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NO. 2.

ON THE INFLUENCE OF FORESTS UPON CLIMATE.

At the meeting of the Royal Meteorological Society, held on Wednesday, Dec. 10th, a paper on the above subject, by Dr. A. Woeikof, was read, of which the following is an abstract:—The existence of a influence of forests upon climate has often been contested, and the question remained for a long time unsettled, because meteorologists were content with principles of too general a character. The first step towards a scientific investigation of the subject was taken by the establishment of the Bavarian Forest Meteorological Station, the results of which have been published by Professor Ebermayer. The excellent example of Bavaria was soon followed by Germany, France, Switzerland, Italy, and other countries. As a general result it was found that during the warmer season (1) the air and earth temperatures were lower in the forest as compared with contiguous woodless places; (2) their variations were less; and (3) the relative humidity was greater.

The following details, referring to the amounts of evaporation from April to September, are quoted as being of special importance.

	In the Open. Ins.	In the Forest. Ins.	Per-centages.
Eastern France...	16.23	5.20	312
Alsation Mountains	13.19	6.26	211
Bavaria.....	14.85	6.22	239
Braudenburg.....	15.71	6.42	245
Eastern Prussia...	9.93	4.73	210
Silesian Mountains	10.52	4.17	250

It will therefore be seen that the evaporation from a free surface of water in the open was everywhere more than double, and even above three times that in the forest. In Bavaria, the evaporation from soil saturated with water was observed. This amounted in the same seven months to 16.7 in. in the open, 6.26 in. in the forest without dead leaves, and 2.44 in. in the forest with them. This experiment shows that the evaporation in the open is 6½ times as much as in the forest with the covering of dead leaves. The influence of the forest on the diminution of evaporation from water and ground is so great that it cannot be explained by the lower temperature of the warmer months only by greater humidity, or even by the shade; one influence which has hitherto been too little regarded is especially important in effecting this result, viz., protection from the wind by the trees standing closely together. This last cause is probably more important in its effects than all the others put together.

The diminution in wind force which is caused by the presence of trees is well known, although we have unfortunately no numerical data with reference to it; but it could easily be investigated by the erection of anemometers. It follows also, from the laws of Mechanics, that

if this diminution of the wind by forests is especially evident in the lower strata of the air below the tops of the trees, it cannot cease above them, but owing to the so-called viscosity of the atmosphere must extend to a considerable height, so that the motion of the air is weakened up to five or even ten times the height of the trees. This indicates the extent of the favorable influence which forests must exert in maintaining the humidity existing in air or soil; and naturally the denser the forests and the higher the trees the greater is this influence. But if this question is incontrovertible, the same cannot be said of influence of forests upon rainfall, etc.; an influence which is as often asserted as it is denied. Hitherto there has only been one series of observations giving comparable values and maintained a sufficient length of time, viz., that in the neighborhood of Nancy. These observations indicate a considerable influence of forests on the increase of rainfall. The explanation appears to be that in winter the effect of forests upon rainfall should be unimportant in the climate of Central Europe—the difference of temperature and humidity between forest and field being very small, and the amount of vapor in the atmosphere inconsiderable. The observations, however, show that during this season the forests receive much more rainfall, &c., being accounted for by the following facts:—(1) In winter the clouds being of a lower level than at other seasons, the obstruction caused by the forests to the motion of the air must then considerably affect their motion, the air will consequently be forced upwards, and at a time of great relative humidity a small ascent suffices to produce condensation of the vapor. (2) In winter damp winds are more frequent, and the rainfall is of longer duration, hence the greater importance of forest influence. In spring and early summer the effect of forests upon the increase of rainfall is much diminished, because at these seasons there is considerable evaporation from the surfaces of fields and meadows; probably more water evaporates than from a given extent of field than from an equal surface of forest, taking into account the evaporation both from the crops and the soil. Towards the end of summer and the beginning of autumn the soil of the fields is considerably dried up, corn is ripe and evaporates but little, while the surfaces of the leaves in the forest still evaporate freely. Conditions then are more favorable to an increased humidity of the air in the forests, their immediate vicinity, and hence to more copious and frequent rainfalls. Other kinds of condensation of vapor for which forests are especially favorable exist. In winter large quantities of hoar-frost collect upon the pine trees, which as the air gets warmer and damper soon falls, increasing the amount of snow on the ground. In warm and moist climates, especially in the tropics, dew collects so freely on the surface of leaves as to fall in

large drops and wet the ground. In this manner a considerable amount of the water evaporated during the day returns again to the earth in the form of dew the following night.

Forests retain the water from rain or melting snow much better by the covering of dead leaves, mould and moss, and only allow a portion to run off superficially when larger quantities of water fall; the remainder percolates gradually, and much of it is utilized in evaporation from the trees. Although forests, especially the dense, luxurious forests of the tropics, cannot, of course, exist without a certain supply of water, yet the time when they receive it is of little import to them. A good instance of this is the Lencoran Forest, on the west coast of the Caspian Sea, where vegetation is more luxuriant than in any other part of Europe, for a mass of climbing plants encircles the trees so that it is always humid in the forest, and yet here the rain curve is a subtropical one, very little rain falling in summer, but large quantities in autumn and winter. The water is stored up in the forest, so maintaining vaporation during summer droughts.

In Upper Assam also, during the four months November to February, little rain falls, but the evaporation of the forests keeps the air damp. It would appear that the influence of thick forests of warm regions upon rainfall is such that, if the general climatic conditions are opposed to rain no rain falls, even where extensive forests exist. This is the case when the wind is constantly descending, or blows from cooler and dryer quarters—as from November to February in Assam, when northeast winds prevail. If there is a strong wind from warmer and damper quarters, and especially if it has an ascending motion, the conditions are favorable for rain, whether forest, field or steppe predominates. Weather types are very far from being always so strongly defined. Frequently, in the vicinity of the equator, the winds are variable or local; or calms prevail. Under such conditions dense forests must be favorable to rainfall for offering an obstacle to the wind's movement; they cause the air to ascend; since it is already damp, condensation ensues. With the same direction of wind there would be little or no rain in woodless regions. During calms and clear weather, after a long drought, the ascending current over forests is much more humid than that over unwooded districts where the ground is dried up, and vegetation withered. Hence there are conditions again more favourable for rain production, in the former case even calms alone may cause rain with an ascending current; an example of this may be quoted in the case of the frequent afternoon thunderstorms in well-protected Alpine valleys. The correctness of the above remarks is proved by the frequent earlier commencement of rain in the tropical forests.

These considerations show that in the western

portions of the Old World extensive forests materially influence the temperature of neighbouring localities, and that the normal increase of the temperature from the Atlantic Ocean towards the interior of the continent is not only interrupted by their agency, but they cause the summer to be cooler in regions situated further in the interior than those nearer the sea.

Hence forests exert an influence on climate which does not cease at their borders, but is exerted over a greater or less district, according to the size, kind, and position of the forests. Hence it naturally follows that man, but clearing forests in one place and planting others in another, may considerably effect the climate. Many incline to the idea that, as forests increase precipitation, it would only be necessary to plant in order to remove deserts from the earth's surface. A person familiar with meteorological questions will, of course, not assume such an extreme position. If the forest economizes rainfall, stores it up for a long time, and even to a certain extent increases precipitation, many parts of our earth are nevertheless too dry to support them, forest vegetation requiring much water. On the other hand, thin forests such as consist of an excess of waxy trees which diminish evaporation, are certainly able to survive in dryer climates than those consisting of trees closer together, which evaporate more freely; but the former have less effect in moderating heat and drought than the latter. On the other hand the widespread opinion that no forests can exist where none existed at the time of the appearance of civilized man is open to doubt. The success of forest culture in the Steppes of Southern Russia, the prairies of North America, and the Pampas of South America sufficiently prove the untenability of this opinion. If afforestation has not hitherto assumed large dimensions, it is more as a question of economy rather than one of climate.

Other growths, such as corn, or the use of the land for pasture, &c., have been more remunerative to private individuals—human life being of but short duration as compared with that of trees.

If there be only a certain amount of rainfall, no matter at what time of the year it occurs, forests flourish. Even long periods of drought are much less injurious to forests than to meadows and fields; and the impossibility of forest culture in a country is not due to the occurrence of rainless periods, provided that copious precipitation falls in other months.—*Timber Trades Journal.*

A Logger by the name of Johnson, working in a camp near Ogontz bay, upper peninsula, Mich., was accidentally shot for game by a fellow workman named Lewis Gotlip. Johnson was hit in the back of the head and died instantly.

BRITISH TRADE.

There is a general admission of a bad trade, and the Government returns to some considerable extent corroborate it, as these columns have had to record; but whence its source no one seems able to determine, nor from what quarter relief is to come. All eyes are at present turned towards America, because it is understood that business is really reviving there, and it has heretofore been found that the state of trade on one side of the Atlantic, whether for good or evil, when a change comes, is soon reflected on the other. But we must not forget that the rival industries of America are in a constant process of development, and that with each returning year she exports more of her own manufactures and imports less of ours; so that we are bound to entertain only subdued expectations from that quarter of the world. Nor is there any steady upward movement as yet discernible in sympathy with the reported revival of business in America. On the contrary, evidence of unabated depression continue to force themselves on our notice.

The latest is a report of the shipbuilding trade in Glasgow for the last as compared with the two previous years, and it confirms as far as that enterprising port or entrepot of northern trade is concerned the view now so universally prevailing, that even in favored localities our national industries continue to lose ground. We learned from the Glasgow Herald on the 19th that during this year 211 vessels of a total capacity of 193,438 tons were launched, as compared with 296,854 last year, a falling off in this important Glasgow industry of 103,396 tons, which is suggestive of a loss of employment to thousands of artisans, as the deficiency would mean the discharge of as many men as could build within the twelve months more than 100 ships of over a thousand tons each, as well as so much loss of trade to those who supplied last year the materials, steel, iron, timber, &c., &c., to construct such a fleet. Yet this would have been considered an immense business as lately as 1879, when only 174,750 tons were launched on the Clyde. But in 1883 the tonnages supplied there reached 419,734 tons, of which the present return is short more than half.

Notwithstanding this decline in the trade, the boiler-makers' and shipwrights' societies of the Tyne and Wear sent their delegates to a meeting last week, in reference to a notice of a 12 1/2 per cent. reduction of wages being given by the employers, and it is stated that it was unanimously resolved not to submit to any further reduction, either on time or piece work, so that another strike and disorganization of the labor market may be looked for in that quarter shortly. Two and six pence in the pound seems certainly a rather formidable reduction on a week's wages at one slap. But the men might be sure it signifies one of two things: either that the masters have not sufficient work on hand to keep the men employed at a profit to themselves, or that their returns will not justify their going on at their present rate of expenditure; and neither case is the wisdom of a strike very apparent. The slate quarrymen at Llan-culinas have a better chance of obtaining a concession from the masters, because slate can only be obtained from certain districts, but shipbuilding interrupted in one port flies to another. The housebuilding trade, all over the country, also depends very much on the slate quarries of North Wales, and the owners, or those who work the quarries at a royalty, may by and by reimburse themselves for an advance of wages by raising their prices, if the strike continues long enough to produce a brisk demand, but this does not apply to shipbuilding, where the stoppage of the work for any length of time may destroy the reputation of the port, and cause it to be shunned by shipowners, who want vessels for a special purpose, to be completed in a specified time.

And if we look to the East, instead of the West, there is not much to reassure us. The news from Burmah is not quite so favorable to a speedy opening of a large trade on the Irrawaddy as it looked when the great success achieved by General Pendergast and our troops by capturing the King and apparently putting an end to the war was first published. There appear now to be some further difficulties, and armed insurgent bands, by land and by water,

have to be put down before much regular business can be established on the upper reaches of the river, and our supply of teak is not likely to be either increased or cheapened for some months to come. Perhaps the reverse, for it always happens that while a people are in a disturbed and unsettled state, the industries of the country are greatly interrupted and neglected. No doubt we see only the brightest side of the picture at this distance, as it is presented to us by the victors. There is evidently a great deal of work to be done by our generals and diplomats out there before trade will be established on a good working basis. Even Rangoon may depend for much of its supplies on the native craft, or lumberers, bringing the teak down the river; and though every facility will doubtless be afforded by British cruisers, native confidence will probably be wanting till the administration is settled. If the native merchants are not afraid of British interference with the river traffic, they may be doubtful of marauding parties composed of their own people, for public disorder and political revolutions are the opportunities of desperadoes in all communities.

The close of the year being now upon us, and the Christmas holidays, at this present issue, in full festivity, the timber and building trades have settled down into their customary quietude at this season. On all sides we are admonished that the year's work is done, and nothing new in the way of business will be undertaken till 1886 puts in its appearance, and imparts new hopes to those who have despaired of a trade revival during 1885. It is not yet time to reckon up the business of the year, but we may take a survey of the distribution of our timber imports up to the end of November, as these form a good index to the state of business in the various parts of the kingdom to which they refer themselves, and altogether form a body of useful information to be obtained, for the moment, in no other work, not even from the Board of Trade publications.

Though the imports up to the end of November exceeded by 151,933 loads the supply of timber goods at that date last year, very little of the excess had found its way to great depots of the trade.

London, the Leviathan of the realm as a swallower up of cargoes, is not accountable so far for a stick of the excess. For the month of November, it is true, it took in some 43,000 loads more than the November preceding; but in the total reckoning for the eleven months it is more than 30,000 loads short in the comparison. It must not on that account be concluded that we are without a sufficient supply here. On the contrary, though keeping within such reasonable limits, London is as well prepared for a better demand, probably, as any part of the country. Liverpool in like manner is well within bounds. It has only just turned the corner by less than 2,000 loads, and cannot therefore be accused of overtrading in timber. One year (1877) Liverpool imported more than half as much as London, but never since. The difference now between these two great emporiums is about in the proportion of 13 1/2 to 6. But London apart, there is no other port that approaches the timber trade of Liverpool. Hull which is next in dignity, has also to acknowledge a slice of the surplus over its last year's import, up till the end of November; till which return it was in arrears. Now it stands in advance by about 30,000 loads. But this is more than off-set by Cardiff, which is above 40,000 loads behind. The greatest spring appears to have been made by Grimsby, which if not a chief timber port seems to be fast becoming one, and fully alive to all the local advantages it possesses. Of the excess aforesaid, Grimsby has seized the huge cattle of 63,000 loads—like a young Hercules throwing a bullock across his shoulders, and walking off with it, as if there was nothing remarkable in the circumstance. Hartlepool just maintains its ground modestly, as if in no hurry to put forth its strength. It is even about 17,000 loads short of last year, and finds itself nevertheless in tolerable good case to meet any improved demand likely to take place when the days get longer. Newport (Monmouthshire) has its trade well in hand too, as if doing a steady business a little within the mark by about 4,000

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loads less than twelve months ago. If not a spring Grangemouth may at least be said to have taken a long, a very long stride, that is, from 127,000 to 174,000 loads. But Grangemouth has a heavy duty to perform, as Glasgow looks to it for its east country timber goods, and therefore 40,000 loads more or less is no great object to that small but ever busy port of the Firth of Forth. Sunderland has gone ahead by 7,000 loads; and Swansea has fallen in the rear by 10,000, while Greenock has taken a cut in of 17,000 loads, and increase rear, of nearly 20 per cent. on the figures of last year, and Leith 13,000 loads. Montrose is perhaps flooring trade in better heart for 10,000 loads of the surplus have gone there. Newcastle, suffering from the general complaint of poor trade, and not at above letting us know it, has, nevertheless, taken a small surplus of 8,000 loads to carry on with. It is one of those places which are always busy, but which in the busiest time delights to complain that it has not half enough to do. Thus its figures do not always correspond with its lamentations.

