pulleys are of turned and and finished iron. And it is possible that all these disagreements on this question may arise from the difference in the materials of the pulley faces.

Wooden-faced pulleys are coming into use again, particularly for pulleys above twenty-four inches diameter, and leather-faced pulleys are very common. It is undeniable that there is a difference in the holding force of these differing faces, as there is in their materials.—*Dominion Mechanical and Milling News.*

NEW WOOD WORKING FACTORY.

A company was formed about a year ago at Elgin, Albert County, N. B., with a proposed capital of $10,000, for the purpose of establishing a wood-working factory. The locality is famous for the great variety and excellence of its hard wood, and, having railway connections, is especially adapted to the line of industry undertaken. The directors of the company are all local men whose names are: W. B. Jonah, J. W. Steeves, J. M. Layden,—Babkirk, D. M. Steeves, G. M. Killam, C. S. Horseman, Charles McGee During the last spring the site was selected at Elgin Corner, near the terminus of the Elgin Branch Railway. On this, building have been erected of the following ground dimensions: Main building 50x30 feet, with extensions 80x26; engine house 30x40; dry house 25x30. Steam power will be used. An engine of 80 horse power, with tubular boilers, made in the most substantial and improved style by the large firm of E. Leonard & Sons, of London, Ont., has been put in position and is a handsome piece of machinery. It is intended very shortly to make a commencement in manufacturing butter tubs of hardwood, carriage hubs, spokes, etc. The business will be developed into other lines, especially with a view to supply the English market. The two hundred shares of stock in the company have been nearly all taken up in the Parish of Elgin. This speaks volums in praise of the enterprise of the parish, which is of comparatively recent settlement. Elgin has been always a prosperous and progressive locality, and may be expected to make still more rapid advance when the new industry is once under way.—*Telegraph.*

HAVOC IN THE MAINE FORESTS.

The terribly destructive worms are again at work upon the juniper-trees, which already begin to present the same dead, dry appearance as they did last year—leaves, twigs, and even some of the bark, being devoured by the ravenous swarms of insects. In 1883 countless thousands of juniper and spruce trees in the northern Maine forests were attacked by this worm, and lumbermen were alarmed, while naturalists were puzzled. Whole townships of timber were almost destroyed by the pest in 1883. The trees were stripped of their foliage, and then the worms would bore in under the bark by hundreds, sapping the timber's vitality, and causing the whole growth to appear as though scathed by fire or suffering from a severe drought.

It was noticed that spruce suffered most where the growth was thick, and last winter all the smaller trees were culled out, so as to leave more nourishment from the soil and free air for the larger. Some scientific men recommended this, and others gave it as their opinion that the worms were generated in fallen and decayed trunks, thence issuing to attack sound trees, and claimed that the forests to be free from the scourage, should be weeded out and cleaned like a garden. Others still said that the advent of the worms was a natural advent, one to be expected, and that it would soon pass away. In cold weather the attack did cease, only to be renewed this summer. Many of the trees which were attacked last season are now dying. They put four green leaves in the spring, but the shoots were sickly, and now look dead and dry.

Maine's forests are extensive, but not inexhaustible under such conditions as now prevail. The axe makes a drain of 150,000,000 to 200,000,000 feet a year on Penobscot's banks alone, and probably 500,000,000 feet a year in the whole state, and cyclones have levelled whole townships of timber.

TREE FALLING BY DYNAMITE.

A cartridge of the explosive substance is placed in a channel bored directly under the tree to be operated upon, and when exploded the tree is simply forced up bodily and falls intact on its side. If this system works as well as it is reported to do, the tree is not fractured by the force of the explosion, and the wood at the base of the trunk can be utilized. An argument in favor of this method is that it brings up the roots of the tree, and thus dispenses with the tedious process of grubbing the roots of the felled timber.—*Mechanical World.*

Every lumberman will appreciate the convenience in handling timber after an artificial tornado or cyclone has left the trees in whatever direction they may fall, with the roots and a large quantity of earth intact, and left standing in the way of the teamester in skidding. Many of the lumbermen during the last season have seen a little too much of this haphazardness in forests, where the high winds have been paying their attention to tree felling at the cost of the owners of the timber. The lumberman, however, takes as much interest in felling a tree as in any part of the lumber business. The direction in which it must fall is carefully considered, and it is placed in the very spot intended by the skill of the chopper, without injury to the timber or a rooted stump turned up in the way of hauling. What would be gained by the wood at the base of the trunk would not pay for the powder, however tedious may have been the process of grubbing the roots of the felled tree.—*Cotton, Wool and Iron.*

MILL AND SKATING RINK FLOORS.

For about three years past there has been a growing demand for birch, beech and maple lumber for factory flooring instead of pitch or southern, pine formerly in use. There is now a very fair demand for birch, beech and maple lumber, and a number of large mills have used it in preference to the southern pine.

The lumber is claimed to be more durable than southern pine and will not sliver as that wood does when worn. It is also cheaper. A lot of floor boards of these hardwoods, dressed and kilndered, can be delivered at $28 per thousand feet, while southern pine flooring would cost from $33 to $34.

A considerable demand fo this hardwood lumber for flooring in roller skating rinks has also sprung up within the last two or three years. These rinks have bec me very popular, and there is hardly a New England town of importance which has not, or which will not soon have, one. As the wear on the floor is very great only the best lumber is used. The boards for this purpose are carefully selected and will command from $40 to $45. They are from 2½ to 4 inches in width, while the boards for mill flooring are from 3½ to 5½ inches wide. With the use of this flooring in skating rinks there has also arisen a considerable demand for it for dining rooms and hall ways, where it has to a great extent displaced the ash, chestnut and walnut, being from one quarter to one half less in price, and it is claimed, being full as durable. It is being used somewhat also in public buildings.

This hardwood lumber is obtained mainly from New Hampshire where there are large forests of these woods. There is considerable obtained also in Vermont. Up to its use for flooring, this class of timber was held to be of very little value and its main use was in the manufacture of clothes pins, pails, hay rakes, and a number of such miscellaneous articles. The timber lands on which it grow were valued mainly for their spruce and hemlock. The growing demand for hardwoods, however, has caused a considerable increase in the value of such lands. About all the mills in that section now have suitable facilities for the sawing, dressing and kiln drying of this lumber, while up to a few years ago very few of them touched it.

The business in this class of lumber has now become important, and is steadily growing. It promises to become very popular for flooring in hall ways, dining rooms, public buildings, &c., as its durability and cheapness become better known. Though its use for mill flooring is large and increasing, it is not claimed that it will drive southern pine out of the market. This hardwood flooring is not used in the Fall river and in the New York and New Jersey mills as the southern pine, coming by water freights, can be laid down about as cheap and, in some instances, probably cheaper. And again, the growing demand for the hardwoods will in time probably lead to an advance in prices. Of the three varieties maple is the best, but is not so plenty as the birch and beech, and in large lots they are sold together. The growth in the trade of this lumber has changed the almost waste lands of northern New England into timber lands of importance.—*Boston Commercial Bulletin.*

DEFENCES OF THE BUTTERNUT.

In the new world, however, the walnut family has been driven by its pressing animal foes to adopt far more vigorous and active defensive tactics. The great American forests, says Grant Allen in the *Popular Science Monthly*, are the very paradise of squirrels, and the numerous other rodents of the northern plains, to the screaming monkey sand the powerful billed parrots of the tropical South American jungles. Where enemies are so numerous and so persistent, only the very hardest and best protected nuts can survive; and so the nearest American representative of the European walnut is the butternut of Canada and the Northern States, a far more formidable and uncompromising mouthful to tackle than its easy-going old world cousin. The outer husk of the butternut resembles pretty well that of the walnut; but its very stony shell is extremely difficult either to pierce or to crack; the sharp ridges on its surface are naturally very baffling to the teeth of squirrels; and even when you have at last made a good hole in it, the inside can hardly be extracted in pieces of any bigness, because of the horny intervening ridges. This American walnut, in fact, is a far 'cuter and smarter form of seed vessel than its effete European relative. There is every reason to believe indeed, that the butternut is an advanced and improved descendant of the same primitive geological ancestor as the Greek walnut. Only, while the walnut has been standing still in peninsular Greece and Anatolia for innumerable generations, the butternut has been going ahead with true American impetuosity, inventing one new improvement or modification after another, till it has now attained to almost absolute perfection in its adaptation to its own peculiar walk in life.

Sudden Activity in the Timber Trade.

The *Timber Trades Journal* of July 19 says: Following an exceptionally dull season, it is stated that during the past week great activity has been displayed at Sharpness Docks, which have presented an unusual sight both in the number and size of the vessels docked. Six steamers, representing a net tonnage of 7,200 tons and a gross tonnage of 11,000 tons, were discharging, and four others, which have been moored there for some time, making in all a tonnage of 10,863 tons net, and 16,754 tons gross. In addition to this there were several large sailing vessels in the docks. Amongst the steamers discharging was the Wydale, from St. John, with 47,305 deals, &c., for Messrs. J. Bland & Co.

Prospects of the Lumber Trade.

The stock of lumber at the mills and in the markets all over the Northwest is accumulating relatively faster than is healthy for trade under the current rate of distribution. Nobody is more sensibly aware of this than the manufacturers, as their proposition to close down in September shows. Much interest is manifested as to the result of the meeting in this city on August 20, but few anticipate that any considerable shutting down movement will grow out of it.—*Northwestern Lumberman.*

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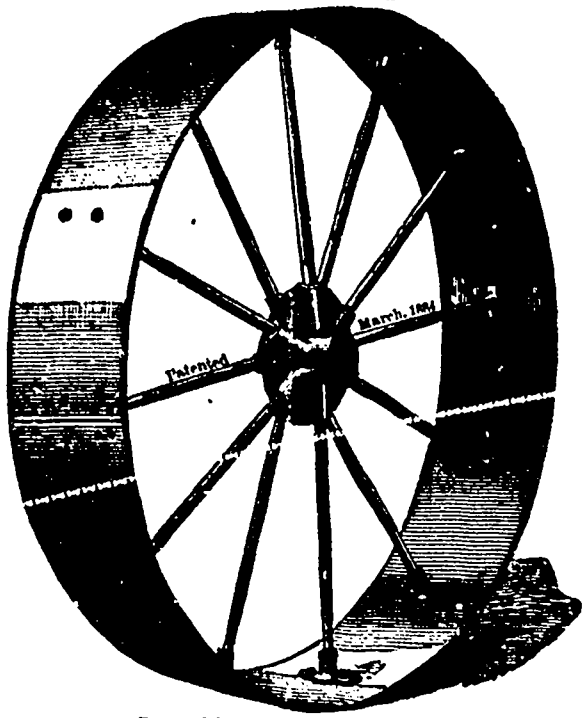

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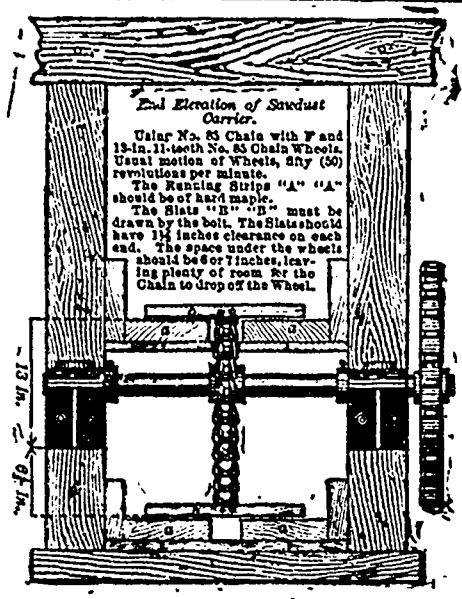

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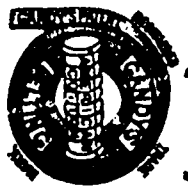

