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WORKING UP WASTE.

UNDER the most favorable and economical conditions, says a lumber cotemporary, the waste in the manufacture of lumber is bound to be a big item. One looks at a tree in the forest, towering, it may be above its fellows and showing the straight, long body that delights a timber hunter's eye, and it seems to him that every inch of it ought to be available and of value. But looking at it with the eye of experience, he knows better. A rapid mental calculation tells him that a very large proportion of it will find its way, not into the timber pile, but into the refuse burner or the sawdust pit. The magnificent top he knows is worthless anyway, the heart must come out, the sap runs into the low grades, and the butt possibly is worthless. Lopping off here a little and there a good deal as waste, and then of the really sound, clear timber turning a considerable quantity into sawdust, there is left at last a surprising small part of the whole as a product available for market. Some timbers work up better than others, of course, but in the best of them a large part of the cost of the marketable material produced is represented in that which is thrown away.

The desirability of reducing this waste as much as possible was early recognized, and the history of lumber manufacture shows a steady, though slow progress in the direction of saving something out of the last material. Not so much goes into sawdust as formerly, and less into the slab pile or furnace; but there is still more room for economy and a further profit to be made in a closer utilization of the contents of a tree. Comparatively little has yet been done in the saw mill business in working wood into small shapes. Lath and pickets have been made for years where the timber was suitable, but beyond these there are few saw mills that undertake to do more than get as much boards, strips, plank and timber out of their logs as they will cut, letting everything that will not work up into this shape go into refuse. Unquestionably millions of feet of good lumber have been thrown away in this fashion, and the waste is still going on. When trees were plentiful and cheap it would have been useless and even unprofitable to attempt any sawing of this waste, but now it is important to work up as much as possible of it, the margin in lumber production having become so narrow that every means to produce it is necessary to success.

It is true that some experiments in this direction have been failures. Several large mills, the proprietors of which sought to carry to its extreme limit the idea of working up everything that came from the tree big enough to make a match splint, have gone into oblivion along with other schemes founded upon purely theoretical knowledge of the business. But the cause of failure was not the principle of avoiding waste, but its disproportionate development. With such people the idea is to use up everything that comes into the mill, almost regardless of the cost and relative profit. They do not sufficiently take into account the fact that there is no saving nor any money in working up a thing that is not worth in the end the cost of making it. They spend more in saving waste than what the save will bring, which is even more foolish than throwing away something that at small cost might be turned into a source of considerable revenue. Economy can be so elaborate and carried to such extremes that it becomes extravagance and waste itself, which is the case with practically every operation which, boasting of the results it proposed to accomplish by means of its close utilization of every particle of timber, has yet split and gone to pieces because it could not somehow make its income exceed its outgo.

The same principles should and must govern this part of wood conversion that controls the main work of saw-

ing trees into timber. Costs and results may be fully considered in every case, and methods selected that are not only applicable to the particular wood handled, but that are adapted to the conditions of the business in respect to the cost of labor and the market available for the products, whatever they may be determined to be.

Due regard being had to the peculiar circumstances of each case, there are few locations where it is not possible to work up to advantage a very considerable part of the stuff that is now wasted. Not all mills can do it, of course, for not all of them are able to invest capital in such an extension of their business, but it is plain that all who can do it should give the matter attention. Hardwood producers especially should make a careful study of the subject. The waste is proportionately greater in the manufacture of the hardwoods than of the coniferous varieties, and hence a greater necessity of more careful economy in getting out of the logs all the marketable stuff there is in them. But on the other hand many of the hardwoods have this advantage, that they are available for use in a large variety of small shapes, for which fair prices are obtainable and for which here is a steady demand. The time will no doubt come when most of the cut-up stock used in every factory where wood is worked up will be cut to the desired size and shape, or nearly so, at the saw mill, saving a good deal in material and the cost of handling to the user and producer. Even now orders are occasionally placed for small dimensions of hardwood, though, for the most part, these are still cut by the user as he wants them from lumber of the regular merchantable sizes. Saw mill men should encourage buyers to place their orders, not for so much lumber, to be cut up when it gets to the factory, but for so many pieces of a certain size, which the mill men can often furnish at considerably less than they would cost cut in the old way, while netting himself a good profit by saving the larger part of the stock out of refuse that would otherwise be of no value. There is room here for a development in the business that would be decidedly advantageous for mill men and it is to be hoped that it may go on steadily.