Most of the Scotch ports, besides those we have mentioned, have imported short, and likewise all the Irish ports of any note except Waterford and Dublin. Even Belfast is 6,000 loads in arrears, and has dropped far astern of the capital with which in the timber trade it used to compete. Dublin up to date has imported more than four times as much as Belfast, and the southern ports look very small indeed in the comparison. It will be seen that already the total import up to November 30th, wanted but a trifle of 6,000,000 loads; and it needs no divination to forecast that the December returns are not likely to fall far short of those for the same month last year, as to the timber trade, so that the supply is pretty sure to be a full average one, upon the whole. And it is greatly to the credit of the trade that with so large an importation, on a very dull year, it goes on just as steadily as if the business to be done was as good as over. But it has at least provided itself with the means to do a good trade, and though, as we have said, few signs of its present themselves to us on the surface, they may work upwards in a short time, and be palpable to us all. According to American ideas, we ought to congratulate ourselves that the bank raised its rate of discount from 3 to 4 per cent. last week. They argue that a cause of dull trade is a cheapness of money. This does not quite conform to

the experience of our own country; but if we find that the rise of bank rate is no check to business, we shall be half inclined to adopt their theory.

Four per cent. may possibly be the happy medium, the palladium of trade, the talisman of safe business. To be very high at 6 or 7 per cent., we know is bad, and at under 2 per cent. our cousins over there say it is so. Between these two extremes there is possibly a middle term in which trade especially rejoices. Let us hope that our great financiers will hit upon it ere long, and that the trade of the new year may be more prosperous than that of the one which is now taking leave of us. It will yet be something to be thankful for if we find it no worse.—*Timber Trades Journal.*

WOOD-WORKING PATENTS.

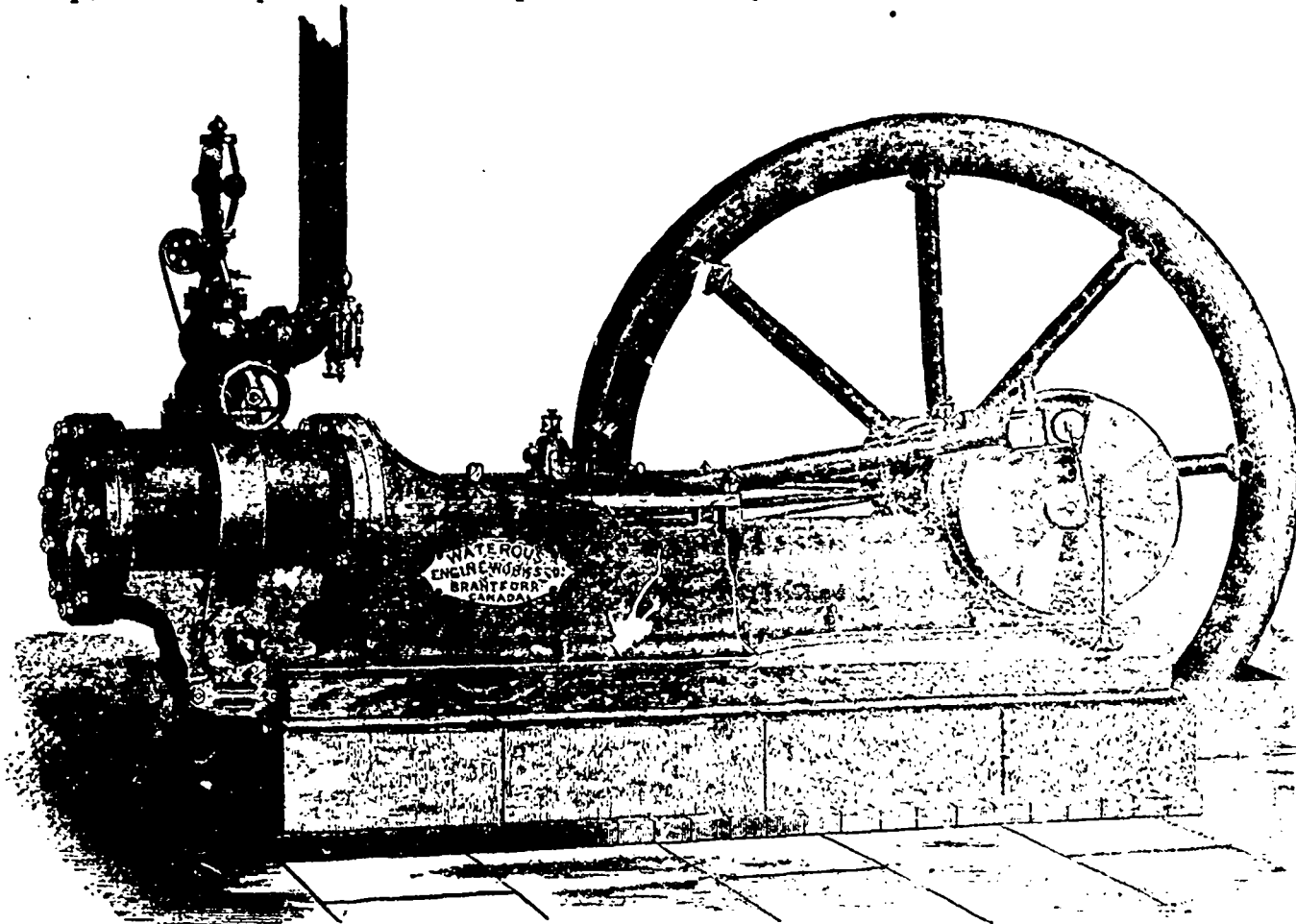
- The following list of patents relating to the wood-working interests, granted by the United States Patent Office, December 29th, 1885, is specially reported by Franklyn H. Hough, solicitor of American and Foreign patents, 925 F. Street, N. W., Washington, D. C.
- 333,295—Dove tailing machine, automatic switch for—C. Graff, Logan, Utah Territory.
 - 333,228—Sash fastener—J. Hutch, Canton, Ohio.
 - 333,240—Sash or door fastener—C. Longbottom, Bradford, County of Cork, England.
 - 333,191—Sash weights, chill mould for—B. Anderson, Urbana, Ohio.
 - 333,438—Sash, window—L. L. Arnold, Buffalo, N. Y.
 - 333,339—Saw guide—H. W. Roberts, Duncan City, Mich.
 - 333,244—Saw mill, set works for—T. J. Leacy, Milwaukee, Wis.
- PATENTS ISSUED JAN 5.
- 333,604—C. M. Stovenson, Syracuse, N. Y.
 - 333,664—Saw mill carriage—T. W. Peck, Milwaukee, Wis.
 - 333,843—Sawing machine, fire wood—I. Gillmore, Dewitt, Iowa.
 - 333,562—Saw table gauge—D. W. Standefer, Oakland, Cal.
 - 333,777—Saw Buck—H. Palmer, Banon, Conn.

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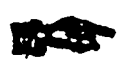
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LIGHTNING'S AMONG THE TREES.

All who have been in a forest during a thunder-storm have witnessed the pranks of lightning among the trees. An English engineer who spent several years in this country thus writes on the subject: During surveys in the forests of the United States, when I necessarily lived under canvas, I often had the opportunity of witnessing the effects of lightning on the trees, and my experience lead me to believe that trees are only destroyed by lightning when they have been previously wetted by the rain.

A sojourner in the woods, whether he is taken in pursuit of game or with the object of prospecting for timber, minerals, and land, is always careful to erect his tent under a short thick tree in order to escape the danger of lightning or of trees falling and bringing down others in their ruy on him; and it was often while thus situated I noticed after stormy nights when thunder and lightning were accompanied by rain that many trees had fallen. The report of the snapping of the trunks would remind one of that of the firing of a cannon, and when lightning and thunder were not accompanied by rain (in the immediate locality of our camp at any rate) no trees had been struck. I infer from the same observations that vus lightning always strikes the tallest trees, whatever their species may be, for the taller white pines and poplars were most often seen destroyed and the shorter maples, lindens, birch trees, etc., rarely so; also that the sap between the wood and the bark of the tree does not increase the chance of its destruction.

A gentleman connected with the new botanical gardens suggests that the meta-logical offices in different countries collect reliable data embodying the observations of different persons as to the particular circumstances attending thunder storms during which more or less injury has been done trees. He states as the result of his own observation that certain kinds of trees are much more likely to be injured by lightning than others, which goes to show that they are very poor conductors of electricity. The condition of the tree in regard to age and vigor has also, in his opinion, much to do in making it a good or bad conductor. In a communication to a London paper he says: The comparative conductivity of different trees is not wholly, in my opinion, a question of species. The same species at different stages of growth, and growing under different circumstances, will exhibit widely different degrees of conductivity.

Doubtless the hardness of the wood and the character of the grain, and also the character of the ramification, have much to do with that resistance to the electric fluid which results in damage to limbs or trunk. Hence, probably, why the oak, which is remarkable for the general closeness and hardness of its grain, and the ruggedness and contortion of its ramification, so frequently suffers, while soft-wooded trees, like poplars, escape. But younger oaks under the same circumstances might escape, while the older and harder and drier trees would be broken by the electric fluid. A mistake commonly made is to speak of certain trees being "struck" by lightning, the word "struck" being only applied to those trees that are injured by lightning. Thousands of trees are struck during every thunder-storm that takes place over woody country; but, being struck noiselessly and without resulting injury, they are not noticed. It is doubtless the superior or inferior conductive power of a tree which subjects it to, or exempts it from, harm from lightning; but it is the greater or less moisture of the branches and trunk which regulates the conductive power.

The form of a tree, too, has much to do with its exemption from hurtful strokes. The Lombardy poplar is about the best form, because its branches, pointed upward, are like so many lightning conductors. The oak is about the worst form, because its branches and limbs are nearly always (in those trees which are mostly damaged) placed across the course of the electric fluid. The Lombardy poplar also is of much moister and softer substance than the oak, and consequently gives freer passage to the electricity.

The best conductors of electricity are not those that are "struck" by a discharge from a

cloud, but those which silently convey it to the earth without being shattered or injured in any way. That many trees do this seems certain. In all probability trees whose leaves present many sharp points are the best conductors of electricity. Each point attracts electricity, and is the means of directing it through the branch and trunk to the earth. The amount conveyed by each is so small that no part of the tree sustains any damage. Leaves like those of the holly tree are admirably formed for attracting electricity. The points on the foliage of fir are of the desired shape to attract electricity, but the resin in the fir tree serves to make it a poor conductor.

In a flat and nearly level country like our western prairies lightning does not always "strike" the highest objects. It sometimes enters the side of a building instead of discharging itself on the chimney, the highest place on the roof, or other projecting point. The presence of suitable trees next a house, or at some distance from it in the direction toward the course of the prevailing thunder clouds, would serve to protect the dwelling. Trees that are better conductors than the materials of which buildings are composed would protect them as well as metal rods.—Chicago Times.

OPPORTUNITIES FOR WASTE.

In a large establishment where several batteries of boilers are at work to supply the steam consumed, we are waiting for shutting down time to commence work upon the engine. Strolling around the building a large drop of very hot water upon the neck compelled attention to a large valve overhead, from the stem of which issued a jet of steam which would have been a decided improvement upon the performance of some safety valves we know of, together with numerous drops of the hot water aforesaid. Moralizing upon this outlet for the escape of heat without the performance of useful work, our thoughts went out over the long line of opportunities for waste which exist in the ordinary steam plant. One of the most prolific of these is the blow-off. Loading as it usually does by closed pipes to some concealed drain, a very serious leak may exist at this point without attracting the attention of an unobservant attendant. Our first experience in this line was in a printing office, where the boiler and engine were in charge of the pressman. One day the boiler worked badly. The fire was driven and coal shovelled with commendable energy, but frequent stoppages had to be made for steam. The state of affairs being called to the attention of the manager, he declared the boiler to be dirty, ordered the fire hauled, and to show his practical acquaintance with the subject shut down his roller top deck, stripped off his coat and bathed in soot, ordered the boys about and raised a general hubbub for half an hour, when the boiler was pronounced all right. Meantime the writer had noticed that the pump was running although the draught of steam from the boiler had stopped, and that when the pump was stopped the water lowered in the glass. The blow off valve appeared to be closed when tried, but the pipe beyond the valve was hot, showing that hot water from the boiler was passing the valve. The valve was opened wide, then closed tightly, the water stood stationary in the glass, and the continual drain of heated water, caused probably by a bit of scale under the valve, being stopped, the boiler did its work nicely when started up, to the infinite delight of the manager who of course laid it to his clearing.

Another favorable opportunity for hidden waste is in those establishments where the circulation of pipes for heating is connected so that the exhaust may be used in it. If the exhaust valve is not tightly closed when live steam is on the building it will find an open passage through the exhaust connections into the open air.

About the engine are two little opportunities for waste, the first of which should be on its face so apparent that its frequency is surprising; that is the practice of allowing the drip cocks to remain open while the engine is running. Although it must be apparent to the operator that an opportunity is thus afforded for steam of the cylinder pressure to blow directly to waste, it is a very common practice with the runners of small engines. The second is more occult and less liable of detection, though we

have met with a number of instances of it. We allude to the exhaust valve being late in closing, so late that it does not close until after the steam valve has been open for some time, allowing, of course, the live steam to blow through the exhaust port and out.

Another source of waste lies in the uncovered pipes which abound in places where the heat which they radiate is rather an annoyance than a desideratum. Every square foot of this surface is radiating heat uselessly into the atmosphere instead of retaining it to be conveyed to the engine, and converted in part, into useful work, and how much steam may be condensed in a long whistle pipe exposed to the weather and allowed to stand full of steam instead of being shut off as it should at the boiler.—Boston Journal of Commerce.

SHAFT BEARINGS.

