

PRESERVATION PROCESSES.

The are several solutions to the timber denudation problem. To start with, it is much more a scare than a reality. That everybody has a chance to know that white pine and other woods are annually manufactured and consumed to an enormous extent is not doubted, as well as that the rate of utilization has latterly increased. But there are several reasons why the period of actual exhaustion is much farther distant than much of the popular noise on the subject would indicate. That result is, in fact, so far ahead of present calculations that it need trouble this generation very little, unless its faith in Providence is gone, or it has an unnecessary solicitude for posterity. One important fact is that the supply remaining is by no means so microscopic, comparatively, as interested or ignorant figurers have asserted, a point which the *Lumberman* has for some time been insisting upon, particularly with regard to the white pine of the North. The fact, also, that substitutes can be employed when wood is not obtainable is being currently and practically demonstrated; the possibilities in that direction having been repeatedly discussed. A further potent factor which will figure is a tendency, both necessary and economical, to temper and reduce the volume of consumption. Before it becomes positively demanded that no wood shall be employed for certain purposes, because of the lack of it, the enterprises affected will have already developed a way of supplying wants with other material, and of making those which are used more enduring. There are a great many possibilities that have not been worked out, many scientific questions of which merely the surface has been brushed, and numerous future developments of great import may be counted on of which nothing whatever is dreamed now. If this should not be so, then abstract science must have reached a standstill, and science is so restless it will never be open to that indictment.

No doubt one of the most momentous points involved is the question of the durability of wood, and the means whereby it may be increased. It makes a vital difference in dollars and cents, as well as in the question of supply, whether a piece of timber will last 10 or 20 years. By having its power of existence extended it not only obviates the purchase of new material, but a more or less heavy expense, many times, in the general reorganization of a structure. Very often a process of timber preserving will cost about as much as the wood itself, which is no object provided it brings assurance of permanence and strength in the materials employed, and hence the structure itself. Such processes, while making the qualities of the raw material available to the greatest possible extent, may also bring into a more practical field certain woods regarded inferior on account of lacking the virtue of endurance, making possible the use of a greater variety of timber for certain special purposes, and somewhat checking a tendency to sweep away and appropriate to a number of purposes the cream of the timber, to leave standing large amounts of other kinds considered of little account or worthless.

A great deal has been said, from time to time, on the subject of preserving timber, but not enough that was definite. The more that is known in this direction, the better for the industries of the country generally. A committee of the American Society of Civil Engineers has spent a large amount of time and effort in collecting from all possible sources the results of experiments and actual experience in this line, which necessarily must cover a series of years. In its researches the committee met with many obstacles in the way of arriving definitely at the facts. The records of experiments which had been carried to the proper extent regarding fine were often insufficient on the subject of detail, and the precise methods of accomplishing results, where the latter were stated. Out of information regarding 88 experiments, the oldest dates back to 1839, and pertains to the building of Fort Ontario, at Oswego. The processes mainly touched on are kyanizing, burnettizing and creosoting. In the case mentioned the first process was adopted. In the reworkings of earthworks 92,000 cubic feet of 12x12 and 6x12 timber was used, with some

smaller, all of which was immersed in a solution of one pound of corrosive sublimate to 15 gallons of water, for from 14 to 21 days, the cost being about \$6 per thousand feet—about the cost of the timber. Hemlock was mainly used, with some basswood, beech and maple. The work was completed in 1843, and it is reported that an inspection in 1882 showed nine-tenths of the shorter timber still standing, while two-fifths of the upper halves of the larger timbers, with their cap timbers, were yet in position. Out of 100 standing timbers, whose lower ends were below the surface, 60 seemed entirely sound, except for about six feet from the surface upwards, the remaining 40 being more or less rotten throughout the length. The sides of the timbers towards the earth in the rear seemed as sound as where exposed to the air. Much of the other hemlock timber was found, the beech and maple having rotted, with the exception of a slight shell. In one case at Lowell, kyanizing was rejected for burnettizing (saturating with chloride of zinc), and the latter being found less effective, the first means was repeated with very satisfactory results. In 1856 the Central Vermont railroad established works for saturating timber with chloride of zinc under pressure, a similar process being now in operation in Germany. The plant was in use four years, when it was abandoned because of the excessive labor and time required to prepare large quantities of heavy timber. The burnettized hemlock ties were inspected however and found in a sound condition after 25 years' use.