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49	"	12	"	"	6	"	49	" 11 " " 8 "
103	"	22	"	"	8	"	47	" 12 " " 6 "
52	"	20	"	"	6	"	73	" 20 " " 8 "
101	"	18	"	"	8	"	51	" 16 " " 8 "
52	"	18	"	"	8	"	37	" 16 " " 8 "
36	"	12	"	"	8	"		

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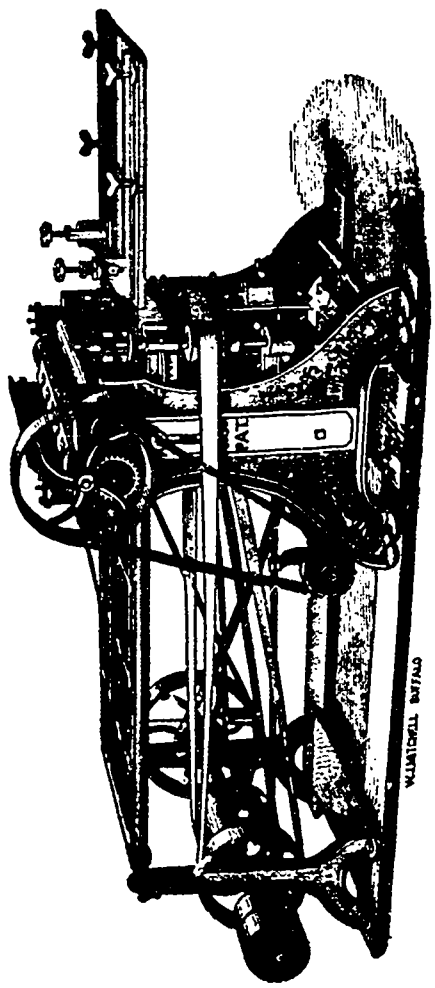

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BURRARD INLET SAW MILLS.

A correspondent of the *Columbian*, writing from Granville, Burrard Inlet, states that the Moodyville saw mill, the largest in British Bolumbia, is owned and operated by a Company of that name. On account of temporary slackness in the lumber trade, the mill has been idle for the past six weeks, but is to start up again in a few days. It is run by a 600 horse-power engine, usually employing, when running to its full capacity, about 75 white men, besides a force of Indians and Chinamen, and has a daily average capacity of 85,000 feet. It has one 62-inch double circular, 1 edger, 1 scantling machine, 2 planers and 1 lath mill. Attached to it is a large machine shop, a blacksmith's shop, and a millwright's shop. The company send out annually about 20 vessels laden with lumber, taking with them 12,000,000 feet rough, 2,000,000 feet dressed, 340,000 feet pickets, 54,000 bundles of lath, and nearly 600 spars. The spars go to England, the balance of the export to South America, Australia and China. The company run six logging camps, averaging 25 men each, and each camp averages 20,000 feet of logs per day. It also runs a comfortable and exceedingly well-managed hotel, besides a large cook-house for the workmen and a general store.

The Hastings saw mill is owned and operated by a company of that name, and, next to that of Moodyville, the largest in the country, is run by four separate engines. It has one 62-inch double circular, edger, lath mill and a gang. Attached are a machine, blacksmith and millwright's shop. The mill employs about 60 men, besides a force of Indians and Chinamen, and has a daily average capacity of about 75,000 feet. The company last year sent out 23 vessels laden with lumber, taking 13,000,000 feet rough, 2,000,000 feet dressed, 192,000 feet pickets, and 4,500 bundles laths. The total export went to South America, Australia and China. The company also runs five logging camps, in each of which are employed about 25 men; also, a general store and a large cook house, for the company feeds and lodges nearly all its employees.—*Victoria, B. C., Standard.*

THE WORLD'S HARVEST.

Harvest prospects and the prices likely to rule are two things on which, in this country, much depends. The harvest will probably be good in Ontario, and the area sown in Manitoba justifies the expectation of a large aggregate increase in the amount of wheat for export.

Prices of wheat will depend upon the total production of the world relatively to the demand, the rates of freight and the quantity left over from last year's crop. In Europe the price of wheat is nearly as low as it has been at any time within a century; and it is the more remarkable that this occurs a few weeks before the new harvest, a time when prices are generally above the average of the year. Even before the average price can be reached, there will be much leeway to be made up. It is too soon to ascertain what the prospect of the world's crop will be; the indications are that there will be a full average, and it is certain there is a tendency to increase exportation from certain countries. The wheat exporting countries of previous years are meeting new and more formidable competitors. Of these India is the most powerful, with, apparently, great possibilities of increase. The Australian wheat crop, by this time harvested, is reported to be much above the average. In Great Britain the prospects are that the year's crop will be better than that of 1883, and France is expected to produce an average crop. From Germany, Denmark, Holland, Belgium and Italy, only unfavorable weather between now and harvest can reduce the yield below the average. Egypt and Morocco are assured a full measure. From Austro-Hungary and Roumania come whispers of damage to the crops; and in Russia the prospect varies, in different localities, but on the whole seems to be good.

Stocks in Europe are believed to be large for this time of year; and in India there remains a good deal of wheat to come forward. Only a deficient harvest, of which there is no sign, or an extraordinary demand, of which appearances do not favor the expectation, could cause any material increase in prices. There is no question that, relatively to the demand, there has been an increase of production. The extra competition has been much felt by European agriculturists, where land is dear and rents high. The complaint is made that much European wheat has been sold below the cost of production. If this be true, the production of wheat for exportation, in countries outside of Europe, is determining the price at the centre of consumption. But wheat cannot long be sold below the cost of production though the cost of production may be lessened by a lowering of rent; otherwise, the growing of wheat on soils where it would not pay the cost of raising, must cease. If this should happen, there would be a tendency for prices to recover, by contracting the circle of competition.

The reduction of freights, which has been carried to an abnormal point, favors the European consumer and the distant producer, at the expense of the European farmer. Cheap freights enable the American, the Indian, the Russian, and other producers, to place wheat in London and Paris, at lower figures. But in all the exporting countries the competition has been keen; it has been said that many of them have been sending their surplus wheat to Europe, at prices which do not cover the cost of production. This somewhat startling averment needs confirmation. If true it shows a state of things which cannot last; no country can long afford to sell wheat below cost; wheat culture would, if the price did not cover cost, have to be diminished out of Europe as well as in Europe, until the equilibrium was restored. The carriers of the wheat, sold below cost, are said to have been working without profit; and if so, this is a state of things which must right itself. The building of new vessels must, in such a state of things decrease. This has actually happened, and, on the supposition that the facts are correctly stated, a diminution of tonnage must be brought about by the natural process of wear and tear. But some exaggeration may be suspected in the statement that part of the world's tonnage engaged in the shipping of wheat has latterly been altogether unproductive. Still, if not absolutely true, it is very near the truth. Great Britain is reported to have a surplus carrying power of three millions of tons; hundreds of vessels, steam and sail, are unable to find employment on any terms.

Are, then, the Malthusian laws being repealed? It is true that population nowhere presses on the means of subsistence, and that the fact of a superabundant production of wheat places an abundance of food within the reach of all? Unfortunately it is not true. Take an example from the facts before us. The excess of tonnage throws shipbuilders out of employment, and men without wages, in a time of plentiful crops and low prices, are liable to suffer the pangs of hunger. The pressure of population on the means of subsistence is not universal—it never is—the contact is confined to certain points, which are, according to circumstances, more or less numerous. In the midst of the greatest abundance there will always be men without the means of buying food.

The present is a period of transition, which must lead to a readjustment. If it be true that in Great Britain, France and Germany, wheat is being grown at a cost which prevailing prices do not cover, and if the same thing is happenning in wheat exporting countries outside of Europe, the loss cannot be long sustained; where rents do not come down in Europe, wheat lands must go out of cultivation; and out of Europe something that will pay the cost of production must be grown instead of wheat. This diminution of culture would of itself raise prices. The world's production of wheat can never, for any length of time, exceed the consumption. If production was greatly increased, additional mouths would come into existence to restore the equilibrium. Starvation freights are already regulating themselves. When the transition period, through which we are passing is over, things will, through a readjustment in harmony with the new conditions resume a normal condition.—*Monetary Times.*

THE POWER OF NIAGARA FALLS.

To any one who is interested in mill privileges where low water is unknown and the hours of use unlimited, the discussion of the possibilities of using the power of the falls of Niagara as given in a paper read before the American Society of Civil Engineers, recently held at Buffalo, N. Y., must be very entertaining. The author detailed the flow of the river at 275,000 cubic feet per second; falls along the rapids, 65 feet; height immediately at the falls, 165 feet. From these data it will be seen that the total horse power reaches nearly 7,000,000. To make use of this enormous power by water wheels, in the estimate of this engineer, would require a plant representing a cost of $5,000,000,000, which represents the amount of power that is thrown away by the neglect of the energy of the falls. The possibility of using this enormous power by transforming the same into electrical energy, and then transmitting it for use in distant quarters, must have afforded a very interesting discussion. The power now in use from the waters of the Niagara is taken in a canal accross the peninsula upon which the village of Niagara Falls is built, taking the water at the extreme point of the rapids and delivering it into the river below the falls, making use of the entire head amounting to 230 feet. This canal is nearly one mile in length, 35 feet wide, with a depth of about ten feet. A large number of factories are now distributed along the banks of the river taking the water from the canal and discharging over the sides of the precipice. The water wheels are set under heads from fifty to one hundred feet, and are capable of developing among the largest from 1,000 to 1,500 horse power each. This, together with a small overshot wheel under a six foot head on the Canada side, represents the extent of the use that is being made of this gigantic power at the present time, unless the race-ways at Goat's Island and along the mainland are to be taken into account where at least a thousand horse power is being developed under heads from four to sixteen feet.

ARRIVALS IN ENGLAND.

The timber ship arrivals between the 2nd of July and the 9th inclusive comprised 100 barone, of which 50 are sailers and 49 steamers. There are 13 arrivals from Quebec, altogether from the St. Lawrence ports 22, a good instalment of the spring fleet, and much in excess of last year at the same date, when there was a pretty full list of 77 vessels one with another. While our imports are falling off in other produce, timber seems to come forward with all the energy of an impatient market, one reason for which is, no doubt, that, as it is not a perishable article, the time to bring it forward is while freights are low, and it will be sure to be wanted some time or other, perhaps at a better price than can be got for it now.

We note that out of the largest fleet of vessels arriving from the St. Lawrence the first four sailing vessels to enter the port of London from Quebec were for Messrs. Bryant, Fowis, & Bryant. Of these, we understand, the Komandor Svend Foyn has gone into the Millwall Docks to discharge, so that with this company will rest the credit of having unloaded the largest cargo imported during the season. We believe the 1,100 standards this ship delivers will not be equalled unless one of the big steam liners loads up a full and comple cargo of wood. The Deepdale, that came the year before last from Pascagoula, with 990 standards on board, was the next largest to the sailing ship above mentioned.—*Timber Trades Journal.*

VARIATIONS OF SPEED.

The contrivance of step cones with shifting belts is a cumbersome and troublesome one for procuring gradation of speed. In many cases it answers its purpose, but in others some more sensitive and intermediate device would be better. A change of speed is readily obtained by a change of position of a driven wheel on the face (side) of a driver wheel or disk. The face of this disk may be either straight or slightly dished, and the driven roll or small pulley traverse the face of the disk from the shaft to circumference. It is evident that while the driven wheel is nearest the shaft of the disk it will revolve the slowest; and also it is evident that as the driven wheel is run out toward the circumference of the disk it will revolve the faster.

The shaft of the driver—the disk—is, of course, at right angles to that of the driven pulley; these relative positions must be maintained. But it does not matter, in practice, whether the disk is on a horizontal or a vertical shaft, so long as the driven is so arranged as to be permitted to be placed in contact with the disk at any point from centre to circumference.