In numberless instances, says Iron Age, shafting is found small in diameter in proportion to its length, even as regards the distance apart of its supports, and far more so regarding the shaft as a single rod, which from the method of uniting its separate lengths, it becomes. Such a bar, even before pulleys are put on, is anything rather than straight. The load of the pulleys puts it still more out of true, and then finally come both the dead-weight of half the belt driven by it and also the diverging strains of the loads on the driving sides of the belts. All these make a length of shafting serpentine, and this is increased in proportion to the distance of this or that pulley from a bearing. Hence it follows that the bearings must and do suffer; so also does the oil bill and the coal bill. Another source of friction and brass-cutting is to be found in the methods sometimes observable of fixing the hangers or brackets, such as bolting to joists or flooring overhead, either of which is subjected to constant variations of load and consequent alterations of line, or bolting to the members of an iron roof or its supporting columns, which are in perpetual movement by expansion, contraction or from wind stresses. In many cases there is no better way practicable, but then the evil can be met by putting up shafting in independent lengths, each having its own pair of supports and transmitting the rotation power by universal joints, or the simpler expedient of cross-ends plain on one end and "taken on to" by studs or pins fixed on the other cross end. It is probable that not one steam user on a large scale in a hundred can tell how much power is absorbed in overcoming preventable friction in his shafting. Yet it could easily be ascertained. We may also point that brass is used far more freely than is necessary for lay shaft beams. Hardwood, such as hornbeam or beech, is much better and cheaper when the loads are not too heavy. Wood bearing will run for years. They soak up oil and come to a beautiful surface, and they never cut a shaft, as brass will do. The virtues of wood are not understood as they ought to be.

THE POPLAR.

In an article on "The Future of the Poplar," a contemporary observes: As is well known, for a nation of shopkeepers a large number of packing cases have to be annually made, and as, in most instances, these cases are only used once, cheapness and lightness for carriage are great essentials, and these the poplar possesses in eminent degree. For cases in which very heavy weights have to be packed, such, for instance, as tin plates, where a cwt. of metal goes into a box about 20 in. by 14 in. and less than 2 in. deep, it is not so suitable as the elm, as it lacks its strength and will not stand such hard knocks. When it is considered that the tops and bottoms of these cases go at three boards in thickness to the inch this will not be greatly wondered at. There are, however, vast numbers of cases wanted in the drapery, grocery and similar trades, and for such purposes the poplar seems peculiarly suited, as, in addition to the qualities of cheapness and lightness of which we have spoken, it is very white and clean in appearance, and has no properties in it likely to cause injury to the articles packed within it. For such uses there need not be an atom of waste, since left to grow on naturally, and it is not attacked and lopped by the

pruner's knife and saw, the poplar produces sound timber and free from knots, and there is no appreciable difference between the heart and sapwood, and the limbs are practically as good as the bole itself; under these conditions it is a very economical tree to cut up. Besides being useful for the packing-case maker, it is suitable for the turner, not perhaps for the more elaborate or lasting work, but for rollers, so extensively used in what our American friends would term "dry goods stores." The same qualities which recommend it for packing cases would be equally applicable here, and no imported wood possesses them in the same degree. Another use to which it is occasionally put is for benches and tables for leather cutters. For this its softness is a great advantage, but in the matter of grain there are woods more suited; but as they are scarcer, and consequently dearer, they have to be dispensed with in favor of the poplar.

THE INVENTOR OF THE CIRCULAR SAW.

In a lonely, secluded spot in the northwest corner of the cemetery, near the ever beautiful little village of Richmond, Kalamazoo county, Michigan, the reader can find, on a pure white marble slab, nearly concealed from view by a large cluster of lilac bushes, engraved the simple inscription "Benjamin Cummings, Born 1773, died A. D. 1843." And who was Benjamin Cummings? He was the inventor of the circular saws now in use in this country and in Europe. Nearly sixty years ago, at Burtonville, New York, and Amsterdam, this man hammered out, at his own blacksmith's anvil, the first circular known to mankind. He was a noted pioneer in Richmond; a first cousin to one of the presidents of the United States; a slave owner in New York state; a leading mason in the days of Morgan, at whose table the very elect of the great state of New York feasted and drank freely of his choice liquors and wines; a vessel owner on the North River before the days of steamboats; a captain in the war of 1812, where, after having three horses shot from under him, with one stroke of his sword he brought his superior officer to the ground for insult, and because he was a traitor and a coward; and after being court-martialled, instead of being shot, he was appointed Colonel in his stead. In this lonely grave are the ashes of the man who, nearly 70 years ago, took up and moved bodily large brick buildings, and, to the wonder and admiration of the world, constructed a mile and a half of the Erie Canal through a bed of rock, and who also built, on contract, those first low bridges over the same. He also aided in the construction of the first ten miles of railway built in the United States, and founded both the villages of Esperance and Bostonville, on the old Schoharie, near Amsterdam. The study and aim of this man's life appeared to be to do that which none other could accomplish, and when the object sought was accomplished, he passed it as quietly by as he could the pebbles on the sea-shore.—Es.

A Good Week's Log-Making.

ATLANTA, Dec. 30.—The following work done by one gang of four men, under the management of Mr. George Guertin, in one week on the limits of N. E. Cormier, on the south branch of the Petawawa river, is worth noting. These four men, Moses Thibault, Cyrille Jeauvine, John Renand and Alfred Perrier cut in six days beginning Monday, Dec. 14th, the following saw logs: Monday, 160; Tuesday, 166; Wednesday, 170; Thursday, 173; Friday, 171; Saturday, 168; total, 1,008 sawlogs, average diameter 16½ inches. The same 1,008 logs were laid up on ten rollways (besides making the rollways) in three days by two teams driven by O'Rooke, Guertin and Tom Guertin, 1st day, 356; 2nd, 307; 3rd, 345; total, 1,008.

DECEMBER 25th, during a thick fog, the British bark Arabella, lumber laden from Montevideo, South America, while in tow of the tug Pilot, went ashore on the rocks at Trail Island, a few miles from Victoria, B. C. Both vessels stuck fast, and the Arabella became a total wreck. She had 500,000 feet of lumber on board.

Chips.

WILD land in Franklin county, N. Y., which a local paper in that state describes as "some 7,000 parcels," was sold lately for \$600,000.

DAVID GIBBOU was instantly killed on Jan. 1st, near Idenheim, Ont., by the limb of a tree striking him and breaking his neck.

THE E. B. Eddy Manufacturing Company, of Hull, P. Q., have made application to Parliament for a charter through Messrs. Gormully & Sinclair.

FIREST fires have lately raged in Pope county, Ark., and considerable damage has been done to pine and other timber, especially on the hills and mountains.

AN addition of about forty feet is being built to the south side of Mr. Peter McLaren's circular sawmill at Carleton Place. The new building will contain the necessary machinery for manufacturing dressed lumber.

THE bark Arabella, lumber laden for A. H., while in tow December 25th, went ashore on the rocks off Trial Island a few miles from Victoria, B. C. At last reports it was thought that the vessel would be a total wreck, but that a portion of the cargo might be saved.

FOLGER BROTHERS have purchased the charcoal works at Sharbot Lake, Ont. In the property is included 2,000 acres of woodland.

THE Port Arthur Lumbering Company, at Port Arthur, Ont., has been exempted from paying taxes for five years by a by-law of the municipality.

We understand that Messrs. Bryant, Powis & Bryant, Limited, have acquired the well-known business of Messrs. Carter, Tyer & Parker, of 15, Canada Dock, Liverpool, and intend to carry it on at the same place, under the title of the London firm as a branch house.

NEVER put resin on a rubber belt. If it is a new one, it will cause the rubber to stick and accumulate on the pulleys, and eventually ruin the belt, and further, when resin has been applied for some time it will form a glazed, hard surface, causing the belt to slip out more than it did before the application was made.

THE operators in cedar, says the *Northwestern Lumberman*, are the men who seriously feel the effects of an open winter. Cedar has the habit of growing in swamps mostly. An early freeze, before snow gets deep, is a great advantage to the cedar industry. There will be a good demand cedar next year, and soft weather a large part of the season may serve to stiffen the market. There is, however, generally cedar enough to supply the demand.

IT is stated in a foreign exchange that a company is about to establish large works in St. Petersburg, for the purpose of making rails from paper. The paper is subjected to great pressure, and it is said that the material is extremely durable, and can be produced at one-third the cost of steel rails. A further advantage would be in their lightness, not only on account of the saving of the cost of carriage and laying, but also because they could be made in longer lengths than is the case at the present time, therefore the number of joints will be fewer, and consequently less oscillation to the carriages, and the wear and tear to both permanent way and rolling stock reduced to a minimum. A greater adhesion also would be offered by these rails to the driving wheels of the engines, and the working expenses reduced accordingly.

THE St. John, N. B., *Globe* says that Mr. H. R. Robertson has invented a new description of raft, differing from any at present in use. This raft in shape resembles a cigar, being round and brought out to a point at both ends. He has got out patents for it in Canada, the United States and in several countries across the Atlantic. Several New York lumber dealers confident that the raft will be a success, have made arrangements with Mr. Robertson to ship their logs by this means, and Mr. Robertson, with that end in view, has contracted with Mr. B. B. Barahill to have the raft constructed at Two Rivers, N. S. It will be ready for launching in May next. The raft will contain about

four million feet of timber, composed of piling, piece sticks, spars and poles, about 800,000 feet of hardwood suitable for wharf logs. Everything that enters into the construction of the raft can find a ready market in New York, and so no danger is anticipated in towing. Mr. Robertson expects to make a big thing out of it.

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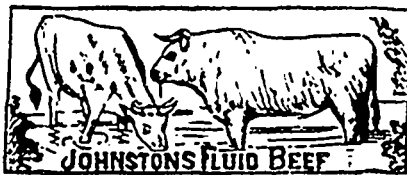
THE SUBSCRIBER WILL SELL HIS TIMBER LIMITS and Saw Mill property, at Cowichan, British Columbia, and if purchased by a Company, will invest a large amount of price in shares.

The Limits are supposed to contain about two hundred millions superficial feet. (An estimate is now being made.)

The Timber is mostly Oregon Pine of an excellent quality. The average haul, only about half a mile to floatable water. The run thence to mill, 30 miles. Full particulars furnished on application.

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The Best Article Ever Offered to the Trade.

I have much pleasure in drawing attention to my WROUGHT IRON COOKING STOVE, for Shanty, Hotel and Boarding House use. These stoves are made of Heavy Sheet Iron, the top and lining of the fire-box being of Heavy Cast Metal and all the connecting parts of substantial Wrought Iron Work. The dimensions of these Stoves are as follows:

SINGLE OVEN STOVE

Top surface contains six 10-inch holes, with ample room between, and one over. 24x24x19. Fire box takes 23-inch wood.

DOUBLE OVEN STOVE

The Double Oven has a top surface containing twelve 10-inch pot holes, with two ovens, each 23 x 24 x 19. One fire-box of suitable size for area to be heated. Below will be found Testimonials from some of the leading Lumbermen, who have used my Wrought Iron Cook Stoves since I commenced manufacturing them. They are the names of gentlemen who are well known and reliable, and will carry more weight than any recommendation of my own could do.

The Best Stove I have ever Used.

PETERBOROUGH, May 31, 1890.

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Yours truly, THOS. GEO. HAZLITT.

The Stove for Lumbermen.

PETERBOROUGH, June 1st 1890.

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Yours truly, J. M. IRWIN

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Communications intended for insertion in THE CANADA LUMBERMAN, must be accompanied by the name of the writer, not necessarily for publication, but as a guarantee of good faith. Communications to insure insertion (if accepted) in the following number, should be in the hands of the publishers a week before the date of the next issue.

THE CANADA LUMBERMAN is filed at the Office of Messrs. SMITH, BRADY & CO., 154 Leadenhall Street, London, England, who also receive advertisements and subscriptions for this paper.

PETERBOROUGH, Ont., JAN. 15, 1886.

MR. CHARLES SERPENTY, an Ottawa lumberman, is believed to have been drowned in Lake Nipissing on Jan 6th.

The Morrison mill, at Fredericton, N. B., is being rapidly rebuilt. The main building is 42x125 feet, and the annex 14x90. The boiler house is 83x75.

JAS. DOLLAR, of Bracebridge, has purchased from the Muskoka Mill and Lumber Co. all their half of the township of Perry, containing 41 1/2 square miles.

The Gibson tannery in New Brunswick will probably be started up next year, when the hemlock lands on the Nashwaak have been rendered accessible by the Miramichi Valley Railway.

The lumber dealers of New York city are endeavoring to form a lumber exchange. It is said that the yearly trade of the port (on lumber we presume) reaches the large total of \$60,000,000.

The Minden, Ont., Echo says that some big work is being done in the shanties this winter. A few days ago five of Irwin's men, for scorpers and a hower, made 900 feet of board timber in one day. Mr. Joseph Hughes, of Anson, is the man that done the hewing.

MAITLAND N. S., ship yards turned out during 1885 eight sea going vessels, five of them being barges averaging 1,100 tons, the others a barquentine and two brigantines. There are two now on the stocks at South Maitland, 1,200 and 1,800 tons respectively.

INCLUDED in the improvements to be made at Coal Harbor, the terminus of the Canadian Pacific railway in British Columbia, is the clearance of 60 acres of land, which is so heavily timbered that it will cost \$200 an acre. The company is also to let contracts for furnishing 45,000 ties and 2,000 piles. There will be lively times among the timber men at that point as a result of the operations of the railway company.

It is reported from Duluth that Osterhout & Fox are making arrangements for the purchase of 60,000,000 feet of pine on the south shore of Lake Superior, contiguous to Duluth. This pine will be logged for stocking the firm's mill at Duluth.

The total length of railway laid in the United States during 1885 was 3,113 miles, 700 miles less than the now mileage of 1884, but more than was predicted at the beginning of the year. The larger proportion of the now mileage was branches and extensions.

As an example of a novel mode of transporting lumber by water on the Atlantic coast, we have already referred to the raft building by Mr. B. B. Burnhill at Two Rivers, N. S. It is 400 feet long, 30 feet wide at the ends and 50 in the middle, 28 feet deep. It will draw 20 feet of water. The cost of towing the raft to New York is estimated at about \$6,000. Its building, including getting out the timber, will give employment to a hundred men for the winter.

G. S. C. writes in energetic terms to ask "if it is possible that Canadians send to Indiana for such things as toboggans," because he has seen a toboggan outside of a shop door in Toronto "Indiana hickory toboggans," and wonders at Canadians letting Yankees run away with such a peculiarly Canadian branch of manufacture. Our patriotic correspondent may calm himself; the goods he refers to were made in Hamilton; the hickory may be Indianian, but the toboggans are Canadian. Our people are not likely to be surpassed by the Americans in such goods as appertain to our winter sports and their costume.—*Montreal Times*.

ON Jan. 7th an accident occurred at James King's shanty, near Mud Lake, by which one man lost his life and another was seriously injured. Two men, James Mangan and another whose name is unknown, were felling a tree, when it lodged. In attempting to get it down, a heavy limb was in some way detached and it fell with terrific force, striking Mangan on the head and his companion on the shoulder. Mangan's head was so terribly crushed that he only lived twenty minutes after the accident. His companion was paralyzed on one side, but is still living. He may possibly survive although it is doubtful.