The Chicago, Rock Island & Pacific road, in 1866, laid 2,000 burnettized hemlock, pine, tamarac and cedar ties in the main track west of Englewood, within a few miles of Chicago, and under a heavy traffic. The ties were mainly hemlock, and after 15 years' service three-fourths of them was still in the track, and good for three or four years more. Those taken out were sound and solid in the center and decayed only one half or three quarters of an inch deep on the surface. The rails had worn into the hemlock no more than they would into oak. The tamarac lasted about equal to the oak, while the pine and cedar had disappeared. The hemlock, when untreated, this road find to first decay in the center. In 1872 this road laid 5,000 creosoted ties in a second track near Chicago, but they are not believed to have been thoroughly treated. They were sound on the bottom when examined in 1882, and badly decayed on the surface, and were cut by the rails more than the burnettized hemlock ties. What ties remain will probably be removed in the summer. The same authority places the life of untreated hemlock ties in sand or gravel ballast at not more than five years, a thorough treatment with chloride of zinc making them last 15 years. The same road erected a Howe truss bridge of burnettized timber, 150 feet spans, in 1860, which it was intended to rebuild in 1882, and which is still in fair condition.

The New Orleans & Mobile road has found that the indefatigable boring genius, the toredo, will not attack creosoted timber.

The Houston & Texas Central road is stated to be the only road in the country now having a plant for preserving timber. It removes sap by applying super heated steam and injecting dead oil under pressure, and within two years has treated about 150,000 cross ties, of a short-leaved Texas pine, which ordinarily lasts only about two years, being so porous that, when thoroughly seasoned, it will absorb over two gallons of oil to the cubic foot. About five gallons to a tie is generally used, which is insufficient to thoroughly saturate them. They were found perfectly sound after seven years' use, except in parts where the oil had not penetrated. The timber is hardened by the treatment, and does not show any serious wear.

The most of the evidence is in favor of hemlock, which, by treatment, can be made superior to untreated oak, while many absolutely worthless woods may be rendered valuable. The result will gradually lead to the more extensive use of hemlock, which will have an enhanced commercial value. Of course the idea of treating timber, as the experiments show, is nothing new, but it is by no means as generally in practice as it might profitably be placed, nor

the processes so thoroughly understood as they should be. While one treatment may be superior for one kind of wood, another process, possibly unknown, may be needed for a different wood, the durability of which might thus be increased as greatly proportionately as in the cases cited. There is, at least plenty of hemlock, which can be utilized to good advantage. In some sections the ties are conveyed such long distance, owing to the absence of suitable timber in the vicinity, as to make the expense borne on the enormous, which might not be so if the idea of a proper treatment of the wood was more generally carried out. Besides the financially practical features the subject presents, the preserving processes will do much toward husbanding present supplies. Moreover, the experimenters, as may be seen, are beginning to learn better what may be done.—*Northwestern Lumberman.*

THE LUMBER SITUATION.

We take the following from the lumber review in the *Montreal Journal of Commerce* on the lumber trade for the past year, and the situation at the close of it:—

Although the English markets show signs of considerable improvement, which it is to be hoped may continue, we cannot refrain from expressing the belief—the result of observations for the last few seasons—that ere many years wood products will be more valuable at this side than in Europe. The enormous consumption going on, especially in the United States and Canada, cannot fail of this effect. The requirements for home consumption in the older provinces are every year increasing, while Manitoba and the North-West are only beginning to indicate their wants. The shipments to these new customers from Canada and the United States during the past year were over 100 million feet B. M. and these must go on increasing as the territory is colonized. It is probable that at no very distant date but very little of the products of our forests will be shipped to the European markets, excepting, perhaps, those kinds for which other North of Europe goods cannot be substituted, such as first-class white pine timber and deals, white oak of large size, and probably hardwoods and pitch pine from the United States ports. Lower grades of pine and spruce will find better prices on this side than English markets can afford, as long as they possess cheaper substitutes from Norway and Sweden. This change is now going on, as far at least as Quebec is concerned, as evidenced by the gradual decrease in exports shown by the following clearances from Quebec for the last nine years:—

Year	Vessels	Tons
1874	854	636,672
1875	642	478,411
1876	786	624,110
1877	796	679,627
1878	476	399,833
1879	433	364,628
1880	634	555,451
1881	459	380,186
1882	426	359,925

And the prospects are for a still further decrease in 1883. This may be clearly ascribed to the large supplies from North Europe at low prices, while our American markets will absorb any probable or possible production at relatively higher prices than European market will pay.