This device, with some modifications, has already been employed in the machine driving of potters' wheels and in the foot of driving of sewing machines. But it is capable of a wider adaptation, especially in the machine shop, where sudden changes or quick variations of speed are frequently necessary. The large disk may be of cast iron turned and finished, and the driven wheel of iron, leather faced, or of wood. The progress of the driven wheel from shaft to circumference of the disk—from low speed to high speed—could be controlled by lever, worked by hand or by foot treadle. It is a much closer and more sensitive device than the present system of absolute changes of speeds on our lathes and drilling machines.

CHANGES UNDERGONE BY WOOD IN CARRIAGE MAKING.

In an address delivered by Mr. H. G. Shepard, of New Haven, Conn., relative to the use of wood in carriage making, he said that after a piece of wood is bent its characteristics undergo a considerable change. The wood is heavier, and its fibres have become interlaced; it will sustain more pressure and strain than straight wood in the same directions, either accross or with the grain. He said: "A piece of timber that has been steamed whether it was bent or not has its stiffness increased. It is more brittle than it was before, and for some uses it will do as well, and yet there is a quality that the steaming process and the kiln drying process effect in much the same way; they both cook the gum in the timber and make it brittle and stiff. There is a kind of hickory that never becomes stiff by a natural process of drying, and one of the desirable qualities of a spoke, *rim, or a bifftree, is stiffness as well as strength*; you take hickory—and it is the very best we have—and steam it, and it is better fitted for these purposes than it was before. It is difficult to tear apart a piece of bent wood; the fibres are interwoven, one with another. We do not perceive the change on the outside, but when we come to split the stick open we find that its character is entirely changed.

Old Butternuts.

Antiquarian discoveries are in order. Mr. E. Wicks, of the township of Chatham, was digging a well last week, and six feet below the surface came across a decayed trunk of a butternut tree, and alongside of it found a number of butternuts, one of which has been handed us, an interesting relic of the sweet long ago. The date of the fall of the tree in question must belong to a remote period, as it was found under a solid bed of blue clay. Mr. Wicks thinks it must be over a thousand years old. Speculation on that point properly belongs to the geologist, who is now at liberty to express an opinion. The nut in our possession is in a good state of preservation, and as hard as, and when cut resembling in substance, a bone. The facts, as stated, can be verified by any person wishing to investigate.—*Chatham Planet.*

Two Hundred Schooners' Masts.

The Steamer "Storm King" left City Island, near New York, on Thursday for Boston with a raft of pine spars, intended for schooners' masts. The lot consists of some 200 sticks, worth $150 each; total value, about $30,000. A dozen or more are chained together through holes bored near the ends; then follow as many more in the same way until all are in line. A speed of about three miles per hour seems to be about all that can be made. An extra towboat cannot double it. The raft will pass down Vineyard Sound Shoals to Monomoy Point, Chatham, where good weather and smooth water are waited for, if necessary, in order to successfully proceed around Cape Cod.

TREATMENT OF OLD TREES.

Old trees, writes Dr. Halstead, are not always profitable trees. The soil of the orchard may be rich, deep and mellow, and the trees remain unproductive. It is difficult to make a whistle out of pig's tail. Some fruit trees are not fruit-bearing, and have little use as foliage plants. A farmer cannot afford to grow wood in the orchard, the wood lot is the only proper place for such a crop. All unproductive trees either need to be cut down and cast into the wood pile or engrafted with new blood and new life. Much may be done in an old, run-down orchard, by a thorough trimming out of the dead branches and scraping the bark free from all insect pests. But a tree that is thoroughly bad, which is known by the poor quality of fruit (o its entire absence) needs to have its nature ·ged by grafting. This work is a simple one, which any farmer may do. He needs to know that grafting is the planting of a piece of one plant in a part of another. The cion is a cutting set in a tree instead of in the soil. The cions should be cut from healthy trees of the best varieties. Cut only twigs of last year's growth, a foot or so long, and tie them up in bundles with labels. These twigs should be obtained before any signs of spring life is seen in the trees, and the grafting should begin when the buds are swelling. The operation is a simple one. The writer grafted successfully when seven years old, and any person can do as well. It is more of an art than anything else, and although not easy to describe it can be easily understood by watching an expert graft a few stocks, and a little practice will soon give the knack.

A Use for the Pine Cone.

For once the pine tree is to figure largely in a presidential campaign. The pine cone is to be the symbol of the Blaine boom, because the "magnetic" candidate hails from the pine tree state. It was said by the reporters in the convention that the Hawley delegates from Connecticut, when they saw that Blaine was nominated on the fourth ballot, each went down into his gripsack and picked out a pine cone that had been cut and dried and brought along for use in a possible contingency. These symbols of the pine tree state they held aloft in full view of the convention with electrical effect on all who beheld them. It was a graceful and appropriate Connecticut tribute to the victor and his state; but pine men need not infer that because they have a sort of resinous connection with the Republican candidate for president that they are in duty bound to vote him.—*Northwestern Lumberman.*

Wood Ashes as a Manure.

Ashes improve all soils that are deficient in the principles which they contain, and are especially adapted to root crops, grains and grasses. When applied in connection with bone dust, they produce, says a contemporary, excellent results on turnips, potatoes—all the roots, in fact clover, peas, beans and the grasses. Ashes and gypsum mixed form an admirable dressing. Ashes are applied in variety of ways. They may be drilled in the soil, sown broadcast, or mixed with the muck heap. Repeating the dressing of ashes without a sufficient amount of vegetable or yard manure will in time prove detrimental, but there is not much danger of this mistake. Coal ashes are decidedly inferior to those made from wood, and depend largely on their mechanical influence for value. They are better adapted to heavy than to light soils.

Effects of a Theory on Trade.

When, a few years ago, the rapid extinction of the American forests was persistently insisted on, till people began to believe in it, a great stimulus was given to the timber trade here, as shown by the larger importation of 1876 and 1877, but when it became apparent that the more buyers were willing to extend their orders the more sellers arose to compete for them, they lost faith in the doctrine, and the trade soon shrank even within the orbit of its customary dimensions, and 1879 was as much below as 1877 was above an average year of importation. Since then the trade has gone on more evenly; but this year the cheapness of freight may possibly, to some extent, cause market cargoes to disturb its equilibrium.—*Timber Trades Journal.*

DEVOTED TO THE LUMBER AND TIMBER INTERESTS OF THE DOMINION.

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The CANADA LUMBERMAN is filed at the Offices of MESSRS. SAMUEL DEACON & Co., 154 Leadenhall Street, London, England, who also receive advertisements and subscriptions for this paper.

PETERBOROUGH, Ont., AUG. 15, 1884.

AMONGST the recent arrivals from Quebec in the above docks we note the Loyal with 750 standards for Messrs Bryant, Powis, & Bryant. This vessel is the next biggest of the sailing fleet to the Komandor Svend Foyn; her contribution to the market consists of pine and spruce deals, besides cases of splints and broom handles, the entire cargo going overside.—*Timber Trades Journal.*

THE present time affords grand opportunities for improving and extending large existing works besides commencing new ones, values of building commodities all around being so greatly reduced, and money plentiful in the market. This, in addition to the remarkably cheap freights, will probably bring the estimates made, when things were better, well within the mark. Those even who drew the line very fine when submitting tenders should be able to carry out their undertakings comfortably.—*Timber Trades Journal.*

THE *Monetary Times* says. A vessel was to be launched from G. S. Turner's ship-yard a Harvey Bank, N. B., last week for St. John parties. She 210 ft. keel, 40 ft. beam, 24 ft. hold, measures 1,765 tons and classes 12 years in French Lloyd's. The material used in the vessel is chiefly spruce, the rails, waterways and stringers being pitch pine, the keel and floors of birch, and the bits of oak. It is understood that the Hon Mr Turner will shortly commence the construction of a ship of 2,000 tons for parties id Albert County.

A CLEAN and excellent coating for wood is asbestos paint, or, better still, the thicker asbestos concrete. These substances act like true paint, adhere tightly to the wood, give good protection against high temperatures, and do not readily rub or chip off. It has but one objection, that is, its solubility in water; but for interior theater purposes this is no material objection. Great care must be taken in purchasing this article, and it should always be tested before being used, as much of the so-called "asbestos paint" which is sold is entirely worthless.—*C. John Hexamer, in "The Spectator.*

FOREST CONSERVATION.

THE almost universal complaints heard on every side, from the Malay Archipelago to the Western States of America, of the general apathy in regard to the vital question of forest conservancy should urge Canada to more vigorous efforts in this direction. Her forest wealth may be considered almost limitless, and a good start in the right direction might, in not very many years, be provocative of untold direct benefit, by enabling her, with greater facility, to cull such timber for the world's market as in quality and quantity should far more than rival that of countries who fall as yet to recognize the supreme importance of so legislating for the preservation of their forests, and of so enforcing these regulations as that, not only shall their present value be enhanced, but bountiful crops be ensured for the future.

Much has been done; much remains to do.

The general public has been stirred by speeches, blue-books, pamphlets, lectures and newspaper articles, to give this subject their earnest consideration. But, from the general public, consideration is perhaps the most that may be expected. Forest conservancy is outside the sphere of any but those who have to do directly with the production and exportation of raw material. It is to our lumbermen, therefore, to whose advantage, indeed, more than to that of any other class, such enhanced value of forest lands and forest productions will redound, that we should look for the urging on of that interest which, we are glad to notice, has already been begun in Canada.

But let us not waste time. Already Germany is outstripping us—at all event theoretically—by her forest schools. Russia, too, and Austria, are not far behind. Not a few in the United States are powerfully agitating this subject; to say nothing of France, India, Norway, Sweden, etc. Nevertheless there is nothing to fear in the lead they have gained. It is at present chiefly merely experimental. Germany has but lately undertaken experiments which will require 50 years for their thorough investigation and proof. Forestry is as yet an infant science. We cannot yet have lost very much ground, and we may, at all events, console ourselves with the thought that the theoretical knowledge gained by European nations may, by us, be practically applied. The differences of growth, variety and climate, must, of course, be taken into consideration, but with already obtained *data* as a basis, there should be no difficulty in progressing rapidly in the most beneficial direction possible.

SCIENTIFIC FORESTRY.

THE growing attention that is being paid to the scientific conservation and reproduction of forests is shown by the frequency of the publications upon the subject that are now constantly issuing from the press. We have just received from the Rev. John Croumbie Wood, one of the most fertile and instructive writers on this subject, a copy of his new work "Forestry in Norway," published by Oliver & Boyd, of Edinburgh. The holding of the International Forestry Exhibition in the Scotch capital is certainly being productive of good results.

This volume is the more interesting to us in Canada because the situation in Norway somewhat similar to that of our Dominion. It has been commonly supposed that the forests of both Canada and Norway were practically inexhaustible, at all events within any period that could concern the present generation. It appears evidently however that this has been taken for granted too readily. We learn from Mr. Brown that not only the farmers, but even the lumbermen, of Norway are now lamenting the wholesale destruction of the forests. In some old forest districts the climate has been deteriorated, and timber has to be imported instead of being exported as formerly.

But the most instructive portions of this work are the concluding chapters, which show that the Government has become awake to the extent of this evil. Forests are being taken under Government control, experimental plantations are being systematically made, and a complete staff of forest officials has been established. Still more instructive for us in Canada is the fact that the Agricultural School at Aars has been utilized for the teaching and study of forest science.

When will we in Canada learn by the example in this matter of the leading nations of Europe?

FENELON FALLS.

From our Own Correspondent.