HINTS TO SAW MILL MEN

In these times of close margins, stagnation of business and low prices, the mill men have had to work hard to make both ends meet. All kinds of business men have suffered by the dull times more or less, but few as keenly as the saw mill trade. The smaller mills not having the capital needed to buy at the lowest figures, and, being for the same reason unable to atone by large sales for the narrow margins of profit, have suffered much more than the large factories, and it is to the owners of these small mills that this article is particularly addressed.

It is with great difficulty that the poor mill owners can obtain a poor subsistence, pressed and harassed as they often are with notes due, and maturing for this and that, and the other. But "It's an ill wind that blows no one any good." The pressure brought upon the saw mill men has had its effect, and to-day many of them are in better shape than ever before to make money, as soon as there is a revival in business circles. The continued low prices have taught the thrifty mill-men, how to produce lumber much cheaper than would have seemed possible to them a few years ago. "Necessity is the mother of inventions," is a saying that has proved very true in the saw milling business the past year or two. There has been no alternative. It was a necessity to produce cheaper or sell at an absolute loss. Mill men have had to put on their "thinking caps" and study how to cut off and shuck down expenses. It was a little here and there and everywhere, but the aggregate saving is wonderful.

Belts that have been rejected, thrown one side as par service, are now unearthed from some pile of rubbish, the best pieces cut out and trimmed up and made over, and so good, ser-

viceable belts are produced at very little expense. The stretch is out of them, and in this respect they are preferable to new ones. Files that were worn out and left anywhere around the mill, are now gathered up and re-cut, reducing the file bill 50 per cent. There is place a to keep the old file now, that a value is attached to them. In one corner is found a lot of old saws of all sizes, shapes and conditions. They have taken up valuable room for years, but the time has come when they are to be classified and cleaned up. Many of them are worthless, but quite a number need only re-toothing, and a gauge or two ground off from them to make excellent saws for small work. The hole possibly may be too large for the small mandrels, but the slight expense of a bushing is nothing in comparison with the expense of a new saw.

Among this miscellaneous lot of old rolls are found two or three large saws with a crack in them three or four inches deep. There is not a drill-press or machine shop within miles, but there should be a good racket, and a small hole drilled through the saw where the crack stops, will prevent it going any further, and with care the saw can be made to do good work. Several of these old saws have the teeth filed nearly off them and need gumming badly, or more properly re-toothing. One or two are "buckled" badly, and are waiting for some time when they will be sent to the shop. Quite a number are thrown out into the scrap pile, and the entire lot classified and disposed of, with the result of saws enough for the entire mill for a year or two, at a small expense of repairing, straightening, re-toothing, etc. It is not the purpose of this article to recommend putting dangerous saws into service, as that is not true economy, but it is still a fact that with care a damaged tool may often be made almost as good as new.

Lacing is picked out from short and rejected pieces of belts oiled to soften it and used again. In another corner of the mill are found old cant hooks which in some way became unserviceable. There are two or three axes without handles; one has the eye split beyond use. This corner has been a cemetery for broken and disabled tools and machinery, for as sure as an article was once thrown into it, it was practically buried without even a tombstone to mark its whereabouts. Truck wheels, old pulleys, pieces of belt, scraps of chain, short pieces of rope, a disabled wheel-barrow, a few remnants of T rail, and a pinch bar or two, are all lying together in this corner. And with but slight expense, many of these old tools could be made serviceable. All this truck is taking up valuable room, and in a short time it becomes a fixture and necessitates going around a pile of trash where much time could be saved could this room be utilized.

And many mill men have discovered this. They have also learned that journals that jump up and run hot, can be babitted and adjusted. Belts too light for the work required of them are replaced by those more suited for the work expected. Loose belts are tightened and made to do full service. Belts with many pieces are made over, thus avoiding the jump that numerous laps will make. Loose pulleys are babitted when needed, and not allowed to rattle. These little details are all receiving the closest attention. The tendency is to save and utilize that which has been bought and paid for, and so reduce expenses.

Piece work is brought into use where it is possible to do so. The logs are cut, hauled, or bought at the bottom figure. More care is used in the selection, to reduce the common and increase the better qualities. Special bills receive closer attention, so that the proper quality may be furnished and the sizes kept exact. It is poor economy to ship, especially long distances where freight is high, any material to take chances upon. If it is sawed too large, re-saw it again. Don't ship it, paying freight upon worthless material and excessive weights, which make the lumber undesirable for the consignee and unprofitable for the shipper. Strange as it may seem a reckless way of sawing and shipping in the past has cost the mill men many dollars. But he is giving points closer attention now, learning the wants of the customer and trying to supply just those wants.

He is looking into the market more to find

ways to work his lumber up more advantageously.

New machinery has been investigated, its merits enquired into and compared with the old in use. Dull as business has been, the only way to lessen expenses materially is to keep up with the latest improvements in labor-saving machinery. No push and hurry expended on poorly constructed machinery will enable the mill man to keep pace with competitors who are better equipped. The "thinking cap" must be kept on to keep pace with a progressive age. Now the saw mill men are not all loose in their mode of doing business, but many of them can but admit that there was a time when they were, and that it was chiefly the dull trade of the past two years which brought them up to a better standard. They have learned economy and the lesson fits them for better times, and if the lesson is not forgotten, prosperity will surely attend them.—*E. B. Chester in Saw Mill Gazette*.

IN BY-GONE DAYS.

Mr. W. H. Murphy relates the following lumbering incident which it will be seen occurred a good many years ago. "Fifty years ago just about this season of the year I was employed getting out timber on the Eardley mountains. We were short of pork and as I had some business in Bytown, now the city of Ottawa, I was commissioned by the boss to call on my way down at Mr. Egan's office in Aylmer and have some pork sent up. I saw Mr. Egan and a day was set that I was to call and take the pork on my return. On the day appointed I was on hand and Mr. Egan informed me that I was to take a horse and team, three barrels of pork and a large sack of oats. I started with my load over the Eardley hills and arrived at what is now and has been for many years known as Breckneredyes' place. There was then a stopping place kept by a Mr. Moor. I put my load under the shed which was then just about where Mr. Breckneredyes' house now stands. Mr. Moor's house was on the opposite side of the road and has long since, no doubt, disappeared. I had not been long in Mr. Moor's when a large gang of portageurs who had been delivering supplies to concerns further up, came along. In those early days it was usual to travel in gangs, as there was often trouble with ice and snow storms. The teamsters would come in in threes and fours as they passed along, but they did not stop. The horses understood their business, and would follow along. When the last of them had passed, I thought I would take a look at my load, and it was well I did so for my sack of oats disappeared. There was no way it could go other than some of the teamsters had thrown it on to their sleighs. I acquainted Mr. Moor of my loss. He could, of course, suggest nothing. Here I was in a fix. I could not take the horse to the shanty with nothing to feed him, and besides, it would be a standing joke on me that I could not bring a load from Aylmer without losing a part of it. I could see the last of the teams slowly wending their way up the hill. My determination was soon taken, and I started after them. When I got up to them I jumped into the last team, turned it round, and brought it back to Mr. Moor's. I got back and asked Mr. Moor if he had a gun, all I wanted was my property and they could have theirs. The suggestion to take back the team to return the oats did not meet my approbation. I had made no allowance for that on my programme, which was to hold the horse till I got my oats. Seeing that I was determined they thought the better way was to return the oats, so starting back for them in a short time they returned with the sack. I gave them their horse and team. As I handed Mr. Moor his gun he remarked, "Well, that's the best I've seen done in these parts."—*Ottawa Free Press*.

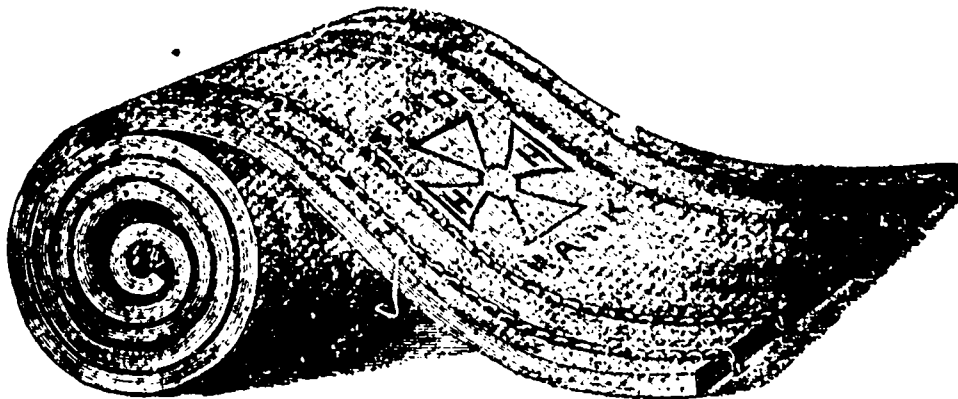
An Age of Discovery.

We certainly ought to appreciate the fact that we are living in an age of progress and discovery, this is especially appreciated by all persons that have been afflicted with rheumatism, as West's World's Wonder or Family Liniment is a positive cure for rheumatism. It is invaluable for cuts, sprains, bruises, burns, scalds and all diseases requiring external application. Sold by J. D. Tully at 25 and 50 cents per bottle.

HARRIS, HEENAN & Co.

124 AND 126 QUEEN STREET, . . . MONTREAL.

Patent Stitched—Steam Power Pressure Stretched—Oak Tanned



TESTIMONIAL.
 ISA GOULD & SONS, CITY M.N.S.A.,
 Nov. 15th, 1884.
 Harris, Heenan & Co.
 Dear Sirs.—Your Patent Sewed Belt has been in use in our "City Mills" for some time. We are thoroughly convinced of its superiority over any belt American or Canadian, we have used in an experience of over 35 years. It stretches so little, and gives so little trouble, that compared with riveted belting, the sewed belt saves double its price in time and labor saved. We heartily recommend it to manufacturers as the cheapest and most satisfactory belt in the market. Yours respectfully,
 W. C. MARSHALL.

TESTIMONIAL.
 FRICK, BERRY & Co., CANAL HOUSE BROS ASP
 NAIL WORKS, MONTREAL, 15th Nov. 1884.
 Messrs. Harris, Heenan & Co., Montreal.
 I have pleasure in recommending the belting manufactured by Messrs. Harris, Heenan & Co. of this city. After thoroughly testing it, I find it greatly superior to any belting that has come under my notice and fully equal to all they claim for it, and certainly without an equal for cross or double belting. CHAS. B. ELACOTT,
 Sup't. H. B. & H. N. DEPT.

LEATHER BELTING!

*The Best, therefore the Cheapest, Belt in the market.
 Replaces, when used, all others.
 More Pliable and Durable, especially at the splices.
 Single equals medium double.*

*Stretches but little, always retains its original width.
 Superior for Cross or Double Belts.
 Runs straight and true, does not start at the laps.*

25 per cent Stronger, 33 $\frac{1}{2}$ More Lasting, and 12 $\frac{1}{2}$ Heavier, than any other Leather Belt

MAPLES, ELM AND OAK.
 Maples, elms and oaks, generally classed as deciduous trees, formed the subject of a recent talk by Prof. A. S. Bickmore to the public school teachers at the American Museum of Natural History. The lecture was the second of a series on the vegetable Kingdom. The science of forestry, it was said, began first to be studied in Germany and to-day Germany leads all other countries in that particular. Her wooded territory has been carefully surveyed, and maps have been arranged showing the kinds of trees found in various quarters. All the forests are under the immediate protection of Government. Only a limited number of trees are allowed to be sacrificed each year, and an officer of the Government directs the particular trees to be felled. The same condition of things exists also in France, and as a result the income from the forests is increased. The public interest taken in the preservation of forests in Germany and France was contrasted by the professor with that taken in our own country. The extreme northern limit of territory where deciduous trees are found in the country was fixed as the St. Lawrence river and the region about Lake Superior. There is a broad area of deciduous forestry extending southward across the United States, bounded on one hand by the Atlantic ocean, and on the other by the prairies. A comparatively narrow strip stretches from Lower California up the Pacific slope. The structure of the leaves of these trees was explained in detail, showing how they act as breathing organs to the trees in a manner closely analogous to the working of the lungs in the human body. The sap of the tree rises from the roots between the bark and the solid trunk, circulates through the branches and thence through the twigs to the stem of the leaf. From this point it is spread throughout the leaf in the veins. The fruit of the tree is engendered by the falling of grains of pollen from the male flower upon the stigma of the fertile flower. The white oak, Prof. Bickmore said, is the kind generally used in manufacturing furniture

and in commerce. Its elasticity and durability is what gives it value. Cork is simply the bark of a species of oak which grows in the vicinity of the Mediterranean. In oak forests where bark is cultivated, a series of circles are cut about the trunk when the tree reaches its 15th year. The circles are connected by longitudinal cuts, and the bark is then pried off in large sheets. The first crop is of little value, but a second coat of bark comes, which is of a finer quality. Trees may have the bark removed half a score of times and lives to the age of 150 years before decay sets in. Attention was called to the veneration for the oak which has been shown in times past by the Druids and others. The Druids worshipped in oak groves, if, in fact, they did not worship the trees themselves. This veneration was accounted for the fact that the trees, aside from their natural beauty, were exceedingly useful. They furnished food for man and the lower animals, and material for boots and bows. In a certain part of Palestine, it was stated, may still be seen an old oak tree which is said to be the oak of Abraham. "I can't say that the tree actually existed in Abraham's time," said Prof. Bickmore. "It is hard for a scientist to believe that any tree now in existence dates back so far." The oak family includes the chestnut, beech, and hazelnut trees, and both oaks and elms are a sub-order of the nettle family. The most beautiful, graceful and dignified tree in all the vegetable kingdom was said to be the elm, and the professor expressed pleasure at the fact there were so many of them in Central park.—*New York Times.*

SHIP BUILDING ON THE MERSEY.
 The shipbuilding trade on the Mersey during the year now closing has been comparatively slack; and, so far as present appearances go, the prospects for next year are not encouraging. Messrs. Laird Bros., Birkenhead, have built the following vessels this year:—The steel paddle steamer Ireland, 1,951 tons gross register and 850 horse-power; the steel twin screw steamer Britannia, 1,524 and 250 horse-power; the iron

twin screw steamer Stormcock, 372 tons and 300 horse-power; and the iron screw steamer Blackcock, 220 tons and 200 horse power. In addition to building the above vessels, Messrs. Laird Bros. have effected several heavy repairs and alterations in ships and machinery. Messrs. R. & J. Evans have built the following vessels.—The iron sailing ship Westgate, 1,920 tons; the iron sailing ship Alliance, 993 tons; and the iron lightship Star, 105 tons. Messrs. W. H. Potter & Sons have constructed the following.—The iron sailing ship Marlborough Hill, 2,578 tons builders' measurement; the iron steamship Hecate, 1,350 tons; the iron twin screw steamer Alarm, 250 tons; the iron sailing ship Langdale, 2,150 tons; and the iron steamer Medusa, 1,350 tons. Messrs. Thomas Royden & Sons have the following list:—The iron steamer Britannia, 3,129 tons gross and 1,400 horse-power; the iron sailing ship Queen of England, 2,115 tons; the iron sailing ship Glenesslin, 1,821 tons; the iron sailing ship Buccleuch, 2,054 tons, and the iron sailing ship Gleneloch, 2,400 tons. Messrs. Cochran & Co., of Birkenhead, have built a large number of lighters, launches, steam tugs, &c., the total gross tonnage being over 2,000.—*Timber Trades Journal.*

A MUCH USED BUT LITTLE KNOWN WOOD.
 "Did you ever wonder what knife-handles are made of?" asked a dealer in fancy woods of a New York Tribune reporter as he hauled out a shapeless block from his store of spoils from many tropical forests. "Outside of bone and tortoise shell and pearl, so called, which every one recognizes, the majority of knife-handles are made out of a close, fine-grained wood, about the name and pedigree of which 9,999 out of 10,000 persons are ignorant. It is known to the trade as cocobola wood, and it comes in large quantities, millions of pound a year, from Panama. It is of special value for knife-handles because of its close texture, freedom from knots and flaws, and consequent disinclination to split. Many well-known kinds of wood require

varnishing and polishing and filling up of crevices before they attain the beauty for which they are famous. Of course that sort of thing cannot be done in the case of knife-handles, and something must be used which doesn't require fixing up. Cocobola is rarely used for cabinet-making, because, being a gummy wood, it doesn't glue well. The same qualities that make it of use in the manufacture of knife-handles render it valuable for the making of wind instruments like the flute. It comes to us in chunks, not in strips and planks like other woods. Sometimes these pieces will weigh 500 and 600 pounds, but generally much less than that. It costs 2 $\frac{1}{2}$ cents a pound now, but before freights went down and the isthmus was opened up so thoroughly it used to cost double that price."

