

LUMBER FIELDS.

The aggregate results of the logging operations in the Minnesota and Wisconsin woods reveal the stupendous magnitude of the northwestern lumber interests in a light which will probably astonish persons most familiar with the subject. The total cut of the two states exceeds 4,000,000,000 feet. The mind will be better able to grasp this unwieldy number when it is understood that it represents the trees growing on 1,250 square miles, or about 35 townships of land. In the classification of districts, the great Chippewa valley region of Wisconsin is easily first, with 1,000,000,000 feet on the Chippewa, Eau Claire, and their tributaries. The Mississippi above Minneapolis comes next with 600,000,000 feet. The Wisconsin river returns 441,000,000, the Duluth district 297,000,000, and the Black river 228,000,000. The streams on the west shore of Lake Michigan, grouped together for convenience, show a cut of 785,000,000 feet. On the different railroads in Wisconsin and Minnesota, between 500,000,000 and 600,000,000 feet were cut. The cut is by far the greatest in the history of the northwest.

There is a great truth to which this enormous growth in the logging interest in the northwest points. The swift and surprising development of the country west of the Mississippi river has created a greater revolution in the lumber business than in any other interest that supplies its various demands. Within the last few years the enormous demand from the west has revolutionized the lumber trade in its sources, its methods, its channels and its markets. This year's investigation reveals clearly the fact, more vaguely understood before, that the destination of nearly all the lumber cut in Wisconsin and Minnesota is the treeless prairies and magically-upspringing now cities of Dakota, Montana, Nebraska, Iowa, and even the more southern states. Chicago, once the lumber market of the whole west, gets now only a fraction of the enormous product of Wisconsin and Minnesota, and the magnet of the western demand attracts the lumber from the cheap water routes of the lakes to the westward railroad lines. Nearly all the lumber cut on the shores of Lake Superior goes west by the Northern Pacific. The Wisconsin Central carries a little to Milwaukee, though much of the traffic by that line is diverted by the westward lines it crosses. The great lumber centres of the Chippewa, Black and Wisconsin valleys are drained by the Omaha and Milwaukee and St Paul to the west and southwest. Even the lumber on the west shore of Lake Michigan, within easy reach of cheap water transit to Chicago, chooses instead a circuitous route by the Chicago & Northwestern road across Wisconsin, Minnesota and Iowa to the omnivorous western prairies. The once all-absorbing lumber trade of Chicago is reduced to the handling of so much of the Michigan product as is required for western consumption.

The stimulus of the western demand has changed the methods of lumber production and transit, as well as the direction of the market. The present or prospective exhaustion of the richest and most convenient tracts on the margins of navigable streams, while the demand is annually increasing, compels a resort to new sources and a more careful gleaning of old. During last winter many tracts were cut for the second or third time. Higher prices and an eager market made it profitable to return to second class timber, windfalls and smaller growth, neglected in former years. So far as this tendency leads to a cleaner and more economical reaping of the pine harvest, it is to be commended. It may work harm, however, by causing the destruction of half-grown trees, which contain the promise and potency of the future timber supply. A still more important change in the methods and sources of lumber production is the adoption of means of reaching rich tracts remote from the channels of navigable streams. To an extent not generally understood, the railroads are taking the place of rivers as a means of transit of the product, even from its first source. Hundreds of millions of feet of logs are taken to market every year that never float for a mile on the waters of rivers. Railroads are penetrating the lumber districts in every direction, the North Wisconsin,

the Chippewa Valley, the Wisconsin Central, the Northwestern on the Michigan shore, whose sole or main business is the transportation of lumber cut on their lines, hauled to mills at their stations, sawed into boards and loaded into cars without ever seeing a raft or a boom. In many places narrow gauge roads are built from the main lines into remote tracts, to enlarge the field from which supplies may be drawn. This change of method adds a large percentage to the available supply, and hastens by as much the rate of exhaustion of the forests.