Wintering stocks are a trifle greater than last year, but yet considerably lower than in former seasons. Prices have ranged during the season about as follows:—

	1st Qual.	2nd Qual.	3rd Qual.
White pine deals	\$104 to \$112	\$83 to \$72	\$36 to \$39
Spruce deals	\$39 to \$40	\$28 to \$29	\$23 to \$26

All these are per Quebec standard (2,750 feet) ex quay, mill cutting and mill specification.

Timber, white pine in raft	20 to 35
" red "	15 to 25
" oak in dram	45 to 50
" birch "	20 to 25
Staves, pipes	\$3.75 to \$3.90
" puncheons	\$9 00 to 100.00

Freights ruled about as follows:—

	Timber Deals
Opening at	23 to 25c. 60 to 65c.
Closing at	30 to 35c. 70 to 80c.

Operations in the woods for the coming season in Canada are on an increased scale for the United States markets, and on a reduced scale

for European markets. The weather thus far has been all that could be desired; there is at present, however, some appearance as though operations would be hampered by too much snow. This, however, is only one of the many ordinary incidents of lumbering; everything is high in price, pork unusually so; labor is also abnormally high; in fact, in this district it is not a question of wages at all, it being absolutely impossible to get a regular supply of workmen for the woods. Large numbers have been lured away to the Michigan and Maine forests at high wages through the efforts of hiring agents who have scoured the province from one to the other.

We hear of few or no sales of new mill cuttings for next season; manufacturers are holding for stiff prices, and exporters are waiting to see how the English markets may develop during the coming months. But these last remarks refer to deals only; we understand that some contracts have been made for Michigan and Ohio oak timber and waney square pine at probably a slight trifle advance on the prices of last year. We can never expect to see the two latter classes of timber at old prices again, for while the supply is diminishing every year, the demand on the other hand is increasing.

SECOND GROWTH PINE.

An interesting paper by Mr. Edward Jack, of New Brunswick, appears in the *St. John Telegraph*. Our readers should ponder, as it contains some valuable hints relating to the second growth of pine. Mr. Jack is an authority on the subject, and his remarks carry a good deal of weight. He says:—

"A few weeks since, just after the railway cars in which I was riding had passed through the Hoosac Tunnel, the news agent handed me a copy of the *Springfield Republican* of December 9th. As I glanced over it my eye fell upon this passage:

"The second growth of white pine sowed in Massachusetts, census year, was worth about \$1,000,000."

"This was an extract from a paper lately read at the State Board of Agriculture in Northampton by Prof. Sargent, of Harvard College. The Professor says that a large portion of the neglected farming lands in Central and Southern New England is growing up to white pine, and could that growth be encouraged and protected, Prof. Sargent sanguinely predicts that its value in Massachusetts, alone, would in a few years exceed the net profits upon half a century of farm crops.

"This statement attracted my attention so much that I made it my business, for the rest of the journey through this part of Massachusetts, to notice every grove of second growth pine, as well as every board pile visible from the car windows. The numerous piles of pine board which met my view, as we passed along, were with but few exceptions, sawn from small second growth trees. What I saw convinced me that if Massachusetts could make large profits out of second growth pine, New Brunswick could do the same.

"One-third of our Province is embraced within the limits of the grey sandstone of the Coal Measures, the meagerness of whose soil is so well described by Prof. Johnston, in his Report on New Brunswick. This soil, although suitable to the growth of little else, is well adapted to that of the White and Norway pine, and clumps and groves of these woods are now springing up all over the burned lands of these districts. Indeed many a good pine log has been cut in New Brunswick on ground swept by the Miramichi fire. Looking across the Nashvaak from the highway near the dam, at Mr. Gibson's mills, one sees on the south side of the river a growth of stout sapling pine, which will soon be fit for timber. It is not many years since the land on which these trees are growing was under crop, and did others exercise the same care that Mr. Gibson has done, in this case, the benefits to accrue to the country would be immense.

"It is not, at present, needful for us to plant trees on our waste lands; all that we are required to do to secure in not very many years an immense return from these lands, would be to protect the trees which nature, herself, has caused to grow upon them. The question