WORTH MORE THAN GOLD.
 The eyes of the northern mill men are turning eagerly to the comparatively virgin forests of the south, and heavy sales of timbered land are constantly being announced. If the ravenous saw must be fed, and no better and cheaper material than wood can be devised, then the people of the south should not dispose of their heritage for a mere pittance of its actual value. These huge tracts of yellow pine can be converted into yellow gold, and should not be sacrificed as a worthless possession. We should make the most of our opportunities, and not yield too rapidly to the pressure of greenbacks. These huge areas of undisturbed trees are daily enhancing in value and importance as the supply in the North and West diminishes. It is idle to talk of the "inexhaustible" forests of the South, when Mr. Little of Montreal, an authority on the subject, estimates that the sawing capacity of the North is sufficient to consume the merchantable pine of this state in less than a year. The South possesses mines of wealth in her noble forests, and they should not be disposed of carelessly, and without a full appreciation of their true and real value.—*Florida Herald.*

NEW BRUNSWICK INTERESTED.

To the Editor of the Canada Lumberman.

Sir.—I took notice in your valuable paper of the 15th Dec. two very sensible written letters,—one by Manufacturer, and the other by Hon. H. G. Joly. Manufacturer shows in plain language our lumber manufacturers are in danger of being drifted on lee shore, by allowing the Americans to take the wind out of our sails; allowing them to cross the boundary and float away our lumber unmanufactured to their own shores to be manufactured, encouraging labor and capital to help build up their country out of our material, and charging us \$2 per M feet duty if we attempt to compete with them.

I trust not only manufacturers, but farmers, laborers, mechanics, and men of all classes will put their shoulder to the wheel and cry out against the unfairness of the Dominion to allow Americans yearly to rob us of our staple article, with no restriction or recompense, for one and all are interested in the matter, and if we allow Americans to follow up with impunity a few years more, to cross the lines and slaughter our forests, one-half of our manufacturers of lumber will be driven into bankruptcy, and their fine costly establishments closed and decaying. Labor is the wealth of any country, and so long as we allow our forest to be snatched from us to go on the American side to be manufactured, just so long we are giving Americans a premium to oppose our lumber industry, and unless our manufacturers' advice is at once taken by our Dominion to put on the same export duty on our raw material going out of the country to the American side to be manufactured, that they charge for our manufactured article going into the United States, we may expect to be left on the lee shore, and our lumber trade stranded in a very few years.

I may remark that its not only Ontario that is in danger now, all above the Grand Falls, is New Brunswick, American and English capitalists have, and are contemplating building mills to cut our cedar and what few spruce we have left. Inside of five years there will be but little if any worth cutting if they go on at the rate they are now cutting. And in Nova Scotia they strip it of its lumber by building immense large rafts and tow them with powerful tugs to the United States ports to be manufactured.

The Hon. Mr. Joly's remarks on forestry are worthy of particular attention, and every man owning an acre of land should plant more or less of some sort of trees, and report for the benefit of humanity, and try to cultivate a taste to improve tree growing and forest protection, and demand of our Governments to put a stop American capital coming over to slaughter our forest as we want it all for Canadians. And we cannot wonder at the American press saying our Dominion politics does more to drive emigration to their shores than all their own politicians and emigration scholars yet been tried.

It has been customary with our politicians to lock the door after the horse has been stolen, and likely the same old groove will be followed for the future.

Most respectfully yours,
P. O. Byrom.

Madawaska, N. B., Dec. 1885.

THE FORESTS OF SIBERIA.

The Russian journal of Finance Minister has published a long article on the forests of Eastern Siberia, of which the following are the principal passages:—"The immense forests of pines, larches, cedars, birches, aspens and limes which form almost the exclusive wealth of this region; belong for the greater part to the State. During a great number of years this source of wealth was almost entirely unproductive. It is only since 1869 that a more or less regular administration of forests has been established, and at the present time the extent of the forests in Eastern Siberia are estimated at 72,335,230 deciatines (about 11 square yards each.) These are divided between Tobolsk Tomsk, Semipalatinsk, and Akmolinsk. Of these forests, 21,355,760 deciatines have been accurately surveyed, and 50,979,570 have been valued very approximately. One hundred and five forests have been conceded to the peasants, and they have an extent of 7,068,240 deciatines. In com-

parison with their enormous extent the forests of Eastern Siberia give at the present time but an insignificant revenue. The want of means of communication, and an insufficient population, greatly hinder its development. Still, the revenue is increasing, for in 1870 it was only 40,000 roubles, and in 1884 it was more than 111,000. The chief centre of the trade is in the town of Tomsk, and then Tumen, which is point of departure for the river traffic."

QUARTERED OAK.

For the past two years quarter-sawn white oak has gradually been grown in favor, and the present demand is largely in excess of any previous demand for years. The thickness most used is inch, and it is worked into flooring and general house finishing. The furniture manufacturers are using quite an amount for dining tables and sideboards, and the manufacturers of desks and chamber sets use limited amounts. The beauty and value of quarter-sawn oak is in the figure, and takes more than ordinary sawyer to cut the log to the best advantage. Only the largest and best logs should ever be quartered, as a most desirable feature in such stock is to secure clearness and width. The eastern market will take quartered oak, five inches and up wide, but the buyers also place the value on a car load by the amount of lumber that is over 12 in. in width.

The best length to cut quartered oak is 14 feet, although there is a demand for more or less 16 feet, and for such a good price is easily obtained. The demand for thick oak is limited, and the price is usually from \$3 to \$4 per M. more than for board.

Quartered oak should always be square-edged, and piled in such a manner as to dry out perfectly straight. An eighth of an inch should always be allowed in the sawing, so that the boards will dry out to full thickness.—*Timber.*

QUEBEC TIMBER AND LUMBER EXPORT.

"The past season has been one depression in all branches of commerce, and the lumber business of this port forms no exception." Such is the opening sentence of Messrs. J. Bell Forsyth & Co.'s lumber report for 1885. The circular states that the arrivals from sea of both steamships and sailing vessels show a slight increase over last year, while the tonnage from the lower ports is also in excess. The total supply of timber measured, by the returns from the supervisor of cullers, was as under:—

SUPPLY.	
Year 1885.....	9,000,000 feet.
" 1884.....	8,250,000 "
EXPORT.	
Year 1885.....	10,500,000 feet.
" 1884.....	9,000,000 "
STOCK WINTERING.	
Year 1885.....	11,750,000 feet.
" 1884.....	12,250,000 "

These figures show a great falling-off during the past ten years when the average export of white pine alone was over 12 million feet. In deals, taking pine and spruce together, the export has been slightly under that of the previous year and the stock wintering rather more.

The accounts from Great Britain show a considerable reduction in the consumption of Canadian timber, and the imports, though light, have been more than ample for the requirements; from all quarters a dull market is reported.

WHITE PINE.—Waney board.—The quantity measured, some of which has been in the coves for a year or more, show a heavier supply than last year, and the stock on hand slightly in excess of that wintering a year ago. Fresh timber of choice quality has been in good demand all season at our highest quotations while old or inferior has been entirely neglected. The stock comprises some choice girly wood, also a larger proportion than usual of old, small and inferior.

DITTO SQUARE.—The supply has been the lightest since 1879, when it was reduced to 2 1/2 million feet, the export light, and the quantity wintering, though less than last year, about an average of the past five. A fair demand existed during the early part of the season especially for choice or new rafts, some of which were

placed at high figures, while for old and inferior wood there were no buyers except at greatly reduced rates. Towards the autumn enquiry almost ceased, the shipping houses manifesting no disposition to add to their light stocks. The rafts on hand are to a greater extent than usual held on manufacturers' account, though only three or four new lots are comprised in this list.

When we issued our last circular a number of rafts, the production of 1883 and 1884, were laid up on the Ottawa in readiness for the spring market; these have reached the coves, as well as the manufacture of the past winter, so that the stock now wintering—which includes much inferior wood—is all that can be counted on as available for the spring fleet. From latest advices the production will be extremely light this winter.

	Supply.	Export.	Stock.
	1885.	1885.	1885.
Square.....	2,820,045		6,651,604
Waney....	2,576,753	6,758,240	2,588,603
	Supply.	Export.	Stock.
	1884.	1884.	1884.
Square.....	3,707,169		7,501,529
Waney.....	2,199,867	6,047,680	2,399,001

RED PINE.—The supply has been almost nil, owing to the scant demand and low prices of past years, the export fair and the quantity on hand less than one-third of the usual average with a good deal of old and inferior wood in stock.

	Supply.	Export.	Stock.
1885.....	73,766	64,160	473,136
1884.....	327,738	614,280	1,012,426

OAK.—The supply has been double that of 1884, the export greater and the quantity wintering more than sufficient for all early requirements. Prices opened steadily, with a downward tendency and a weak market towards the close of the season. The only wood now readily sold in this market is choice in quality and make, and manufacturers cannot be too particular in this respect. The quantity wintering at Garden Island is small. Sawed oak exported from the United States to Great Britain is in many ways now taking the place of square timber.

	Supply.	Export.	Stock.
1885.....	1,566,968	1,626,400	1,078,051
1884.....	772,250	1,212,520	837,715

ELM.—Notwithstanding the difficulty in securing standing timber the production last winter was heavier than usual, the export larger and the stock on hand greater than for some years. The demand has been fair but the closing prices easier, owing in a great measure to the heavy stock. It is estimated the manufacture this winter will be greatly curtailed.

	Supply.	Export.	Stock.
1885.....	1,018,932	884,160	560,453
1884.....	657,919	658,090	114,961

ASH.—The receipts and exports have been light and the wintering stock heavy. It contains a large amount of old timber unsuitable for shipment and useful only for sawing up for local consumption. Good wood is held at our highest rates, while inferior is unsalable and neglected.

	Supply.	Export.	Stock.
1885.....	287,595	262,480	428,635
1884.....	451,984	360,080	389,358

BIRCH.—The shipment has been large, the quantity wintering very light. Prices have been fairly maintained, and for parcels of good average there has been a fair demand.

	Supply.	Export.	Stock.
1885.....	379,059	457,160	22,138
1884.....	194,346	241,120	23,038

STAVES.—This branch of the Quebec business which once formed so important an item of export will disappear from our stock list altogether if the decrease continues in the same ratio for the next few years.

The present stock of pipe is equal to the export of the last two seasons, while that of puncheon is considerably less.

	Supply.	Export.	Stock.
1885—Pipe.....	144	152	349
1885—Puncheon....	189	469	310
1884—Pipe.....	96	183	379
1884—Puncheon....	261	700	474

DEALS.—Pine has been in good request, especially for specifications containing fair proportions of first quality and broads, which have been scarce all season, and have commanded

extreme rates. The enhanced quotations for all the higher grades of lumber in the United States will not only curtail the shipments of Michigan deals to the St. Lawrence, but must also attract a larger proportion than usual of choice Canadian lumber suitable for deals to that market. From all appearances prices are likely to be well maintained, and may rule even higher for next year's delivery. The export has been slightly under that of last year, the stock wintering rather heavier; including, however, a larger proportion than usual of culls and odd sizes. We learn that the shipments from Montreal have increased considerably this season.

	Supply.	Export.	Stock.
1885.....	2,668,240	2,376,737	955,648
1884.....	2,247,240	2,442,946	847,653

SPRUCE.—For some weeks in the early spring a brisk demand existed, attributable, however, more to the fact that the fleet arrived almost simultaneously and that the mills, owing to the lowness of water, were unusually late in getting to work. As the season advanced prices dropped, but towards the close of navigation considerable sales were made at fair figures. We would, however, urge our mill men to curtail the supply, as we are convinced that if the manufacture be excessive the present healthy tone will not be maintained.

	Supply.	Export.	Stock.
1885.....	2,635,324	2,473,529	822,632
1884.....	2,222,557	2,636,465	838,817

Freights have ruled low all season, opening at 20s. to 22s. 6d. Timber, 47s. 6d. to 50s. Deals to Liverpool, 20s. to 22s. 6d. Timber, 50s. to 52s. 6d. Deals to London, 17s. 6d. to 19s. Timber, 45s. to 47s. 6d. Deals to Greenock closing at 18s. Timber, 45s. Deals to Liverpool, 20s. Timber, 45s. to 47s. 6d. Deals to London, 16s. 6d. to 17s. timber, and 45s. deals to Clyde.

THE BAND MILL.

The interest in band saws does not abate. Owners of good timber see the necessity of making the most of it. Good pine is too valuable to throw away in sawdust. The time was when the thickest circulars were thought to be the best saws. They were durable, easily run, and the wide kerf was no objection. Gangs were not introduced as timber savers particularly; the saving they made was a consideration with some, but the fact of superior manufacture was the prime object.

The oldest operators in the field are the ones who are now giving the most thought to band saws. Years of experience have taught them that by the older methods of manufacture what would otherwise bring to them many dollars goes into the refuse heaps. They plainly, and forcibly see that this is poor policy. They are also aware that their pine possessions are growing smaller year by year. They want to make the most of the last of it. It is often said—and we all know it by experience—that a person never fully appreciate a friend until that friend is gone. So it is with pine. When it was plentiful, and could be had at \$1.25 an acre of government for asking, it was not appreciated. Its value was underrated. In a strictly commercial sense it was worth only what it would bring, but its prospective value was much greater. The latter value was what was considered by the cautious and far sighted, as is proved by the fortunes at which several holders have recently disposed of their timber.