A FINE RAFT.—Mr. J. M. Irwin's raft of square timber is now (August 1st) passing over the Midland Railway. It is loaded on the cars at Fenelon Falls and several trains pass here daily on their way to Belleville, where the timber is dumped into the Bay of Quinte and rafted and taken to Quebec. This is the largest raft that ever came down the Gull river waters in one block. The timber was cut in the township of Eyre, and landed on Saw Log creek. This creek was made navigable for square timber last fall and winter at considerable expense by Mr. Irwin, one of the features being a slide of over 1,400 feet long. This is the largest slide on any of the waters north of this, even if it is not the longest in Canada. Some idea of the roughness of the creek may be imagined when we mention the fact that one lumberman, who owned limits six miles up this creek, and who one winter landed several thousand logs upon a marsh about four miles up this creek, decided that the creek could not be made navigable and left the logs in the creek, and the winter following reskidded the logs out of the creek and hauled them some three miles to another lake. No difficulty, however, was found this spring in driving the out their large drive of timber, and Mr. Irwin also anticipates that he will have no trouble in driving out the large quantities of timber and saw logs which are yet to be cut and brought down this creek. We understand Mr. Irwin has already had one very good offer made for his raft. The timber is mostly wanoy, very large, and of a very fine quality, and if any lumber sells well this should. In conclusion we may remark that the creek improvements, timber making and driving was done under the superintendence of our townsman Mr. Geo. S. Thompson, who for many years past has superintended the woods department of Mr. Irwin's business.

THE LUMBER TRADE OUTLOOK.

Confidence in regard to the outlook for heavy business in the lumber trade during the fall months continues unimpaired, notwithstanding the great number of failures reported. The confidence is inspired by reports from every section of the country through the local papers in regard to extraordinary building operations. Such a condition of things must eventuate in a lively demand for lumber previous to the close of navigation. The depleted stocks in the eastern distributing centres and retail yards all unmistakably sustain the opinion expressed above. There is nothing really discouraging in the lumber outlook, as regards a spirited demand.—*Lumberman's Gazette.*

LIST OF PATENTS.

The following list of patents upon improvements in wood-working machinery, granted by the United States Patent office, July 29, 1884, is specially reported to the CANADA LUMBERMAN by Franklyn H. Hough, solicitor of American and foreign patents, No. 617 Seventh St., N. W., Washington, D. C.:—

302,595.—Auger-bit—H. L. Shaler, Deep River, Conn.

302,931.—Boring tool.—L. S. Faught, Philadelphia, Pa.

302,649.—Chucks, reversible jaw for lathe—J. W. Carleton, New Britain, Conn.

302,644.—Lathe, concentric—H. C. Albee, Detroit, Mich.

302,794.—Lubricating apparatus—J. L Booth, Meriden, Conn.

302,771.—Lumber elevator—J. Pauly, La Crosse, Wis.

302,874.—Planing machine—H. C. Tunis, Baltimore, Md.

302,766.—Saw sharpening machine—T. O'Connor, San Francisco, Cal.

302,766.—Saw tooth—P. V. Conover, Waldo, Tex.

302,741 to 602,744.—M. Kunz, Oberhausen, Germany, compositions for filling, grinding and polishing wood.

PATENTS ISSUED JULY 5.

303,091.—Gear out of connection, device for throwing—J. Sinnamon, Oswego, N. Y.

302,230.—Hammer for driving and holding tacks, etc.—J. W. Niebel, Buffin, Ohio.

302,911.—Planing machine—R. B. Jones, Chicago, Ill.

302,941.—Plugs or dowel pins, device for cutting—P. Robarge, Aurora, N. Y.

303,187.—Rule and square combined—G. D. Umland, Osceola Mills, Wis.

303,138.—Saw bow—C. Eusminger, Albany, N. Y.

302,891.—Saw set—J. Charlton, Newark, N. J.

303,127.—Saw set.—C. Croissant, Albany, N. Y.

302,902—Saw set—H. Flater, Findlay, Ohio,

302,895.—Wood bundling machine—L. H. Converse, St. Louis, Mo.

QUEBEC CULLERS' OFFICE.

The following is a comparative statement of Timber, Masts, Bowsprits, Spars, Staves, &c, measured and culled to July 25:—

	1882.	1883	1884.
Waney White Pine..	739,077	1,340,757	979,509
White Pine.....	2,587,094	1,213,191	903,680
Red Pine.....	392,890	123,556	50,311
Oak.....	643,060	871,427	452,275
Elm.....	441,980	242,609	507,131
Ash.....	156,081	140,335	341,531
Basswood.....	256	1,337	202
Butternut.....	1,060	835	1,088
Tamarac.....	1,427	2,705	16,037
Birch & Maple.....	262,273	130,494	185,053
Masts & Bowsprits...	33pcs	—pcs	—pcs
Spars.....	—pcs	—pcs	32 pcs
Std. Staves.....	237.3.2.15	341.0.1.1	10.0.2.22
W. I. Staves.....	604.1.0.0	332.6.1.1	69.3.1.23
Brl. Staves.....	10.0.3.4	77.0.0.21	0.0.2.13

JAMES PATTON,
Quebec, July 25. Supervisor of Cullers.

RAFTS ARRIVED.

The Quebec *Chronicle* has the following list of rafts arrived:

JULY 28.—D. D. Calvin & Co., oak and pine, sundry coves.

Burton Bros., pine Sillery (Sharples).

David Moore, white pine, Cap Rouge.

" white and red pine, Cap Rouge.

JULY 29.—J. & B. Griers, white and red pine, Dalhousie cove.

JULY 31.—A. & P. White, white and red pine, St. Lawrence Docks.

THE PROPORTION OF FAILURES TO TRADERS.

In 1870 in the U. S. there were 3,551 failures out of 426,000 traders, or 1 in 120, with liabilities of $88,242,000. In 1871, 2,915 failures (1 in 163), $85,252,000 liabilities. In 1872, 4,069 failures (1 in 130), $121,036,000 liabilities. In 1873, 5,183 failures (1 in 108), $228,499,000 liabilities. In 1874, 5,830 failures (1 in 103), $155,239,000 liabilities. In 1875, 7,740 failures (1 in 83), $201,060,000 liabilities. In 1876, 9,092 failures (1 in 76), $191,117,000 liabilities. In 1877, 8,872 (1 in 64), $190,669,000 liabilities. In 1878, 10,478 (1 in 66), $234,383,132 liabilities. In 1879, 6,658 (1 in 105), $98,149,053 liabilities. In 1880, 4,735 (1 in 153), $65,752,000 liabilities. In 1881, 5,582 (1 in 140), $81,155,932 liabilities. In 1882, 6,738 (1 in 122), $102,000,000 liabilities. In 1883, 9,184 (1 in 94), $173,000,000 liabilities. The number of traders has yearly increased from 426,000 in 1870 to 863,993 in 1883, except in 1877 there was a diminution of about 16,000 from year previous.

BRITISH LABOUR MARKET.

The British labour market, as reported by the London *Labour News* of July 9, continued very unsettled. Wages disputes and strikes were cropping out in all directions. Large numbers of miners were on strike in East Worcestershire and South Staffordshire, and "several thousands" of employees of Davlais Collieries have struck. The texile industries are variously situated, some being better supplied with orders than others, The weavers at Burnley were still on strike, and the Preston cotton-mill weavers left off work for alleged non-fulfilment of agreement to advance wages in July.

THE CORK-TREE.

This is a native of southern Europe and northern Africa. It grows to a height of 40 or 50 feet. It is the great source of the cork of commerce. This substance is the outer bark of the tree, which is of great thickness and elasticity, owing to the extraordinary development of the cellular tissues. The corky bark ultimately cracks and separates from the inner bark, which remains attached to the tree. Both the outer and the inner bark abound in tannin, and the former contains a peculiar principle called *suberine*, and an acid called *suberic* acid. The cork-tree flourishes well south of Virginia; it will stand ordinary winters north of this state, but severe winters injure it considerably, especially when the plants are young. A plant in the grounds of the department was killed during the severe winter of 1880-81, when the thermometer indicated eighteen degrees below zero. It is readily raised from the seeds, which, however, have to receive a special care in packing, so that they may retain their vitality during the time necessary for the transportation from Europe. The trees are usually allowed to grow for sixteen years before the first removal of the bark takes place. The first crop of bark is considered of but little value, except for tanning purposes, being full of cracks and cells. After a period of eight or ten years the bark is again removed, but this is also considered of an inferior quality, and is employed for floats for nets and such purposes. At the end of ten years or more a third cutting takes place, when the cork is esteemed of thickness and quality. The bark is removed by making longitudinal and transverse incisions, so as to allow it to be taken off in flakes. When first removed from the tree the bark is curved; the pieces are straightened by placing them in water and laying heavy weights on them; they are afterwards held over a blazing fire until the surfaces become scorched or blackened, which has the effect of closing the pores and giving a closer texture to the cork.

The best cork is not less than one-and-a-half inches in thickness; it is supple, elastic, neither woody nor porous, and of a reddish color. Yellow cork is considered of inferior quality, and white cork, which has not been charred on the surface, the worst. Although the charred surface is considered evidence of good quality, yet it is said the charring process has a detrimental effect, as it secretes an empyreumatic oil, which is given off and is frequently taken up by the liquid which the cork confines when in use. The firing is sometimes partially superceded by the process of boiling the cork and afteawards scraping its surface, which is said to be more effcetual in closing the pores.—*Southern Lumberman.*

Failure in Casting a Cannon.

Disastrous failure attended the attempt to cast a 120-ton steel cannon at the South Boston Foundry recently. The metal was conducted to the mould successfully and the process of cooling begun, when the entire mass suddenly exploded, setting the building on fire, but fortunately not injuring the workmen. The cause of the explosion is supposed to be an insufficient supply of cold water in the core. Krupp still retains the ribbon for successfully casting heavy ordance.

MILITIA

SEALED TENDERS, marked on the left hand corner of envelope "Tenders for Militia Clothing and General Store Supplies," and addressed to the Honorable the Minister of Militia and Defence, will be received up till noon of Monday, 11th August, 1884.

Printed forms of tenders, containing full particulars, may be obtained from the Department at Ottawa and at the following Militia Stores, where also sealed patterns of all articles may be seen, viz:—The offices of the Superintendent of Stores at London, Toronto, Kingston, Montreal, Quebec, and St. John, N. B.

Tenders not in relation with sealed patterns of the Department or accompanied by special patterns will not be received.

No tender will be received unless made on printed forms furnished by the Department.

The material of all articles will require to be of Canadian manufacture and Canadian workmanship.

Each tender must be accompanied by an accepted Canadian bank cheque, for an amount equal to ten per cent. of the total value of the articles tendered for, which will be forfeited if the party making the tender declines to sign the contract when called upon to do so, or if he fails to complete the service contracted for. If the tender be not accepted the cheque will be returned.

The Department will not be bound to accept the lowest or any tender.

C. EUG. PANET,
Deputy of the Minister of Militia and Defence
Ottawa 4th July, 1884.

WHEREAS, on the night of the 18th instant, the Post Office at Peterborough, Ontario, was entered by burglars, and money and postage stamps stolen therefrom, and moreover a number of valuable letters opened and robbed of the contents; notice is hereby given that a reward of TWO HUNDRED AND FIFTY DOLLARS will be paid for such evidence as may lead to the arrest and conviction of the thief or thieves.

JOHN CARLING,
Postmaster General.

Post Office Department,
Ottawa, 31st July, 1884. } 3d53eod13t3

DRIVING BY FRICTION.

For many purposes for which gear wheels were formerly used surface friction wheels are now employed. If the surfaces are properly matched as to material, and are sufficiently large as to area, there appears to be no reason why friction wheels cannot be more extensively employed than they have been heretofore. One of the objections has been that there must be an end thrust, which by its friction absorbs much of the power. It is a baseless objection, as may be seen in the friction clutch of the overhead countershaft of the lathe, and in many other situations where the release of the friction is the easiest and most natural movement. To be sure, in this case the amount of contact is very large—the entire circumference of the pulley—but the principle is the same; for where the pulley friction clutch must be held as one with the moving pulley, so the friction wheels are one so long as they are in contact, and their contact is a mere point against the circumferential contact of the pulley clutch.