The question of the prospective exhaustion of the pine timber of the northwest will suggest itself to every thoughtful person. There is no question that the time is swiftly approaching when the forests of Minnesota and Wisconsin will no longer answer to the annual demands made upon them, nor that the day is hastened by the extravagant and destructive methods of production, happily less common now than a few years ago. A pine forest is a thing of slow growth, and those of Wisconsin and Minnesota are definitely limited, though still of vast extent. They cannot indefinitely endure the stripping of the available timber from 1,250 square miles per year. The period of exhaustion of the northwestern forests has been the subject of speculation. It is vaguely put at ten years, but there is no data to justify such exact computation. The demand is variable, and there is no means of estimating what the supply may become under changed conditions. Poorer and less accessible timber will be made available by improved methods, and the pine lands remaining will probably be made to go much farther than the same quantity in former years. But the certain fact that the forests are destroyed much more rapidly than they are replaced with new growth, makes their exhaustion only a question of time. There are few virgin tracts left now. The loggers are already invading the Red Lake and Vermillion districts in Minnesota, and the railroads have penetrated to the hitherto intact forests above and between the heads of navigable streams in Wisconsin. Whether ten or twenty years hence, the exhaustion of the northwestern lumber supply is near enough to suggest the most careful husbanding of the resources that remain, and to emphasize the blind and mad folly of a lumber tariff that preserves the forests of our neighbors and puts a premium upon the destruction of our own.—*St. Paul Pioneer Press.*

TREES AGAIN.

One of the yagaries of the free-traders is the publication of a pamphlet intended to show that the only way to check the destruction of forest trees in the United States is to abolish the duty on foreign lumber; and a scientific periodical, which ought to know better, remarks in commending the argument that the timber duty offers "a direct encouragement to a continued course of ruin." The forests are recklessly destroyed because the people have no adequate sense of their value; and the way to check the destruction, say these economists, is to reduce their value by introducing Canadian timber at a low price. To state their position is to show its absurdity.

If we are not to check the destruction of forests until we have persuaded people to cease cutting our trees into planks and shingles, and to buy their building material abroad, we may as well abandon the expectation of a change. The abuses to which we ought to direct our attention are reckless waste in wood-cutting, wanton or careless devastation by fire, and the wholesale destruction of forests not for the use of the timber but merely to get rid of it. All these evils, except possible the second, would be aggravated by the repeal of the lumber duty. It is a common practice all over the country to waste the woods in such a manner as to wreak the greatest possible ruin for the least possible result. The axemen who are cutting fuel leave all the fallen trees and broken boughs, and bring down the fresh ones, of which, moreover, they take only the best parts; or they sweep away the young and old growths together, destroying all chance of a renewal of the forest. Perhaps only a few miles away another gang are stripping hemlock bark for the tanneries, and the naked trunks, instead of being turned to

use, are left to rot on the ground. As the woodman will only chop in the easiest way, without regard to economy, so the householder will burn nothing but the best firewood, without reflecting upon the cost which he will ultimately have to pay for his extravagance.

Forest fires, which are more frequently the result of criminal recklessness than of accident, ought to be the subject of penal legislation. But closely connected with the frequency of these disasters is the widespread sentiment that woods are like weeds, the natural enemies of the settler which must be exterminated to make way for civilization. There are regions of the United States where the owners of timber offer it gratis to anybody who will cut it and haul it away. Under this system the best parts of the best trees are taken for fuel and the rest is burned on the spot, the fires of course often spreading over miles of valuable standing timber. Thus, in order to hasten the clearing of a few acres for the plough, the landholder destroys one of the most important elements in the productiveness not only of his own farm but of the whole country around. His case is like that of the thriftless cultivator who exhausts his fields by excessive and improper cropping, ruining his future for the sake of a few hundreds of bushels in the present. And the man who wantonly lays waste a forest is worse than the man who exhausts a farm, because the injury is not confined to himself and his heirs but is spread far and wide.

The State will sooner or later find itself forced to consider how it can prevent people from cutting down their own trees. But before any such radical reform as this is attempted we must cultivate the "sentiment of trees," in which a large part of our population seem to be strangely deficient. No important public measure can be carried out until public opinion demands it; and although this question of the preservation of forests is attracting more and more attention every year, there is a huge mass of indifference and ignorance which will long resist any change. To this formidable inert opposition, journalists and economists must patiently address themselves.—*N. Y. Tribune.*

LUMBER RAFTS.

The lumber merchants of Hannibal, Mo., employ a novel method of removing lumber from rafts in the Mississippi to their yards. This is usually done by towing the "strings" of which the rafts are composed alongside the shore. The lumber is then washed off by the use of buckets and brooms, and loaded by hand upon wagons which convey it to its proper place for piling in the yards. This method, it will be noticed, necessitates a large amount of manual labor and the occupation of considerable river front in order to handle a large amount of lumber in the season.