That band saws, almost without number, will be put in as soon as possible, admits of no question. It can be said that there is a craze for them, but it is backed by common sense, and strictly business principles. The machine that will pay for itself in a few months is considered a good investment, and we believe a good band saw will do that. The man who can change his methods of business and make \$1.25 when before he made but \$1, will naturally, as soon as possible, place himself in a position to secure the extra 25 per cent. If he can do this by using a band saw, instead of a circular, he is certainly excusable for being an enthusiast.

The men who do not wish to adopt band saws are those who cut coarse stock mainly, and who are obliged to turn out large quantities of it, in order that their business may be profitable. A small output of lumber of low grades rarely pays. There is but small profit on a thousand

feet, consequently the more that is manufactured and sold the better. But this objection is entirely done away with as soon as good lumber is considered. A gain of from 20 to 35 per cent. in the amount of lumber turned out, in favor of the hand saws, is a prime object, when such logs produce good lumber. What, for instance, would have been the result, if up to date, the Wolf river stock had been manufactured by band saws? Much of the timber cut on that river was exceptionally fine, as high as \$20 a thousand having been paid for logs, yet these logs have been cut with circulars. The waste of timber has been so great that had that waste been sold as lumber, as a large portion of it would have been had thin blades been used, fortunes would have come from it. Old operators have in mind just such cases, and while they cannot undo the past they are determined to do better in the future.

There has been a doubt in the minds of many manufacturers as to the feasibility of using band saw mills. This not to be wondered at. The outcome of any prominent innovation is always doubted by many. The old, if not so good as the new, is, as a general thing, clung to by the majority. We believe there is no manufacturer of band saws who will say that his machine is perfect; still there are band mills doing excellent work, day after day, as figures, published from time to time in these columns, prove. And after all it may turn out that there are better mills on the market than many give them credit for being. Along in the fifties, somewhere, the first circular that was put in a Manistee mill was discarded because it was thought to be worthless. Practically it was worthless, but it was so because it was a new thing. The mill men were not used to it, and did not know how to run it. Yet the circular which was thrown out had the same intrinsic merit that have the scores of rotaries that sang in Manistee during the last sawing season. Without a doubt, there are many sawyers in that city, and probably there is one in every mill in the Northwest,—who, had they a chance, to-day, would take their supposed worthless old circular, and make it do a hero's work. Every machine has its peculiarities,—some say its dependant and elated moods,—and no man can understand it who is not familiar with it.

There is another forcible argument we see in the use of the band saw. The white pine lumber manufacturers know, or ought to know, by this time, that the capacity of their mills has injured their business. For years the manufacture of lumber has been carried on with a mighty rush. Timber and prices have been slaughtered. Certain mill owners say that the capacity of the band mill is not large enough. If such mills are to come into general use, let the lumbermen of the Northwest hold up their hands and in unison thank heaven that their capacity is no larger. With the invasion of yellow pine from the South, and of California, Oregon and Washington territory lumber from the West, if every other circular and gang in the 2,700 mills of the Northwest were replaced by band mills there would then in coming years be all the white pine lumber manufactured that could be disposed of profitably.—*Northwestern Lumberman.*

THE DAMAGING GUM SPOT.

A widespread difference of opinion exists in the various markets in regard to the inspection of cherry. In New York there are certain dealers who consider a car load of cherry first class if it will run fifty per cent firsts on their yard inspection, while in Boston the standard is 75 per cent firsts. In another market there is also a marked difference in the manner of grading, and the proportionate amount of firsts which must exist in order to constitute a choice or standard grade lot of cherry. This variety of opinion undoubtedly arises from one source, the prevalence of gum spots in the lumber. There are inspection rules in force which require a first in cherry to be eight inches or over in width and absolutely perfect, and it is an easy task under such a rule, of course, to pick out the firsts.

It requires care and judgment in inspecting cherry to intelligently and fairly classify boards that are entirely free from knots and sap and still have more or less gum spots on their sur-

face. As a matter of fact very few cherry boards or plank are absolutely free from gum spots; it is a natural characteristic of the timber, and while many places might have but one or two minute blemishes of this description, it naturally follows that a strict adherence to the letter of grading which consigned such pieces to a second grade, would in case the lumber had been sold in sorts, prove unjustly severe upon the manufacturer. It is true that buyers of cherry in the large markets place great stress upon the appearance of gum spots in the lumber, but observation proves that in the finest goods manufactured from this wood, the process of staining and polishing has failed to entirely obliterate the gum defects, which goes to show that while it may be desirable to secure cherry absolutely free from nature's blotches it is far from possible to do so, and consequently the feature is used more as a means of securing what amounts to a discount on the lumber when bought, than from a desire to really secure an impossibility.

Cherry growing in various sections of the country differ materially in regard to the presence of gum; a distinct choice exists between mountain growth and valley growth timber more or less cut from second growth trees mixed in with that cut from trees of an older growth to "sweeten" the average. Still, in the face of all these facts, there should exist some common understanding regarding the classification of gum specked cherry, so that its real value may be obtained.—*Northwestern Lumberman.*

JAPANING,

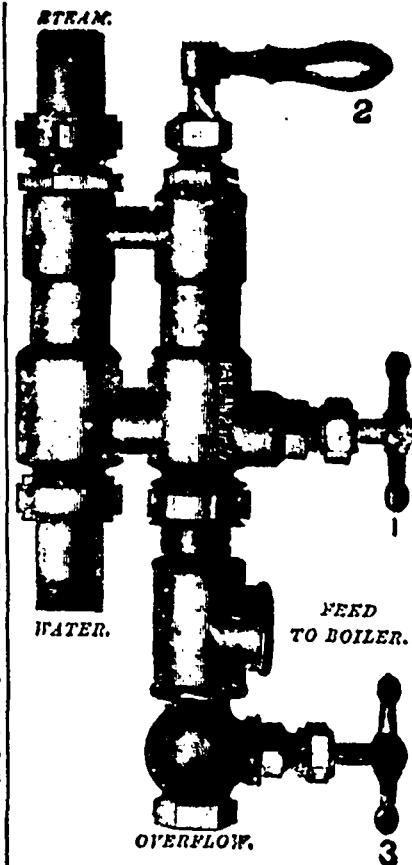
In an article on japaning, the *Scientific American* says the work to be japaned is cleaned, dried and warmed. If of wood or other porous material it is given while warm several coats of wood-filler, or whiting mixed up with a rather thin glue size, and is, when this is hardened, rubbed down smooth with pumice stone. It is then ready for the japan grounds. Wood and similar substances require a much lower degree of heat and usually a longer exposure in the oven than metals, and a higher temperature may be employed where the japan is dark than when light. The japaner's oven is usually a room or large box of sheet metal, heated by stove drums and flues, so that the temperature indicated by a thermometer or pyrometer can be readily regulated by dampers. The ovens are also provided with a chimney, a small door, and wire shelves and hooks. The ovens must be kept perfectly free from dust, smoke and moisture. A good, cheap priming varnish for work to be japaned consists of pale shellac 2 oz., pale resin 2 oz., rectified spirit 1 pint. Two or three coats of this is put on the work in a warm, dry room.

Catarrh—A New Treatment.

Perhaps the most extraordinary that success has been achieved in modern science has been attained by the Dixon treatment for Catarrh. Out of 2,000 patients treated during the past six months, fully ninety per cent. have been cured of this stubborn malady. This is none the less startling when it is remembered that not five per cent. of the patients presenting themselves to the regular practitioner are non-fitted, while the patent medicines and other advertised cures never record a cure at all. Starting with the claim now generally believed by the most scientific men that the disease is due to the presence of living parasites in the tissues, Mr. Dixon at once adapted his cure to their extermination; this accomplished the Catarrh is practically cured, and the permanency is unquestioned, as cures effected by him four years ago are cures still. No one else has ever attempted to cure Catarrh in this manner, and no other treatment has ever cured Catarrh. The application of the remedy is simple and can be done at home, and the present season of the year is the most favorable for a speedy and permanent cure, the majority of cases being cured at one treatment. Sufferers should correspond with Messrs. A. H. DIXON & SON, 305 King Street West, Toronto, Canada, and enclose a stamp for their treatise on Catarrh.—*Montreal Star.* 1912.

Advice to Mothers.

Are you disturbed at night and broken of your rest by a sick child suffering and crying with pain and cutting teeth? If so, send at once and get a bottle of Mrs. Winslow's Soothing Syrup for children teething. Its value is incalculable. It will relieve the poor little sufferer immediately. Depend upon it, mothers, there is no mistake about it. It cures dysentery and diarrhoea, regulates the stomach and bowels, cures wind, colic, softens the gums, reduces inflammation, and gives tone and energy to the whole system. Mrs. Winslow's Soothing Syrup for children teething is pleasant to the taste, and is the prescription of one of the oldest and best female nurses and physicians in the United States, and is for sale by all druggists throughout the world. Price 25 cents a bottle.



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Market Reports.

TORONTO.

From Our Own Correspondent.

JAN. 9—Considerable trade has been done up to within the past five days, but as might be expected the present severe weather put a stop to all outside work, and the yards are all quiet waiting for more favorable chances. In the meantime those who are wise will stock up their yards while the present favorable prices stand, for most assuredly figures will advance ere long, and may be said to be now moving up. Stocks at the mills are run low, and the season for getting in logs must of necessity now be a short one, and with a fair prospect of the duties being taken of lumber going to the American side, all tend to make manufacturers hopeful of what the future has in store for them. On the other hand should the balance of the season prove favorable for stocking a good spurt will be put on by the mill men and a fair stock be got in, and prices may not advance to the extent hoped for. Yard men can hardly hope, however, to stock up their yards again to sell out at the prices now being obtained. In fact they cannot now purchase to sell again at their present quotations. There is no bill stuff worth mentioning piled off on track side here. The only article that is plentiful is the lower grades of one inch boards, and as the season advances the stock in hand here will be materially lessened, and a considerable portion of that now at the mills will find its way west, so that there is but little fear of any glut during the present winter and spring. Mill men must not suppose, however, that dealers will snap up green lumber to ship out during the present winter (unless where cut to fill orders.) The question of freight on green lumber is a serious one, and dealers cannot afford to overlook that item. Railroad companies generally take care to remind them that they have such articles as weigh scales, and if manufacturers want their stocks removed before it becomes reasonably dry they will have to submit to taking low prices.

Basswood is plentiful on our market and only a limited demand for it; the same may be said of maple. Birch and cherry will find a ready market. Sawn lath are in fair demand, and shingles quiet. Should the present cold snap continue long there will not be much demand for anything below dressing and better lumber until milder weather comes in.

Mill cull boards and scantling	.....	\$10 00
Shipping cull boards, promiscuous widths	.....	12 00
Stocks	.....	13 00
Scantling and joist, up to 18 ft.	.....	14 00
" " " 18 ft.	.....	15 00
" " " 21 ft.	.....	16 00
" " " 24 ft.	.....	17 00
" " " 26 ft.	.....	18 00
" " " 28 ft.	.....	19 00
" " " 30 ft.	.....	20 00
" " " 32 ft.	.....	21 00
" " " 34 ft.	.....	22 00
" " " 36 ft.	.....	23 00
" " " 38 ft.	.....	24 00
" " " 40 to 44 ft.	.....	25 00
Outing up planks to dry	.....	20 00
boards	.....	20 00
ound dressing stocks	.....	16 00
Picks Am. inspection	.....	30 00
Three uppers, Am. inspection	.....	25 00
B. M.		
1 1/2 inch flooring, dressed	.....	25 00
" " " rough	.....	14 00
" " " dressed	.....	23 00
" " " undressed	.....	14 00
" " " dressed	.....	16 00
" " " undressed	.....	12 00
Beaded sheeting, dressed	.....	19 00
Ceiling board, dressed	.....	12 10
1 1/2 inch sawn shingles, B. M.	.....	2 75
Sawn lath	.....	2 25
Red oak	.....	20 00
White	.....	23 00
Basswood, No. 1 & 2	.....	19 00
Cherry, No. 1 & 2	.....	16 00
White ash 1 & 2	.....	25 00
Black ash 1 & 2	.....	20 00

OTTAWA.

From Our Own Correspondent.

JAN. 9—Not a little uneasiness exists amongst lumbermen in this vicinity over the project now said to have taken shape among Michigan mill owners of taking over logs and other lumber in crude form from the Georgian Bay and Lake Superior section for manufacture in United States territory. These Michigan men have already secured a foothold by buying timber limits in the Georgian Bay and Lake Superior section, and propose towing the logs over to their Michigan mills. While no one

disputes the right of the Michigan men utilizing our forests, still it is contended that this will act detrimental to the lumber industry of this section of the Dominion, and they think that an export duty should be placed on all logs thus taken out of Canadian territory. Canadian lumbermen have to pay duty when shipping lumber to the United States, and they think it only just in the interests of the Canadian trade, that American shippers of crude lumber should come under taxation to the revenue of Canada. True it is that the United States tariff on coarse lumber has lately been reduced, still there remains the present very heavy duty on first quality. By towing logs across in booms from the Canadian side to the Michigan mills the American escape both imposts. This complaint of Canadian lumber merchants is certainly not without reason, and it is presumed that the Government will take some steps to equalize things a little in a matter of such serious importance. Another aspect of the case is the fact that the territory over which the American lumbermen will operate is that they will have easier facilities for getting their logs to the saw than the average Canadian millowner. They propose to operate in the Georgian Bay country and utilize the rivers of that territory, which will make the transport not only short but rapid. The longest distance which these logs will have to be driven before being placed in the boom, ready to be towed to the mills, will not at the outside exceed over 50 miles; whereas the Chaudiere mill owners have to drive their logs hundreds of miles before they reach the mills, and are thus heavily handicapped in the race of competition. The Georgian Bay and Lake Superior section is a heavily timbered country, and owing to the ease from which it can be reached and utilized by the American lumbermen, it offers a very inviting field for their enterprise and energy, now that their own forests are beginning to show such visible signs of depletion. Bordering on the Georgian Bay are a number of fine rivers running into the bay, which are naturally well adapted for the rapid transport of logs; whereas the Ottawa and its tributaries are not only a lengthy means of reaching the markets, but have often very hazardous channels and subject to many drawbacks owing to low water in some seasons. The question of putting all who are engaged in the lumber industry on a footing of equality is one well worthy of grave consideration, and the Government by attending to the matter at once will simply be doing a duty which is incumbent on it.

CHICAGO.

AT THE YARDS.

The *Northwestern Lumberman* of Jan. 9th says:—In the absence of anything but a dribbling winter trade, the wholesale dealers are having plenty of time to reflect on the past year, and speculate on the future. They have taken a firm grip on values for the time being, which they are able to hold, somewhat as a driver can hold a team that is standing stock still, with no disposition to go. The lumber business is taking a rest, when compared with the rush of the busy season, so that there is no trouble in holding the team of values. A little later, when the dogs of competition get a barking, and rumors of cut prices begin to explode with such noise, the team will commence to dance and cavort, and then it will be business to hold the horse.