An objectionable method of employing the friction driving is to use a metallic surface against a wooden or a leather surface; two surfaces of wood are better; but if iron and leather or iron and wood are used together, the driver should, in all cases, be made of softer material. For when the driver is thrown in contact with the driven, it must make a number of revolutions before its contact will be sufficient to start the driven wheel. It is evident, therefore, that if the driver is of iron while the driven is of some softer substance, it (the driver) will wear a crease that will injure the surface of the driven wheel. It is much better, where it is practicable to make both the driving surfaces of wood.

Excellent wheels are made of maple—hard rock maple—and of lignum vitæ, the lignum vitæ wheel to be the driven and the maple the driver. The wheels should be a cast iron spider made to receive the wood, which should be sawed into wedge-shaped or radial segments, so that the end grain of the wood bears and makes the contact surfaces. Excellent results have been obtained, also, with hard rubber (vulcanized) and wood, where there was no oil to rot the rubber, and for small wheels there is nothing better than raw hide as prepared for pickers for looms and for small gears. This will stand oil and resist its disintegrating influence.

One of the advantages of friction wheels over cogged wheels is that when they are started there is no shock, but only a gradual coming up to speed. Another is their noiselessness; but the epicycloidal cutting of gear teeth latterly has made the objection untenable, as gears can be run as silently as belts. But a great advantage is the very slight movement necessary to connect and disconnect, the actual surfaces requiring to be merely and barely separated to insure a stoppage of motion.

ABOUT LUMBER.

The *Monetary Times* says:—The extravagant scale on which lumbermen are wont to operate on this continent, the expensive methods of conducting the business, and the disproportion which the cut often bears to the probable demand, have long attracted the attention of observers, and are now getting some consideration from lumbermen themselves. Says the Chicago *Northwestern Lumberman*, "A small cut of logs next winter is now more seriously talked of than it has ever been before. The necessity for reducing the cut was never more apparent than now. For the past two logging seasons less work in the woods would have proved highly advantageous, but the operators could not bring themselves down to a slow gait. Last season the marked conditions made an urgent appeal to the mill men to curtail their cut, but they did not heed it. Logging was so easily done that in many cases the tally sheets footed up big figures at an early date. Under such favorable conditions as existed work could not stop, or rather the operators did not think it could, and the result of the season's work showed a large crop. Many of the men who logged would be highly pleased if the greater portion of the logs cut were back on the stump. Many logs are selling at a price that leaves nothing for stumpage."

The simple and sensible conclusion of the *Lumberman* is that this kind of business does not pay. Considering the amount of standing pine, and not only a growing demand, but one that will never cease so long as there is a pine tree in the Northwest, adds that journal, stumpage has a positive value, and it is extremely unbusiness like to slaughter it.

Respecting the lumber trade in the western part of Nova Scotia, the Yarmouth, N. S., *Herald* states "that the lumber trade of 1881 will show probably as large an output as that of any year in the history of Bridgewater. Messrs. Davidsons' output will be nearly or quite 14,000,000 feet, and that of Duffus & Co. in the vicinity of 5,000,000, while other mills will swell the total lumber product of the La Have to perhaps 25,000,000 feet."

The Ottawa *Citizen* of 30th July makes the statement that the number of rafts passing through the slides at Ottawa this year is the smallest known for several years. This is owing to the large shipments of square timber by rail.

A Montreal despatch of Tuesday last to the Quebec *Chronicle* runs: "The shipment of lumber to date for American ports is upwards of two millions of feet in excess of that of last year."

NOTES ON SOME MALAY TIMBER TREES.

The following is an extract from an article by Mr. James Collins in a recent number of the *Journal of the Society of Arts*, which also contains a table showing the results of experiments on the stiffness, and giving the characteristics, of some of the principal woods of Singapore, Malacca, and Johore. The subject of a large supply of timber is a most important one, and a few notes on the question as regards to the Straits Settlements will, it is hoped, be found of use. These will be but brief and preliminary, as the materials at command are too scanty at present to deal with the question otherwise. Johore, although an independent state, under the rule of His Highness the Maharajah of Johore, K. C. S. I., &,, is also included in the present note.

The extent of forests has been variously stated, but the following figures may be taken as an approximation:—

Singapore.....	20 to 30	square miles,
Malacca	160 to 170	"
Penang and Province Wellesley	110 to 120	"
Johore and adjacent Islands.....	10,000	"

To this must be added Selangor, Perak, and the other native states of the Malayan Peninsula, some of which are more or less under British Government control.

The forests of the Straits Settlements, properly so called, are the sole property of the Government, as is the case also with those under the Maharajah's rule. They are, however, in all cases rapidly decreasing, and no means are taken to stop this. The system of working them is as follows:—A person wanting a tract of land applies to the land office, and pays tenths on the value of the timber cut. Forest rangers, and occasionally the police, have to see that none but those having this license or permit cut timber.

This land may be required for the timber on it, or for cleaning for the cultivation of various products, and the forest supply of timber suffers most materially if the occupation of the land is not permanent but temporary. Thus a tract of land having been secured, the primeval forest is cut or burned down, and the timber left to rot. Between the fallen trunks, gambier, pepper, rice, tapioca, or other products are raised, and after a few crops have been taken off, the ground becomes exhausted. To procure and clear a fresh spot is often cheaper than manuring the old soil, so the previous plantation is abandoned to white ants, secondary jungle—as a rule of lalang grass—low scrub, with here and there small and useless trees. The lalang grass (*Andropogon caricosus*), when once it gets possession of the ground, stifles everything else, and its long fibrous and tough roots resist all native efforts to eradicate it; even a prairie plough would possibly reclaim the land at too great a cost. The pretty little sensitive plant Mimosa soon carpets the ground with its flaming yellow flowers, and it is more difficult to eradicate.

Singapore hardly cuts any timber at all for her own use, being chiefly supplied from Rhio and the adjacent islands, and also from Johore. In Malacca a greater quantity can be cut, but from want of roads or streams it is very difficult to get timber from a greater distance than fifteen to twenty miles from the town. Penang and Province Wellesley cannot cut much timber, unless the risk of climatic disturbance be run. The Straits Settlements export no timber to speak of; what little Tampinis and other hardwoods which have been shipped occasionally to Ceylon and Mauritius being chiefly from other islands.

With the territory of Johore the case is different. Some years ago H. H. the Maharajah erected extensive steam saw mills, and these mills, under the enlightened and able management of Mr. James Meldrum, have placed in the markets a large quantity of timber.

The following figures have been supplied me by Mr. Meldrum. Exports of timber from Johore, 1863—1874:—

To British India.....	15,000	$115,000
" China.....	7,000	84,000
" Mauritius.....	3,000	36,000
" Java.....	2,700	27,000

Taking in "sundry places," about 40,000 loads of hardwood have been exported, principally in the form of logs or railway sleepers; the trade in the latter has fallen off, through the more general employment of iron cradles. About 60,000 loads of softwoods, in the form of logs, planks, boards, &c., have been exported. Of these softwoods 25,000 loads were taken by Singapore, at a value of $270,000.

Mr. Meldrum states, as the result of about twenty years' experience, that the Johore forests are diminishing rapidly, that the seashores, islands, and other easily attainable localities are cleared, and that a good supply cannot be hoped for till the rivers are made more navigable and good roads pushed into the interior.

As will be seen, no steps have been taken as to conservancy or cultivation, and this calls for immediate attention. As to how this is to be managed need not be entered on here, but in parenthesis we may state that in following in the lines of the Indian Forest Conservancy, with a few modications, would amply meet the case.

As to the climatic changes brought about by the clearance of forests in this part of the world very little can be said. The late Dr. Randell, Principal Medical Officer, S. S., in his Annual Meteorological Abstract for 1873, has the following:—

"The only causes that appear to me to exist, or have existed, to which this great decrease of rainfall may be attributed, is the extensive clearing of forest on the mainland of Johore, contiguous to this island (Singapore), which has been effected principally during the period under notice; and I would suggest that the conservancy of portions of forests may be taken into the consideration of Government."

Certainly many old inhabitants have informed me that the heat is greater and the rainfall less in the Straits Settlements than it used to be. One thing, however, has done largely to mitigate and render less apparent the great destruction of forests, and that is the enormous extent to which the cocoanut palm and other fruit trees are cultivated.

AMERICAN WOODENWARE.

Perhaps in no branch of American industry has greater progress been made during the last thirty years than in the vast and varied manufactures of wood. We have not only distanced all rivals in this branch of industry, but we have gained a firm foothold in foreign markets, especially for agricultural implements, furniture, and a variety of labor-saving machines. The perfection to which our wood-working machines have been brought by unrivalled ingenuity has given American manufactures of wood a world-wide reputation. For, as nine-tenths of the cost of articles included under the head of "woodenware" consists in the labor necessary to their manufacture, and the wages of labor in this country are comparatively high, it could hardly have produced successfully its own woodenware without the aid of machinery. With this aid, however, the home market has not only been supplied by home dealers, but American woodenware has found its way into various foreign markets. For instance, the exports of woodenware for the year ending June 30, 1882, were valued at nearly half a million of dollars. The manufacture of furniture increased in value from $17,033,000 in 1850 to $75,539,000 in 1870, while the estimated increase in the last thirteen years has been very large. The growth in the manufacture of agricultural implements has been still greater. With woods of all kinds in abundance and easily accessible, with improved machinery for the purpose, there seems to be no reason why the exportation of woodenware should not yearly increase.—*Journal of Progress.*

HOW PIPES ARE MADE.

The short clay pipe formerly used by smokers has of late years been to a great extent supplanted by the wooden pipe the manufacture of which is now an important industry. Some interesting information respecting these pipes is given in Consul Inglis's trade report on Leghorn, whence the material for making wooden pipes is now largely exported. Similar works are also to be found at Siena and Grosseto. Selected roots of the heath—preference being given to the male variety—are collected on the hills of the Maremma, where the plant grows luxuriantly, and attains a great size. When brought to the factory the roots are cleared of earth, and any decayed parts are cut away. They are then shaped into blocks of various dimensions with a circular saw set in motion by a small steam engine. Great dexterity is necessary at this stage in cutting the wood to the best advantage, and it is only after a long apprenticeship that a workman is thoroughly efficient. The blocks are then placed in a vat, and subjected to a gentle simmering for a space of twelve hours. During this process they acquire the rich yellowish-brown hue for which the best pipes are noted, and are then in a condition to receive the final turning; but this is done elsewhere. The rough blocks are packed in sacks containing forty to one hundred dozen each, and sent abroad, principally to France (St. Cloud), where they are finished into the famous G. B. D.,, or "pipes de bruyere," known to smokers in England under the name of "briarwood" pipes. The production of this article is considerable, four hands turning out about sixty sacks per month. Consignments are also made to England and Germany; but, the Anti-tobacco Association will be glad to hear that at present the demand is said to be rather slack.—*Timber Trades Journal.*

WHITEWOOD.

Whitewood is very easy to work—it probably ranks next to pine in this respect—takes a good finish and makes a close joint. There are complaints against cypress for sash, doors, and blinds because, it is said, it is too hard a wood to drive together and make a perfect joint. Too much work must be put on the pieces where they come in contact to cause them to fit closely. In pine work this extra work is unnecessary. The wood is so soft that it readily gives, and the tight joint is at once produced. There are others who claim that such a fault with cypress does not exist; but that it does somewhat there can be no question. Not that perfect cypress sash, doors, and blinds are not made, but it requires a little more attention and labor to make them than it does from pine. In regard to softness, whitewood probably ranks next to pine; it is not quite as easily worked as pine, and a little more easily than cypress.

The Doomed Chestnut.