LUMBERING INTERESTS IN MAINE.

A DOCUMENT recently prepared by prominent Maine lumber manufacturers, intended to serve as a protest against the free lumber clause of the Wilson bill, contains some interesting statistics as to the size and character of the lumbering interests of this important lumber state. LUMBERMAN readers will be interested in the figures on the general principle of wanting to know all they can of the business in which they are engaged, and also because of the intimate relationship that exists between lumber methods in Maine, and our own Maritime provinces.

In the first place it is shown that the total cut of logs in the state during 1893 amounted to 849,581,398 feet. Of this amount 573,811,627 feet was spruce, 107,330,822 pine, 100,357,101 hemlock, 60,904,701 cedar and 7,177,147 hardwoods. The cost of getting logs from the stumps to the various saw mills, including cutting, hauling, driving, boomage, shorage, tolls and other expenses is estimated at from \$8 to \$8.50 a thousand. The average cost of stumpage is \$2, which makes the cost to the manufacturer of spruce logs delivered at the mill from \$10 to \$10.50 a thousand. In other words from 75 to 80 per cent. of the cost of a cargo of sawed lumber is expended for labor, which is a larger percentage than on almost any other manufactured article.

American citizens doing business at St. John, N. B., under the act of congress of March 16th, 1866, (which provided for the free importation of the product of logs

cut in the United States, but taken to a Canadian point for sawing) have from 15,000,000 to 20,000,000 feet of sawed lumber on hand, and from 90,000,000 to 100,000,000 feet of logs cut in 1892 and 1893, which have been carried over and will be marketed in 1894. Of this amount 90 per cent is spruce. About the usual amount of logs is being put in this winter under the provision of the above act, on the St. John river and its tributaries which will add largely to the stock to be marketed by the American citizens at St. John in 1894.

American spruce logs lying in booms at St. John, side by side with provincial logs of the same quality, sell in the open market for \$1.50 to \$2 a thousand more than provincial logs, which just about represents the increased cost of labor in getting them out.

There is now on hand 300,000,000 feet of logs and manufactured lumber cut in 1892-93 on the Penobscot, Kennebec, St. Croix, Union, Machias, Androscoggin and other rivers of Maine. The cut of logs in Maine during the present winter will be about two-thirds as large as last year. This will give 879,000,000 feet to be marketed in 1894.

An interesting point touching the question of forestry is brought out in this report, it being estimated by experts that the timber in a single Maine township renews its growth equal in amount to what six or eight horses, kept constantly at work, can haul to landings. In the great forest fire of 1825, extending from the Penobscot waters, in Maine, to the Miramichi, in New Brunswick, 600,000 acres of timber land were burned over, but so rapid was the new growth that large lumbering operations have been conducted on this same territory for years, and it is now equal in value to the same number of acres in any other section of the Maine forests. Townships which have been cut upon constantly are reckoned as the most valuable, for a judicious cutting of the large trees makes possibly the more rapid growth of the smaller trees. A few years ago it was supposed by many that the spruce forests of Maine would be destroyed by beetles, but it is now admitted by those familiar with the subject that the worms, or beetles, only attack the old trees, which have begun to decay.

The assessor's books show that in the state of Maine there are 13,214,027 acres of timber land, valued for the purpose of state and county taxes at \$34,204,634.

WOOD THAT WILL NOT BURN.

ACCORDING to Nicholas T. Wilson, an inventor, of Chicago, Ill., there is no necessity in future for the destruction by fire of frame dwellings, or any other kind of buildings constructed of wood. He has invented a plan by which with certain solutions of chemicals wood is rendered non-inflammable. Saturated in the solution, it is impossible, he maintains, for a piece of lumber to burn, even if it should be soaked in coal oil. The wood or inflammable material of which houses are constructed is first immersed in the solution of chemicals for a period of twenty-four hours. Then the lumber is fire-proof and will burn no more than a piece of iron or stone. By means of the chemicals the wood becomes so dense that heat will decompose it by charring only, but will not cause any flame. The substance produces an inert gas, which prevents combustion. By this scientific process of making wood non-inflammable, Mr. Wilson believes that thousands of fires may be prevented. He also thinks that, after the invention is thoroughly known, many railroad coaches will be built of wood so prepared. This would prevent railroad horrors resulting from fires after a wreck. Several car builders have seen the test and are satisfied that it is impossible to burn the wood after it is once immersed in the substance.