The looks for the year have been balanced, an account of stock has been taken, the dealers know how much they have paid out, and how much they have left. It is seen that the aggregate of business done shows a decrease as compared to results in 1884. There are a few exceptions in which houses have made a comparative increase of their business during the past year. But the great majority have had an opposite experience. Dealers are now asking: Why is it that receipts and distribution in and from this city fell off during the past year as compared to the year previous? Some are bold enough to assert that the Chicago lumber trade has passed the summit, and never again will be so large as it was in 1882. Other dealers take a different view, and say that another period of good times will place the white pine trade back where it was before the late depression in the

matter of volume. But all regret the departure of fair profits, and the majority are fearful that they have gone to stay. As a basis for this view, it is pointed out that stumpage and manufacturing has got into strong hands, and that the cargo market fails to yield to the demands of the yard men, as it once did. It is claimed that two much has been paid per thousand for lumber now in stock. The stumpage owners and manufacturers are able to hold their values steady, while the wholesale trade is cut up and constantly menaced by competition from various quarters. Now the yellow pine of the South, and the redwood of California threatens to eat into the western trade. It is argued that under the weight of all these adverse circumstances the wholesale trade of this city must necessarily be restricted, and gradually dwindle. The claim is not made, of course, that there is to be a rapid decline and near-by extinction of the wholesale trade, but it will fall off, a few millions a year, until where 1,500,000,000 was once handled by the jobbing trade, there will increase with the growth of the city and suburbs, while the near-by country demand will constantly call for supplies.

The *Lumberman*, while admitting that there is argument in the foregoing view of the prospect, must contend that the subject is not thus wholly covered. The manner of doing business will change, and greater attention will be paid to local trade and special lines. There will be less dependence on rushing great quantities of lumber out West, and more of fine, economical handling introduced into the business. Still the situation of this city at the focus of lake and rail transportation, with a vast and growing local and contiguous, as well as widespread, demand to supply, must insure the continuance of a heavy distribution from this point.

But immediate prospects are really most interesting lumber dealers now. It can be plainly seen that they are anxious about the coming spring demand. Being dissatisfied with the business of the past year, they naturally want to secure a trade for the coming months that will compensate them for lost time. They look eagerly for encouragement from some quarter. The late warm weather gave them hope that the log crop would be meager. But since the later snows and froze they have cast the short log crop reliance aside as worthless. They now conclude that there will be logs and lumber enough for any demand. Now they look to a local requirement through the winter to break up assortments of dry stock as a help to prices. This is something substantial, for there will be a fair local consumption all winter, if the weather hereafter is not cooler than it has been. Moderate weather will also tend to the maintenance of a steady country trade—a condition precisely opposite to that which prevailed last winter. But the more favorable conditions on which to base a good prospect are the short stocks in country yards, and the increased demand on account of railroad building. These are really the pronounced features of the situation that render the outlook now better than it was last year at a corresponding time. We cannot look to a lack of supplies, beyond the fact that dry stocks will be in demand for the early trade, if it come with a rush. We have no reason to think that there will be an extraordinary farmers' demand while prices for grain and meat are so low as now. But we have reason to expect that the call for dimension and strips, on railroad construction and car equipment account, will be extraordinarily large for the coming year. The call from the car factories has already begun in considerable volume. Yet the railroad demand will not be felt so forcibly early in the year as later when construction gets under full headway, and there has been some completion.

The low state of stocks in the country yards will necessitate large buying in the spring, but it will not be so heavy in volume as would be the case if there were speculation in buying. So long as the hand to mouth method is pursued the wholesale trade will continue to complain that the country trade is slow, and profits meager. Yet, if toward spring general business and railroad construction should begin to certainly exhibit a tendency to boom, a great change would be manifest in regard to buying. Country dealers would begin to realize that dry

stocks were being picked up, and that in order to transfer the profits of a sharp advance from the pockets of the wholesalers to their own, they would have to put in stock. This is what may happen, and it is well for all interested to bear it in mind.

The feeling in regard to prices at present is undoubtedly firm. Estimates on bills, wherever seen, show that list prices, or very near them, are asked for dimension. There is not trade enough, however, to be a serious test of values. Holders of lumber better than common are making inquiry about the feeling in respect to this class of stock. The strong faith in good lumber that during the past year prevailed, induced some dealers to quietly lay in ample supplies. Now these holders are naturally anxious about the future of prices. It is impossible to see why the better grades of lumber should not hold their value with the lower grades. Better times will increase the call for manufacturing, and for all purposes requiring the use of good stock.

LIVERPOOL.

The *Timber Trades Journal* of Jan. 2nd says:—The deliveries during the past week have been, as one would naturally suppose at this time of year, meager in the extreme, and the business done has had neither interest nor importance. A straggling cargo or two keep dropping into port, but nothing of importance, if we except the various lots of sundry kinds of timber arriving in the Atlantic steamers from the United States, such as oak waggon scantling, whitewood, maple and staves.

We notice in the large ship *Emily Flinn*, well known in the timber trade, with a cargo of spruce deals from St. John, N. B., bound to Fleetwood, has gone ashore at Sherbourne, Nova Scotia, and will probably become a total wreck. Happily, the crew has been saved, and a portion arrived here this week in the Dominion steamer *Sarnia*.

It is said that some shipbuilding work for the Government has been placed with Messrs. Laird Brothers of Birkenhead, and it is to be hoped the orders will be extensive, for a great amount of misery and hardship has been felt in that borough for some time past, owing to the intense and long-continued depression in the various shipbuilding and engineering concerns.

The completion of the tunnel between Birkenhead and Liverpool, which is now accomplished, will in all likelihood give a considerable increase to the building trade of the former town during the coming season, as many good building estates in Cheshire will be brought into quick and easy reach of Liverpool, and as West Cheshire is a favorite residential district with business men in this city, many of the villages will, we hope, show signs of building activity in spring and summer.

The experimental trains, under the supervision of the Government Inspector, were run through the tunnel this week from Birkenhead to James Street station, Liverpool, and the usual certificate may be expected within the next few days, preparatory to the formal opening of the line by His Royal Highness the Prince of Wales on the 19th of this month.

LONDON.

The *Timber Trades Journal* of Jan. 2nd says:—There is but little fresh to chronicle as to the course of business for this season's shipment, but we expect that before the end of this month some considerable contracts will be closed on this side. With regard to France, many good judges are of opinion that the importers there will not hold aloof from the market during the early part of the year, as they did last season, but will, at any rate, provide for part of their requirements before the importers' specifications are too much picked over. Altogether, the situation seems a more hopeful one, and, as sellers seem inclined to be reasonable, and buyers not unwilling to operate if fairly met, we shall be surprised if we are not shortly in a position to inform our readers that some extensive operations have taken place. We expect, however, that the coast buyers will lead the way, and we do not anticipate that the London importers will purchase much on

f.o.b. terms, until they are in a position to judge as to the course the market is taking. We expect, of course, a few special makes, which always command a ready sale.

The dock deliveries, we are glad to be able to say, have shown some slight improvement on last year's report to date. The increase over the corresponding week twelve months since, amounts to 403 stds. deals, battens, etc., and 112 standards of flooring, but the item of floated timber is some 400 loads short. We have become so accustomed to be always bewailing the diminished consumption, that it comes as quite a relief to be able to change our tone, and we hope the altered state of things will continue. Next week we shall be comparing 1886 and 1885, but we must not forget to have an occasional look back at our old friend 1884. It is a good augury beginning the new year with fresh activity in the dock deliveries, and for Christmas week, too, the improvement reported is of additional importance, for that is generally credited with being the dullest week in the whole of the year in the wood trade.

One effect of the continued pressing of goods on the market, has been to give to the timber trade a more retail character than it formerly had, and the small dock orders which are exchanged now would have had a startling effect on the merchants of thirty years ago. Exceptional cases will occur when it is difficult to help giving an order on the docks to deliver to somebody or another half a dozen deals or as many boards, or even a few bundles of laths; but a decade since such instances were very rare. At the present time, however, they have almost ceased to create surprise, though by no means welcome to the officials who have to execute them. What will be the outcome of all this retail business time alone can tell. Perhaps when prices take a turn for the better the desire to hold bigger stocks will work its own cure, and sellers will feel less anxiety to press goods in such little parcels.

We are glad to note the improvement in the dock deliveries the past week, Christmas week too, when things might be supposed to be at their worst; the record shows something like five hundred standards of deals over and above last year's consumption during the same period.

The satisfactory settling on the Stock Exchange and the absence of failures in the outside market are favorable features of the new year. Altogether the outlook is quite up to earlier anticipations. The activity in the dock deliveries is also significant of trade improvement. Things could not go on being dull for ever, and we hope the turning point is now reached.

TYNE.

The Timber Trades Journal of Jan. 2nd says:—The Christmas holidays have effectually stood in the way of any business having been done during the last seven days, and in this district the New Year's Day being even a more popular holiday than Christmas, they extend from 24th of December to January 4th, most works being entirely closed during the whole of that period, and in consequence business is at an entire standstill. At present there is not a great deal of business to be done, and to owners of saw mills, or any mills where much machinery is employed, the relief is satisfactory when a slackness of orders is felt.

The importations are, as may be expected, on a very small scale. They cover, however, two complete steamer cargoes of wood goods, one from Namsos of battens, and one from Dronheim of staves, one late ship from Stockholm with deals and battens, and several items of lesser importance.

So far no business is reported over this district for next year, and in the face of large stocks and a small demand it is scarcely likely to be attempted for some time to come.

TONAWANDA.

CARGO LOTS—MICHIGAN INSPECTION.

Table with 2 columns: Item and Price. Includes Three uppers, Common, Culls.

ENOS MICHAEL, operator of a mill at Kin-darhook, Mich., has failed.

ALBANY.

Table of lumber prices in Albany. Includes items like Pine, clear, 2 M., Pine, fourites, Spruce, common box, etc.

OSWEGO, N.Y.

From Our Own Correspondent

Table of lumber prices in Oswego, N.Y. Includes items like Three uppers, Picking, Cutting up, Fine Common, etc.

BUFFALO.

We quote cargo lots:—

Table of cargo lot prices in Buffalo. Includes Uppers, Common, Culls.

Queer Books in a German Library.

One of the most curiously original collections of books in any library is said to be a botanical collection at Warsenstein, in Germany. At first sight the volumes appear like rough blocks of wood; but on closer examination it is found that each is a complete history of the particular tree which it represents. At the back of the tree the bark has been removed from a space large enough to admit the scientific and the common name of the tree as a title. One side is formed from the split wood of the tree, showing its grain and natural fracture; the other shows the wood when worked smooth and varnished. One end shows the grain as left by the saw, and the other the finely polished wood. On opening, the book one finds the fruits, seeds, leaves, and other products of the tree, the moss which usually grows upon its trunk, and the insects which feed upon the various parts of the tree. To all this is added a well printed description of the habits, usual location and manner of growth of the tree.—London Daily News.

The Season for Complaints.

This is the season for complaints, to witness the number of questions that are coming forward, and we never recollect a year in which claims have been so rife as in the one now drawing to a close. It would be interesting to have a formal report of all the arbitration cases of which the trade as a body know nothing that have been settled this year. The surveyors, who now form an important branch of the wood trade, have we expect, had rather a busy time of it.—Timber Trades Journal.

SPRUCE.

An exchange says:—The supply of spruce is very limited as compared with that of pine. Outside of New England, Province of Quebec and the Adirondack region there is little or no spruce of Commercial value. Spruce lumber, taking into consideration its strength, lightness and desirability for framing purposes, is selling comparatively lower than any other valuable wood on this continent. Simply because spruce has always been in overstock in New England the price has been unreasonably depressed. The necessities of small millowners has ever created a supply slightly in excess of the demand and a consequent weakness in prices. If a single reason of short supply should occur, so that the buyers were forced to seek supplies of the manufacturer prices would be considerably and permanently advanced. It is a sin to slaughter our magnificent spruce forests with so little remuneration to either operators, manufacturers or dealers. We predict within ten years good sized spruce lumber will sell at double the price of sapling pine. Spruce lumber will meet with proper appreciation when an approaching scarcity, at least in large sizes, forces builders to hunt for desirable substitutes, so light, so strong, and so easily worked. Already the lumbermen report the berths of virgin spruce as growing scarcer and farther removed from drivable streams and transportation by rail.

DROWNED IN LAKE NIPISSING.

OTTAWA, Jan. 13.—Mr. Charles Sereny left this city last Wednesday to visit his lumber works on Lake Nipissing. Some time after reaching the shanty, near Nipissing Village, he complained of feeling unwell, and a letter was sent to Southeast Bay, summoning Dr. Walton to attend him. On reaching the shanty, in which Mr. Sereny was confined, the doctor found the man suffering from insomonia or sleeplessness, and injected morphine into his feet to induce sleep. On Saturday night the foreman of the shanty, Mr. McDonald, heard a noise but paid no further attention to the matter. On rising in the morning McDonald discovered that Mr. Sereny was not there and went to look after him, but no traces could be found for some time. Finally traces of footsteps were found near the shanty in the vicinity of Nipissing village. The tracks were compared with footwear belonging to Mr. Sereny and it was found that the footwear and tracks fitted. The tracks led to a portion of the lake where the water is open, but no returning tracks were found. At the point where the track stops the water is very deep. No trace of the body has yet been found, but no one has any doubt but that Mr. Sereny wandered to this spot in his delirium and was drowned. The body has not yet been recovered.

Bark Up and Bark Down.

When it is desired that the bark shall come off of wood easily, it should be piled bark down. A correspondent writes giving his experience as follows.—"I have sold wood for over forty years, and I find that when wood is corded bark up, the bark remains on until I sell and measure up the wood, and all that is bark down, the bark falls off, and measures nothing. Besides, there is more heat in the sap of the log. The most and best ashes are also in the bark. I have on my place now some wood that was chopped nine years ago, and corded bark up, and the bark would hold on if I would draw the wood eighteen miles and cord up and measure; besides when the bark is piled down, the water runs in around the wood and makes it dozy, wet and heavy."

Advice to Mothers.

Are you disturbed at night and broken of your rest by a sick child suffering and crying with pain and cutting teeth? Also, send at once and get a bottle of Mrs. Winslow's Sorely for Children teething. Its value is incalculable. It will relieve the poor little sufferer immediately. Depend upon it, mothers, there is no mistake about it. It cures dysentery and diarrhoea, regulates the stomach and bowels, cures whooping cough, softens the gums, reduces inflammation and gives tone and energy to the whole system. Mrs. Winslow's Soothing Syrup for children teething is pleasant to the taste, and is the prescription of one of the oldest and best female nurses and physicians in the United States, and is for sale by all druggists throughout the world. Price 25 cents a bottle.

BEAR SLAIN WITH DYNAMITE.