A scientific authority claims that the chestnut tree, which is disappearing so rapidly, has a fixed period of evolution. This tree, like all others of the spongy inferior fibre, cannot flourish beside the close-fibered trees, such as the oak. In ancient times a rank, quick growth covered the earth, which yielded, as the ages went, to the stouter trees. Thus it is the chestnut is doomed in the operation of the same law.

Chips.

THE claim is made for cedar that the tree is never struck by lightning, and that, therefore, a building covered with cedar shingles is free from danger from this source.

IT is stated that Louisiana has about 48,000,000,000 feet of pine in her forests. As the three great lumber states of Michigan, Minnesota and Wisconsin have only 82,000,000,000 feet. It will be perceived that Louisiana is very rich in timber resources. It has, in fact, more than half as much as the three other states combined.

IT is said that New York men are to build a mill near the Mt. Tom lumber mills, Northhampton, Mass., at a cost of about $6,000, for the purpose of utilizing the waste wood of the mills for kindling wood for the large cities. The mills make about 20 cords of waste daily, which will make a car load of the kindling wood, which is to be cut up and tied in small bundles daily.

PRODUCTION in the north of Sweden is being restricted, and this in connection with the low pressure at which many of the mills (especially in the Sundswall district) have been working since the commencement of the season, cannot but have a beneficial effect before long in spite of the slackness of the building and cognate trades in both Great Britain and on the Continent.

PRICES f.o.b. on the coast, says the *Timber Trades Journal*, are said to be slightly better this year than last; but, though some shippers are getting higher rates, others are pressing goods at some reduction. The inclination is to use the low freights as an argument for importing at the present time, but if the chief shippers adhere to their promise of curtailment even lower freights, we fear, will yet be heard of.

THE Dominion Dyewood and Chemical Company of Toronto, Canada, whose works were destroyed by fire last March, are about rebuilding on the former site at Don Station, Toronto, Ontario. The scope and volume of their business will be much enlarged. The new works are to be 160 by 82 feet, 3½ stories, and devoted to the manufacture of dye-woods, extracts, sulphuric acid, tin crystals, and mordants generally, mill soaps and lard oils.

AN ingenious dodge is described by a correspondent of the *Frontier Advocate*: The steam barge Derby, belonging to the International Lumber Co., of Newport, is taking home the hardwood lumber from the shore at present. She seems to be a very practical boat, for she hoists the logs from out the water and places them on the barge by a steam derrick, which is much easier than rolling them on by hand, and does it fast, putting and placing them at the rate of one per minute. She can carry 50,000 feet a load.

A NOVEL plan of draining high land marshes has been tried in some sections of the south with good success for several years. The *Southern Lumberman* speaks of a successful attempt on a marsh in Dougherty county, Georgia, that covered several acres. A framework was erected in the middle of the pond and a pipe driven down about 30 feet, when rock was struck, and the work of drilling a large hole commenced. This continued for 20 feet when, the rock being drilled through, the water ran out, and a screen being placed over the hole the bottom of the cavity was filled in with large stone to insure continued drainage.

AT a recent meeting of the New York State Commission on Forest Preservation one of the speakers maintained that among the things the State ought to do was immediately to take stock and find out what timber she is actually possessed of. She ought to have her timber pruned out and sold systematically. The ripe timber only should be cut, and when lumbermen paid for what they took they would not be tempted to cut any other than this, as no other could be manufactured at a profit. The Commission adjourned to meet again at Blue Mountain Lake about the middle of August. An inspection of the Adirondacks will then be made and their report prepared for submission to the Legislature.

Market Reports.

TORONTO.

From Our Own Correspondent

AUG. 8.—There is no change in the aspect of lumber trade worthy of note since my last letter. Dullness marks every department. At our docks it bears the aspect of one long holiday and at the retail yards it is but little better, and dealers feel thoroughly discouraged. Architects say, however, that the fall season will be a busy one, and certain it is that the wood working factories are full of work. The writer happened to be in one of our chief door and sash manufactories and the proprietor of which called the attention of his foreman to the fact that there were more orders in than could be turned out during the next two months, and, therefore, no more orders were to be taken in if immediate filling of such were required. On making inquiries at other establishments I found much the same conditions existing, and from this it may reasonably be inferred that the yard will not be long idle, although the consumption of lumber by the factories includes only the better grades of lumber of which we have no overstock. In past years we have had a class of buildings going up that used large quantities of the coarser grades of lumber, but buildings of this kind are now not numerous. Houses built of solid brick now command readier sale, and they give more employment to the factories than to the lumber dealers. It is thought by many that the late addition made to the boundaries of our city will give impetus to buildings of a cheaper class such as will rent or sell at low rates to mechanics and others, and doubtless such will be the case to a larger extent. I feel convinced, however, that shipments to the American market for the remainder of the season will be of a limited character and that mainly of the better grades of lumber.

Mill cull boards and scantling	$10 00
Shipping cull boards, promiscuous widths	12 00
" stocks	14 00
Scantling and joist, up to 10 ft	13 50
" " " 18 ft	14 50
" " " 20 ft	15 50
" " " 22 ft	16 50
" " " 24 ft	17 00
" " " 26 ft	18 00
" " " 28 ft	19 00
" " " 30 ft	20 00
" " " 32 ft	21 00
" " " 34 ft	22 50@22 50
" " " 36 ft	24 00
" " " 38 ft	27 00
" " " 40 to 44 ft	30 00
Cutting up planks to dry	24 00
" boards "	20 00
Sound dressing stocks	18 00
Picks Am. Inspection	28 00@30 00
Three uppers, Am. Inspection	35 00@40 00

B. M.

1¼-inch flooring, dressed	30 00
1¼ " " rough	16 00
1¼ " " dressed	25 00
1¼ " " undressed	15 00@15 00
1 " " dressed	22 00
1 " " undressed	16 00
¾ Beaded Sheeting, dressed	22 50
Clapboarding, dressed	14 00
XXX sawn shingles, ₱ M	2 90
Sawn lath	2 75

MONTREAL.

From Our Own Correspondent

AUG. 9.—We have no change to report in prices, and business continues very dull both wholesale and retail. Dry lumber is getting scarce here, but there is no encouragement for dealers to buy new stock in the present state of matters. We continue to quote as follows

Pine, 1st quality, ₱ M	$35 00@40 00
Pine, 2nd " ₱ M	22 00@24 00
Pine, shipping culls, ₱ M	14 00@16 00
Pine, 4th quality deals, ₱ M	11 00@12 00
Pine, mill culls, ₱ M	8 00@10 00
Spruce, ₱ M	10 00@13 00
Hemlock, ₱ M	9 00@10 00
Ash, run of log culls out, ₱ M	18 00@20 00
Bass, " " ₱ M	17 00@20 00
Oak, ₱ M	40 00@50 00
Walnut ₱ M	60 00 100 00
Cherry, ₱ M	60 00@80 00
Butternut, ₱ M	25 00@40 00
Birch, ₱ M	20 00@25 00
Hard Maple, ₱ M	25 00@30 00
Lath, ₱ M	1 75@ 2 00
Shingles, 1st, ₱ M	3 00@ 0 00
Shingles, 2nd, ₱ M	2 50@ 0 00

SHIPPING

Has been active both to South America and Europe and there are at present 14 vessels at the wharf loading for that destination. The exports for last month footed up to nearly 4,000,000 feet. Freights to the River Platte are steady at $13 to $13.50, and 50s. to Liverpool and direct ports in the United Kingdom. The demand for tonnage at the moment is nothing extra.

CORDWOOD.

There is very little coming in by boats, but a good deal by rail. Retail sales are very slow at present, but dealers are now beginning to lay in stocks for fall and winter. Prices are unchanged. We quote at the wharves ex cartage:

Long Maple	$ 6 00
Long Birch	5 50
Long Beech	5 00
Tamarack	4 50

WINNIPEG.

The *Commercial* of August 5th says:—The business transacted during the past week has been fairly liberal, and as the season advances dealers anticipate that trade will still increase. Prices are still hard to quote for the simple reason that each dealer has his own price, regardless of his neighbour or outside influence.

ALBANY.

Quotations at the yards are as follows:—

Pine, clear, ₱ M	$53 00@60 00
Pine, fourths	50 00@55 00
Pine, selects	45 00@50 00
Pine, good box	32 00@33 00
Pine, 10-in. plank, each	00 42@00 45
Pine, 10-in. plank, culls, each	00 23@00 25
Pine boards, 10-in	00 28@00 32
Pine, 10-in. boards, culls	00 16@00 21
Pine, 10-in. boards, 16 ft., ₱ M	28 00@32 00
Pine, 12-in. boards, 16 ft	30 00@34 00
Pine, 12-in. boards 13 ft	27 00@29 00
Pine, 1¼ in. sid " elect	45 00@47 00
Pine, 1¼-in. siding, " mon	16 00@18 00
Pine, 1-in. siding, sel	43 00@45 00
Pine, inch siding, common	15 00@18 00
Spruce, boards, each	00 00@00 16
Spruce, plank, 1¼-in., each	00 00@00 20
Spruce, plank, 2-in., each	00 00@00 30
Spruce, wall strips, each	00 12@00 12
Hemlock, boards, each	00 00@00 14
Hemlock, joist, 4x6, each	00 00@00 33
Hemlock, joist, 2¼x4, each	00 00@00 14
Hemlock, wall strips, 2x4, each	00 00@00 11
Ash, good, ₱ M	40 00@43 00
Ash, second quality, ₱ M	25 00@30 00
Cherry, good, ₱ M	60 00@85 00
Cherry, common, ₱ M	25 00@35 00
Oak, good, ₱ M	40 00@43 00
Oak, second quality, ₱ M	20 00@25 00
Basswood, ₱ M	25 00@30 00
Hickory, ₱ M	40 00@40 00
Maple, Canada, ₱ M	28 00@30 00
Maple, American, per M	20 00@28 00
Chestnut, ₱ M	38 00@40 00
Shingles, shaved, pine, ₱ M	0 00@ 0 50
" 2nd quality	0 00@ 5 00
" extra, sawed, pine	0 00@ 4 75
" clear, "	0 00@ 3 25
" cedar, mixed	0 00@ 3 00
" cedar, XXX	0 00@ 3 50
" hemlock	0 00@ 2 00
Lath, hemlock, ₱ M	0 00@ 2 25
Lath, spruce, "	0 00@ 2 50

CHICAGO.

AT THE YARDS.

The *Northwestern Lumberman* of August 9th, says:—The condition of the market during the week has been as dull as that of any week since the opening of the season. Though arriv have been only fairly plenty, the docks, ce Sunday, have been hemmed in by a fleet of considerable size, and the vessels have clung to the market with a staying pertinacity that has been anything but pleasing to either the commission merchants or skippers. The yard dealers have manifested an unwonted apathy about taking hold. Stocks have accumulated to such an extent that dealers are not inclined to buy freely when trade is in its present slack condition. The money question is also a matter of consideration. So long as the bank maintain a conservative attitude, and the financial heavens are far from clear of clouds, it is simply the part of wisdom for the lumber merchants to move with caution.

The pivotal point in this season's market seems to have quite or nearly arrived. The market hangs on the value of dimension. As long as piece stuff holds, the market can be saved. When that breaks, and a point or two is lost, there is much doubt as to the result. The peculiarity of the present position is that the imminence of the peril has made a common cause between the sellers and the buyers as regards anxiety. It may be asked, then, Why do not the merchants come forward freely and buy in order to uphold the market? Simply because they cannot with safety to themselves and self-preservation is the first law of existence. They realize that they must purchase as cheaply as possible, and at the same time they would like to have the actual state of the market hidden from the world. In this attitude we see the reason why "p. t." was written on transactions for the last three weeks up to the beginning of the present week. Now the actual condition can no longer be suppressed, and secrecy is relaxed.. The price of short piece stuff has fallen off a point, so that lumber that sold last week at $8.50 can now be bought at $8.25. As we go to press the market is trembling in the balance, and we will not undertake to say how much the decline will be before, in the fall, it catches on something that will hold. If only a point is lost, the market may rally at $8.25 and stay there until a revival of the yard trade, which, in all reason, cannot much longer be delayed. A brisk outward movement from the yards would put a much brighter phase on affairs.