The new method calls in the use of the railroad and is operated as follows:—A track is laid along the edge of the water, extending even beyond the low water line. This is heavily ballasted with rock, so that water running over it will have no effect in moving it out of place or floating the ties. At ordinary stages of water, therefore, there is a depth of several feet over the river end of this track. The lumber-raft which it is desired to land is then broken into its "strings," one of which is floated over the line of submerged track and kept in place by a line of guide piles driven for that purpose. This string is again divided into the various cribs composing it, which vary somewhat according to the size of lumber. A train of low, strong flat-cars, built for the purpose, is then run down from the shore, so that one or more of them are under the cribs of the lumber-raft. These cars are of such size that each will take in the length of the crib.

By the proper connections of ropes and staves a crib is moored over a car, and the movement of the train away from the water by an engine floats the crib also ashore. When in such shallow water that it touches the car, the latter receives its weight, and instead of being floated it is carried shoreward and out of the water. The cribs thus loaded, each on its car, are switched to the yards, which are now some distance from the river, as by using this method they can be. At the yards the lumber is quick-

ly washed off with a hose while being unloaded.

The advantages claimed by this manner of handling lumber are many. There is less obstruction of valuable river front by lumber-rafts; cheaper ground can be used for the lumber yards, as they can be away from the river; the saving in manual labor and teaming is very large, and, lastly, the saving in time is an important item. It is claimed in Hannibal that last year was the first that saw the whole supply of lumber out of the water before winter set in, and this was only possible through use of the method we have described.—*Railway Review.*

EXHAUSTED FORESTS.

The following letter has appeared in the *Montreal Gazette*:—

SIR,—I observe, in the *Gazette*, an article referring to the drive of logs on the Connecticut river, containing 90,000,000 feet, as an evidence that the forests of the east are not completely exhausted, and inferring that years after the time at present allotted by statisticians extracts of similar import may be expected from Michigan papers, and that in the estimates of standing pine no calculation is made for the natural growth of trees, etc.

That the forests of the east are completely exhausted has hardly been claimed, but no better evidence of their scant condition as regards pine could be furnished than on this enormous river, draining such a vast extent of country, which not many years ago was covered by magnificent pine forests, hardly a stick of pine is to be found in the whole 90,000,000, and to obtain this amount of spruce, most of which is to supply mills in Massachusetts and Connecticut, the lumbermen were compelled to go to the headwaters of this river in New Hampshire, within gunshot of the Canadian line, even getting some of it from Canada; in fact, four-fifths of it from the region of the Connecticut lake a section of the country that would not have been in the States at all but for the generosity of Lord Ashburton, who, with that liberality proverbial with those dealing with the property of others, presented it to the United States, rather than have any unpleasantness with his friend Webster, for a projection eastward of the northerly line bounding Vermont and Canada would cut off nearly the whole of it.

If this Connecticut river spruce drive of 90,000,000, 40,000,000 of which are old logs, proves anything, it is rather that the eastern states are pretty near the end of their supply, not of pine only, but also of spruce." W. LITTLE.

TIMBER-TREATING PROCESSES.

At the National Exposition of Railway Appliances the American Society of Civil Engineers has a large display of specimens of different kinds of wood treated by various processes for diverse purposes, in which are included many curiosities. The collection is the result of the labors of a committee appointed to investigate the subject of timber preservation. The conclusions arrived at, after corresponding with 330 persons, examining 104 patents, and collecting a fund of general information, are that out of innumerable methods of preserving timber but few are practical, and only three can be relied upon to prolong the life of wood exposed to the elements, namely: kyanizing, burnettizing, and creosoting. In Europe these methods have passed beyond the domain of experiment, and there produce great economical results. In this country the cheapness of timber has been the principal obstacle to wood preservation, the cost of injecting making the price of cheap woods too high, and consumers have preferred letting the wood rot and renewing it. The committee believe that this condition of affairs is fast being removed by the enhancement in the price of timber, and the proximate exhaustion of the more available forests, the time having probably arrived when the economy and necessity exists in many parts of the country for treating wood against decay in exposed situations. The selection of the proper method to be used depends upon the proposed subsequent exposure of the timber—dry, wet, marine worms, etc.—and the amount of material which the value of the unprepared timber admits of being expended upon it. For bridge and trestle timber, for fences in