I remember once when I was mining near Breckonridge that I met a grizzly bear, one that would tip the beam at 1,000 easily. You see, I was going up to the mine, and nothing could be further from my mind than expecting to meet one of those fellows at such a time and place. But it's like them, they always turn up when they are least expected, and when you are most ill prepared for them. I had no gun with me, or even knife. What was worse, or would be to a man who lacked presence of mind, I had with me a box containing dynamite cartridges, which were to be used in the mine. This would of itself have prevented me from retreating with credit or despatch, if such a thing were possible; but it so happened that when I sighted the bear I had wandered from the regular trail, having taken a narrow ledge in the hope of finding a short cut to the mine. I there was a sheer fall from this of at least five hundred feet. The bear had already passed on to this when I first saw him, and as I never before traversed the ledge, I had no idea as to how far it might be passable.

When I saw the bear it was evident that he had not yet discovered my presence. He was snuffing along at an easy gait, apparently quite familiar with the path. I did not dare to run on the narrow ledge, but I got in the best looks at waiting that I knew how, and had soon gained a fair lead on the grizzly. I began to hope that I would come safely out of the difficulty, and was further encouraged by the fact, that the ledge appeared to be slightly wider as I advanced. In rounding a sharp curve, however, you may imagine my consternation when I saw the ledge suddenly terminate not twenty feet in front of me in a cavern, unquestionably the habitation of the bear. Above the wall rose straight hundreds of feet, and below there was empty space. The bear had made a nice selection of a home, I saw at a glance, and he would find here, right at his very door, a meal in me, provided I could do nothing to avert the catastrophe.

My mind became strangely active. The events of my past life did not pass in review before me. It might have been on account of lack of space, but it is much more likely that it was due to the greater interest attaching to the incident in which I was soon to take a prominent part.

I tried hard to think of some way out of the dilemma, and came so near finding nothing to base any hope on that I almost lost my presence of mind. I did not, however, I thought of everything I had about me, with a view of using it as my defence. I had eight pounds of candles, a jack knife, and a lead pencil. It occurred to me that if I had sufficient candles I might feed the bear for a while until I could induce him to feel that he was in a condition for hibernating, but I would not be more than able to whet his appetite with what I had. The jack-knife and the lead pencil were dismissed without a moment's thought. The dynamite suggested possibilities. I hit upon a plan. Taking a dozen sticks of dynamite, I thrust them in among the candles and hastily arranged my steps around the corner I placed the charge of candles and dynamite in the path of the approaching bear. The latter was but a few rods away, but appeared to be wrapped in such a brown study that he did not notice my action. Then I again retreated a few rods, and withdrew myself into the bear's cavern to await developments. I did not have long to wait. In less than five seconds after I entered the cave the mountain shook as though in an earthquake, and I knew that I had succeeded. The bear had evidently tried to get the candles and found them too much for him. I rushed out to see the result of my strategy. There was little to be seen, however. A tuft of hair here, and a splash of bear's grease there, a splinter of bone or two, and the end of the bear could only be guessed.—Denver News.

Heavy Losses to Cattle Men.

INDIAN CITY, Kas., Jan. 12.—The heavy snow and the bitter north winds of the past two days have caused the most serious apprehensions among cattle men as to their probable losses. Within a few miles of here 30 head have drifted to the river, where they perished in attempting to cross, or drifted up by the fences, where they remained frozen to death. A man from a ranch some reports seeing cattle on his way up frozen and were standing on their feet. The water holes are frozen over. The grass is snowed under, and the weather is cold, with every prospect of more snow. The loss of live stock will be very heavy on the Arkansas River.

During last year 3,362,235 dozen of eggs were imported into the United States from Canada through the Suspension bridge customs office alone. The trade is assuming immense proportions.

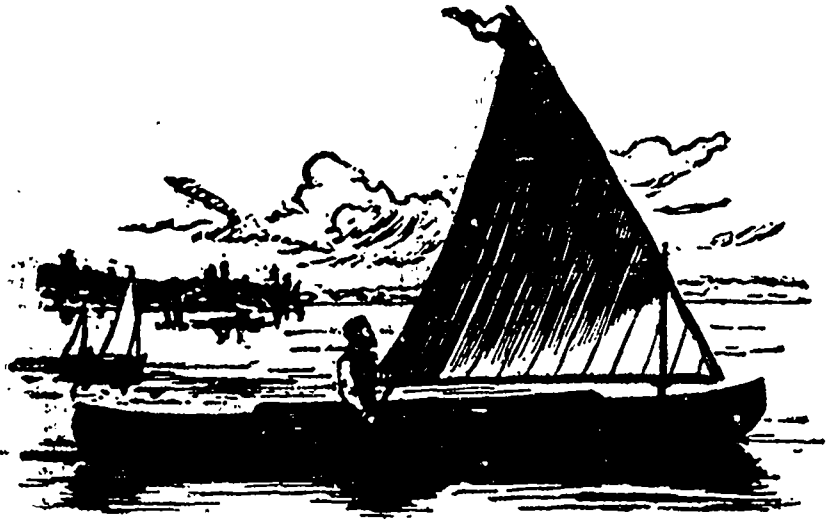
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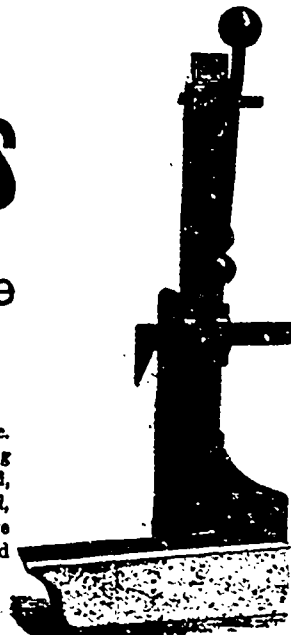
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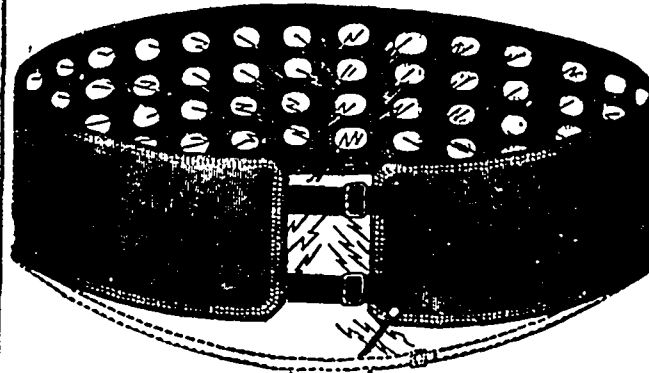
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This Belt is the last improvement and the best yet developed Curative Appliance in the world for

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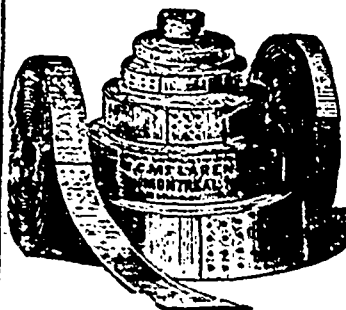
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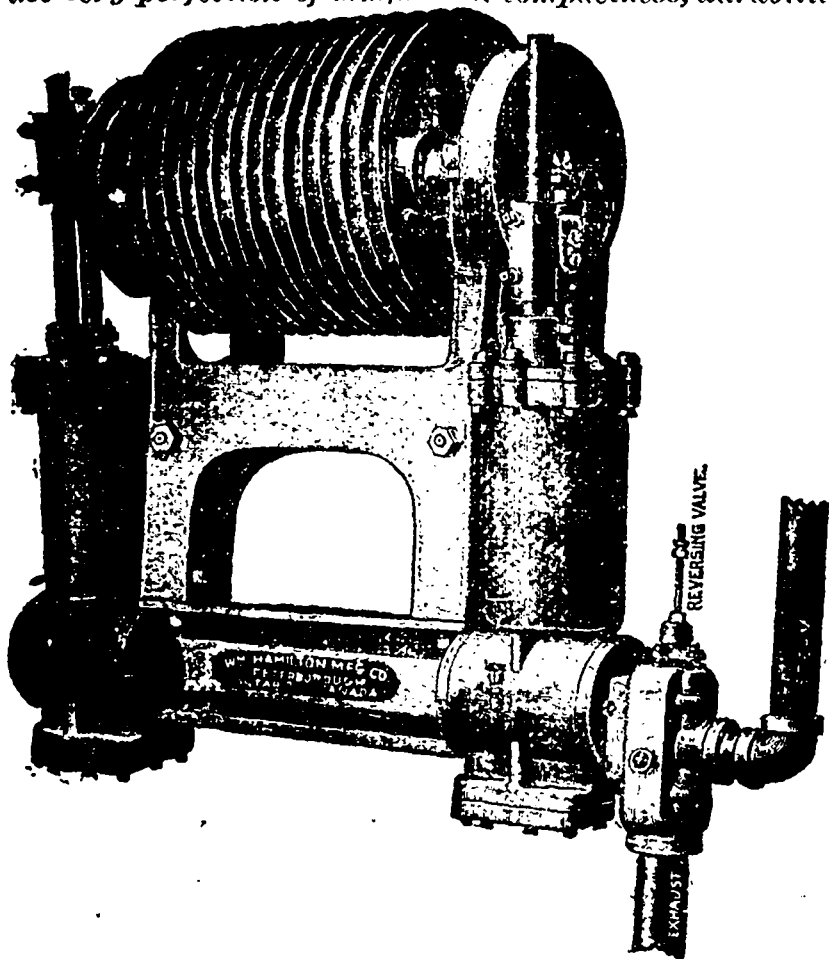
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FOR STAM FED IN CIRCULAR MILLS WITH RACK OR ROPE.

This Engine has practically but two moving parts, aside from cranks and shafts. The whole array of eccentrics, valves, valve rods, connecting rods, cross heads, slides, levers, rock shafts, bell cranks, etc., is done away with, and the very perfection of simplicity, compactness, durability and cheapness attained.



The above engraving illustrates the Twin Engine, 10x16, for Rope Feed, for Saw Mill Carriages. The spool is 27 in. diameter, 30 in. face, is grooved 2 in. pitch for 1½ in. rope. The shaft is steel, 4½ in. diameter, with disk cranks. No connecting rods, eccentrics or valve rods to get loose and out of order. The ports are in the trunions, and worked by an oscillation of the cylinders, and are held in their place in the downward motion by a steam cushion below. The sawyer's valve is a perfect balance, and by moving this valve the engine can be reversed, stopped or started almost instantaneously if necessary, as the sawyer has perfect control of it by his lever either to go fast or slow. Should the sawyer let go of his lever either by mistake or any other cause, it is balanced so that the valve will come to the centre and cut the steam off both cylinders and stop the feed. When standing, the lever is locked or fastened, so that it is impossible for it to start off itself. The engine stands upright below the carriage, and bolted to two upright beams, placed on the mill for the purpose. When a rack is preferred in place of the rope, we put on a steel wheel 30 in. in diameter, and the engine placed high enough to work into the rack on carriage bar, or if the beams come in the way, an idler wheel can be used between engine and rack segs; or, the engine can be placed at a distance and have a shaft

from it to the carriage; or it can be placed in the engine room, where it is under the control of the engineer for oiling, thence by shaft and pinion to carriage rack bars. These engines are well adapted for cutting long logs, or where the logs are mixed, the advantage of this feed will be apparent to mill men. When the carriages are used in two or more sections, the coupling and uncoupling of each section is quick and simple.

There were two of these feeds working this summer and giving the best of satisfaction, one with rope feed at James Playfair & Co's Mill, Sturgeon Bay, near Waubaushene, and one at the new mill furnished by us to Francis Carswell & Co., at Calabogie Lake, on the Kingston and Pembroke R. R. This mill is working with the Rack and Pinion feed, and drops from fifteen to seventeen stock boards per minute. We have also sent one to the Rathbun Company, Deseronto, to put in to feed their heavy Circular Mills. They will also commend themselves for various other cases, especially for running Elevators, hoisting Engines, and wherever a simple and easily reversible motion is required.

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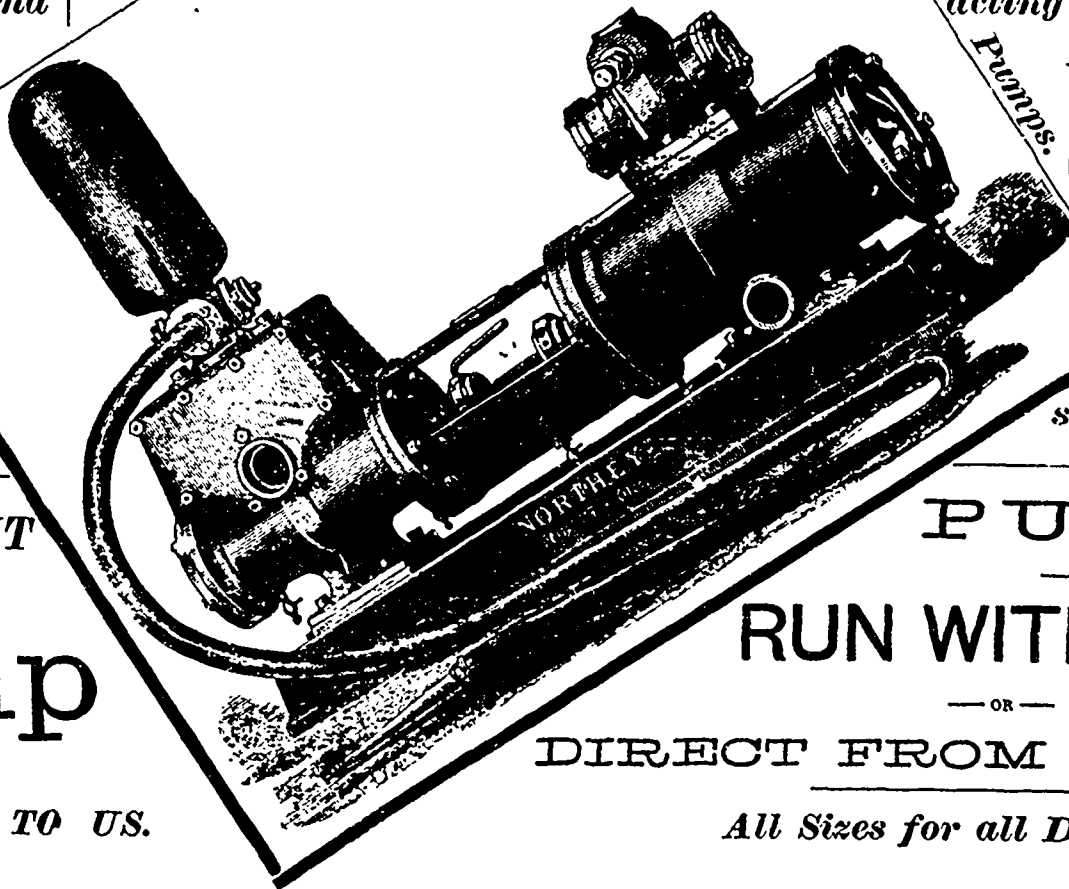
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