Common inch lumber, having enjoyed none too good health all the season, is no better on account of the weakness of dimension. No. 2 stock of the coarser quality that is now flooding the market is freely quoted at $9 to $10 a thousand, which are figures that were not freely quoted a short time since. A better quality will range from $10 to $11. There is such a variety in the cargoes of No. 2 stock offering on the market that an exact statement of prices would have to include each transaction. The best that can be done is to give a range that includes the highest and lowest prices.

As an indication of the extent to which weakness has seized general lumber values, the sale of a cargo of inch lumber this week is in point. It was offered at $14 at first, and hung fire for two or three days at that figure. It finally sold at $12.50. This cargo would class as high medium or ordinary No. 1 stock.

It is openly stated that thick clears and selects in the general market have declined to the extent of $2 to $3 a thousand. This is one of the most noteworthy features of the present condition, and is exciting a good deal of comment.

No. 1 boards and strips are still holding up well, considering the weakness in other lines of lumber. One mill cut comes to the market here regularly that sells uniformly at $17, which shows the strength of No. 1 lumber when its quality is well understood.

Shingles, though arriving more freely than a short time ago, are selling at about the same figures as hitherto quoted, a considerable difference in price resulting from the diversity of brands and qualities.

Lath are selling at almost nominal figures, nobody appearing to be fully posted in regard to prices, which seem to be made very much to accommodate the buyer, and as a make weight in disposing of lumber. One dealer says that a blank mark after lath would be as good a quotation as any.

Quotations are as follows:

Piece stuff, green	$ 8 25@ 9 50
Long timber, green	10 00@10 50
Boards and strips—No. 2 green	9 00@11 00
Boards and strips Medium, green	11 00@13 00
Boards No. 1, green	15 00@18 00
High grade	18 00@24 00
Shingles, standard	1 60@ 1 75
Shingles, extra	1 80@ 2 00
Shingles, clear	2 80
Shingles, cedar	1 50@ 2 00
Lath	1 25@ 1 40

AT THE YARDS.

This year trade having been unusually slack during July, the revival will probably be deferred to the last moment. The reasons for this are that prices being low and uncertain, both distributers and consumers will hesitate about purchasing, for fear that prices may go still lower.

Lumber is low enough now, and it would seem to be wise policy to put in such stock for the fall trade as will be absolutely needed before the inconvenience to prompt shipment shall become great.

Under the sluggish demand stocks in the yards have accumulated until most houses have a full assortment. There will always be more or less assorting up between yards, but there is less necessity for it now than for months past. There is less talk than earlier about scarcity of particular sorts. Inch and a quarter high grade lumber is probably as meager in supply as any.

The prices of shingles are considered more certainly at bed-rock bottom than any other stock. A heavy dealer in shingles thinks it a safer transaction to buy shingles than lumber at present prices. He claims that shingles are now so low that mills have been forced to shut down, while saw mills are running wide open everywhere. He argues from this that the demand has at last regulated the supply of shingles, while it has not that of lumber.

LAKE FREIGHTS.

Grand Haven	$ 1 00
Muskegon	1 12½
Whitehall	1 25
Ludington	1 50
Manistee	1 62½
Menominee	1 50
Oconto	1 62½
Cheboygan	1 37½
Alpena	1 75
Bay City	2 00
Tawas	2 00
Frankfort	1 75

Receipts of lumber, shingles, etc., for the week ending July 24, as reported by the Lumberman's Exchange:—

RECEIPTS.	Lumber.	Shingles.
1884	115,118,000	53,254,000
1883	123,231,000	82,440,000

FROM JANUARY 1, 1884, TO JULY 24, 1884, INCLUSIVE.

RECEIPTS.	Lumber.	Shingles.
1884	836,654,000	433,028,000
1883	758,708,000	531,478,000
Increase	67,836,000	
Decrease		98,450,000

LAKE RECEIPTS FROM JAN. 1 TO JULY 24.

Lumber	853,453,000
Shingles	434,797,000
Lath	32,731,000
Posts	2,299,761
Railroad ties	624,924
Wood, cords	15,294
Bark, cords	12,941
Slabs, cords	21,911
Telegraph poles	104,275
Spars	12
Piles	250

STOCK ON HAND JULY 1.

	1884.	1883.	1882.
Lumber & timber	470,292,195	430,375,078	443,089,546
Shingles	295,843,825	246,987,650	223,839,500
Lath	40,889,385	43,612,922	26,691,152
Pickets	1,331,104	1,486,077	1,902,187
Cedar posts	297,645	409,258	154,143

OSWEGO, N.Y.

1½, 1¾, 2 & thicker uppers	$42 00@44 00
" " " " picklings	32 00@34 00
" " " " cutting up	22 00@24 00
" " " " cutting up pecklings	
pecklings and better	32 00@34 00
1 inch selected sidings	28 00@30 00
1¼ " " "	30 00@35 00
1 & 1¼ in. box	12 00@14 00
" " sidings, dressing and better	22 00@25 00
1x10 in. 13 ft, dressings and better	20 00@25 00
" " shipping culls	14 00@15 00
" 14 & 16 ft, dressings and better	20 00@23 00
1x10 in. 14 & 16 ft. ship culls	14 00@15 00
1x12 " " " "	14 00@15 00
" " " dressings and better	20 00@23 00
1¼ in. stripe selected	23 00@25 00
1x" " dressings	16 00@17 00
" " culls	10 00@13 00
Ash.	
1st & 2nd, 1 to 4 inch	18 00@22 00
Culls " "	10 00@12 00
Basswood.	
1st & 2nd, 1 & 1¼ inch	18 00@20 00
Culls " "	10 00@11 00
Shingles.	
XXX Pine	3 50@ 4 25
XX "	1 90@ 2 10
XXX Cedar	2 90@ 3 25
XX "	1 50@ 2 00
Lath 1¼ No. 1	2 00@ 2 25
" No. 2	1 50@ 0 00

BOSTON.

Cotton, Wool and Iron of Aug. 9 says:—General business is moving along slowly, and there is very little change to chronicle. The fall demand has hardly opened up yet. Western pine shows a little more doing. Orders for spruce are being pressed, and sometimes at reduced prices. Yellow pine is as slow and dull as ever. Hardwoods as a rule hold up quite steadily at previous prices.

CANADA PINE.

Selects, Dressed	$48 00@50 00
Shelving, Dressed, 1sts	40 00@42 00
" " 2nds	33 00@35 00
Dressed Shippers	27 00@29 00
Dressed Box	18 00@20 00
Sheathing, 1st quality	42 00@45 00
" 2nd "	34 00@35 00

TONAWANDA.

CARGO LOTS—MICHIGAN INSPECTION.

Three uppers	$42 00@46 00
Common	14 00@18 00
Culls	11 00@14 00

BUFFALO.

We quote cargo lots:—

Uppers	$45 00@46 00
Common	17 00@18 50
Culls	12 50@13 00

LIVERPOOL.

The *Timber Trades Journal* says:—The deliveries from the quays and yards seem to show some diminution and this would point to a decrease in the demand from the country if the indications at the various wharves and the other shipping depots such as railways, &c., are to be taken as a criterion of the amount of business

that is being done in this neighborhood. The general trade of this neighborhood is in an unsatisfactory condition at present, the disturbed state of the mining and cotton manufacturing districts having no doubt considerable influence upon our trade, and complaints are rife of the want of animation in nearly every quarter.

Prices generally are so low at present that it would seem a favorable opportunity now presents itself for buyers of large quantities to enter the market, as in the face of the rapidly approaching autumn we shall soon have increased rates of freight and insurance put before us.

Some animation will be thrown into the market by the requisition which has just been made by the Mersey Docks and Harbour Board, through their brokers, Messrs. Duncan, Ewing, & Co., for the supply of various quantities of Quebec pine, pitch pine, and other woods, and in putting forth their wants at this time they are doubtless pursuing a wise policy, as prices are very low, and with the exception of some articles a good selection can be made.

On Wednesday, the 23rd July, Messrs. James Smith & Co. offered a cargo of spruce and pine deals, a large quantity of American oak waggon scantling, and also a cargo of Newfoundland yellow pine.

The latter sold at a wide range of prices, considering the wood was to be delivered as landed from the ship, without regard to size, the first lot being sold at 11d. per foot, and gradually dropping down to 7¾d. per foot.

GLASGOW.

The *Timber Trades Journal* says:—Trade here is just now to a great extent suspended, being the annual summer holiday season, which generally continues for a week in the building trades, and for the working classes in general.

This year, however, as some of the ship builders have few orders on hand, a number of the yards will not be opened for business until the 4th of August, which we believe will be longer than is desirable by the workmen. The consumption of material and selling by wood merchants will therefore be limited for some time.

A cheering announcement in regard to shipbuilding, especially for the populace in the east end of Govan, has, however, just been made, being that Messrs. R. Napier & Sons, Govan, have secured an order for two new steamers. They are intended to be used chiefly in connection with the construction of one of the deep-sea cables.

As will be observed from the import list there have been considerable arrivals of timber and deals at Clyde ports during the past week.

The timber trade at the opening of the summer imports have found the accommodation at Yorkhill Wharf, Glasgow (which is the chief depot for storing deals imported to Clyde), inadequate for their requirements. A portion of the wharfage there is set apart for the use of the cattle trade, and a large additional piece of ground in the yard has lately been taken up by this trade, which very much hampers the wood business.

TYNE.

The *Timber Trades Journal* says:—The principal arrivals of wood goods during the last few days have been pit props and pitwood, of which, whatever may be the demand, there is evidently never a diminution in the supply. There are also two cargoes of prepared floorings from Norway, one cargo pitch pine from Doboy, and the Christiania and Gothenburg steamers with usual assorted cargoes. Most of the sawn deals appear to be going forward into consumption, and the returns published in your last number show certainly that a good and steady trade must be doing. In the building trade, while there is no very great activity, there is no doubt a good steady trade being done, and saw mills are on the whole fairly well employed. In contracting there is also a good deal of work, but in shipbuilding and ironworks there is as yet no sign of improvement.

A MAMMOTH MILL.

Wood and Iron, San Francisco, Cal., speaking of the great mill of Hanson & Co., at Tacoma, W. T., says: This mill is situated on the headwaters of Puget Sound, and is one of the largest and most complete on the coast. It is 450 feet long, 80 feet wide, and has a capacity of 225,000 feet of lumber and 60,000 lath per day. It has all the latest improved machinery, including steam feed gangs, scantling machines, live rollers, etc, known to the lumber manufacturing community. In this mill timber 100 feet in length and of the largest size can be sawn as readily as a lath, so complete and perfect are all its workings. On the Tenino and Olympia railroad the company control numerous logging camps, from which is procured the finest timber and spars in the world. There is now being shipped from this mill a full cargo of spars for the Chinese market, this cargo following a former one of sawn timber from 12 by 12 to 26 by 26, seventy feet long and upward, from same mill and for same market. At Tacoma they own fifty-four dwelling-houses, occupied by their employees. These houses are built with all the modern conveniences, and partake of the attractiveness of a well-regulated home. The company also run, in connection with their lumber business, a mammoth store, carrying an immense stock of dry-goods, groceries, hardware, boots and shoes, shipchandlery, etc. In connection with the office of the mill and store is a telegraph office, giving them all the wire accommodations of the day. Four vessels, ranging from 700 to 1,200 tons, belonging to them, are engaged in carrying lumber to different ports, while from four to six vessels loading for foreign ports are constantly at the wharf, carrying in quantity from 500,000 to 1,500,000, and the steam tug Tacoma, the strongest tug on the waters of the sound, is kept busy. The firm also has a fine mill at Redwood City, which has a daily capacity of 20,000 feet. In all of this firm's enterprises over 1,000 men are constantly employed the year round. This gigantic business, with all its branches and workings, is managed, conducted and handled by one man, Mr. Charles Hanson, the founder of the enterprise, and the only person composing the firm of Hanson & Co.

POWER FROM NIAGARA FALLS FOR ELECTRIC LIGHT.

The correspondent of the New York *Sun* has received a letter from Leonard Henkle, inventor and electrician, of Rochester, saying that although the action of the New York Legislature in favour of the National Park compels him to abandon Prospect Park and the American side of Niagara for electric lighting purposes, he has nevertheless negotiated for the purchase of land on the Canada side of the river and for power from the great Horseshoe Fall for carrying out his original plan. That plan contemplated the lighting of sixty-five American and Canadian cities, connected by means of underground cables with electric lights generated at Niagara. The plans are all drawn for ten hydraulic engines of 200,000 horse power each, and gigantic machinery. That Henkle himself means business is attested by the fact that he will soon open an office on the Canada side of the river, and endeavour to complete arrangements with capitalists, whom he expects to furnish $22,000,000 for the undertaking.

UNITED STATES FORESTS.

The New York *Commercial Bulletin*, speaking of the value of the forests of the United States, says the same influences are at work in that country as R. W. Phipps have shown have led to such unfortunate results in the forests of Canada. Valuable timber, either through ignorance or criminal carelessness, has been outrageously wasted, and more rational views as to the immense value of the forests are urgently needed. The forest wealth of the United States at the lowest calculation outmeasures the value of the entire corn crop of the country, is a third more than the value of the wheat returns, exceeds the aggregate value of the hay, rye, oats, barley, buckwheat, potatoes, and tobacco, and is ten times as valuable of the product of all the mines of gold and silver in the country.

FOREST DENUDATION AND WATER POWER.

The effect of forest denudation at the head waters of the Hudson river shows itself even earlier this season than it did last, and is seriously interfering with the water power along that stream. The Glens Falls *Republican* says:—"The first trouble occurred on Tuesday night, June 1, when one mill on the south side of the river was compelled to stop for lack of motive power. Since then they have run a majority of the time, but at periods quite slowly. After the rain on Tuesday matters mended somewhat but not permanently. Last year the mills continued in full operation until about July 15. The dearth of water began this season earlier than ever before, according to the recollection of a veteran sawyer who speaks from 25 years' experience. The necessity of building reservoirs at the head waters of the streams which feed the Hudson becomes every year more apparent." The safest and best reservoir which can be built in the Adirondack region is to prevent any further forest denudation there, and reafforest that portion already denuded.—*Lumberman's Gazette.*

ANY visitor to Buckingham Landing, who takes an interest in mill matters, cannot fail to admire the well ordered little saw mill which is conducted there by Mr. Erince for the Diamond Match Company of Westville, Connecticut. This is supposed to be the largest match company on the continent, and some years ago bought up many manufactories in Canada and the States. This little mill has a capacity of some 400 to 500 logs per day, and is run with comparatively very few hands, it being one of the best ordered and most conveniently arranged saw mills, mechanically, in the district. Pine and spruce deal and board lumber is sawn for the American and local markets, and the waste lumber is cut into match blocks.

Central Iron Works

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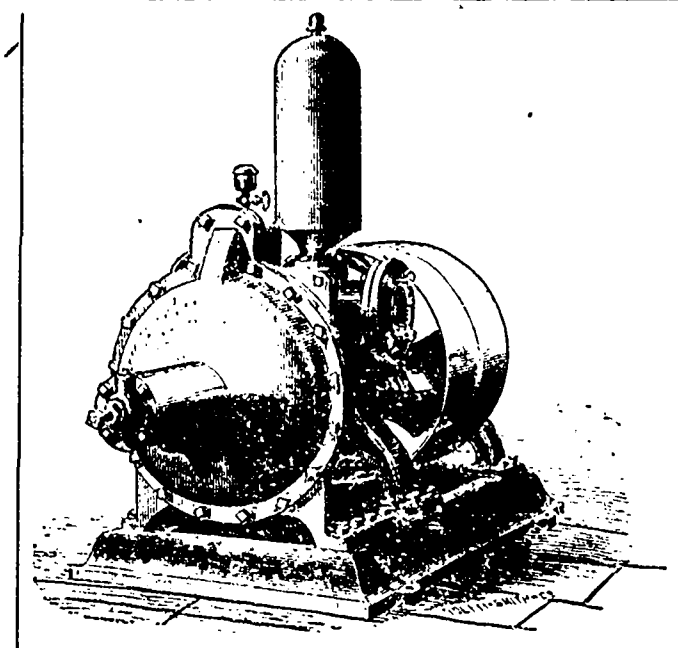
PETERBOROUGH, Ontario.

WM. H. LAW, PROP'R.



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3	4 "	3 "	250	250	150
4	5 "	4 "	250	400	225

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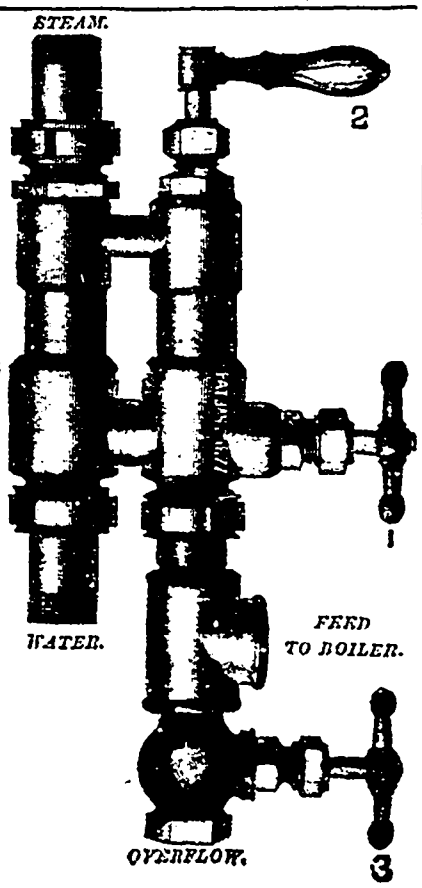

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Besides the variety of Machines we build for the manufacture of lumber we have added to our list the

PERKIN'S PATENT SHINGLE MACHINE.

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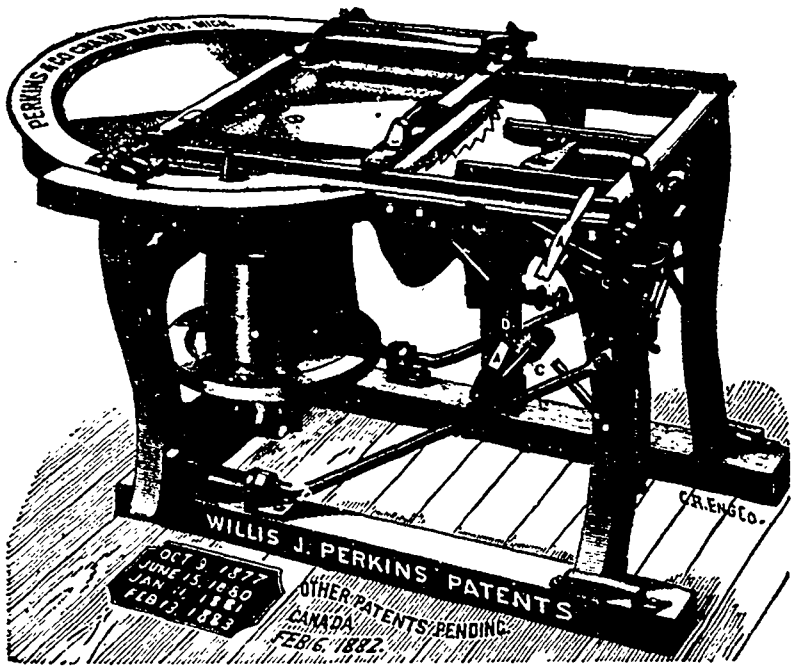

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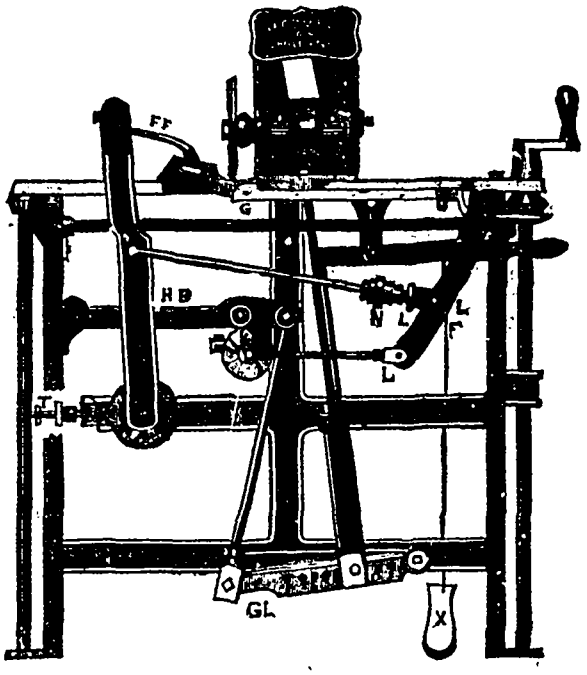
The only Horizontal Saw Machine on which a thick slab can be cut from the bolt.

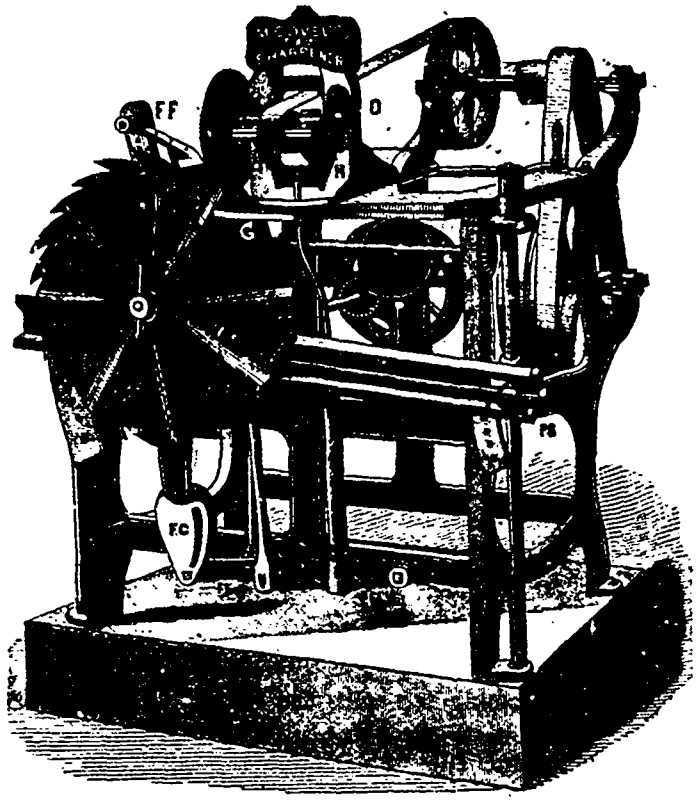
☞ *SECOND CUT ALWAYS A SHINGLE.*

Knots, rots, hearts, bolt squared rift-ways, and all irregularities cut off at one clip. This improvement will pay the price of the whole machine every season by increase of quality and quantity cut

THE M. COVEL PATENT SAW SHARPENER.



The above Cut No. 1 shows some very important changes that have lately been made, which makes the machines far less complicated for new beginners to operate. Cut No. 2 shows this machine with a circular saw upon it ready for operation.



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