

LARCH-MORE.

The following paper by Dr. John A. Warder, of North Bend, Ohio, appears in the American Journal of Forestry:—"In this age and country, where so much is accomplished by the assumption of merit, and by boastful claims of praise for works said to have been performed, but which too often fail when they are subjected to close scrutiny, it is truly refreshing, in our rambles over the country, to meet with a tree-planter who does not boast of millions as the result of his labours, which, when seen, will contain only a few thousands; and instead to find a man who, without any bragadocio, quietly and thoroughly does something that is worthy of notice and report.

Fast as trees may grow in this country, and their rate of increment is said to be much greater than in European forests, still the work of growing a productive forest that shall yield returns within the lifetime of the planter appears to most men problematic. Some fast-growing trees, like the cottonwoods, willows, chestnuts, locusts, and a few others, with very brief rotation, may be cited, but as a rule, Forestry is and must be slow in its cash returns.

But to a brief description of Larch-More—where our worthy friend has undertaken to clothe a vast amount of waste, sandy land with valuable timber. Not content with the usual boast of so many who are styled foresters and forest-planters, who can show but a few acres at the most, we here find many hundreds devoted to this crop. The planting is of course progressive, and spread over several years, but it is done by a private citizen who has other interests to look after, and who must also provide for his daily wants.

From the great railway corporations who possess larger means, and on account of their own deep interest in forestry, that would enhance the value of their extensive landed estates, granted as subsidies by the government, we had expected, before this time, some grand results that would be worthy of record. But what have these wealthy bodies to show, after long years, as the result of the florid anticipations that were published to the world some years ago! Let them look to their laurels, or it may happen long before the close of the century, that private individuals of moderate means will have greatly outstripped them with absolute results of growing timber.

The plantation which is now to be described is situated on the low shores of Lake Michigan, on its western coast, near the little city of Waukegan, Illinois, close to the Wisconsin State-line, in latitude 42° 30' N., at an elevation of six hundred feet above the level of the sea. The surface is slightly above the level of the lake, except where, from the continued action of the winds and waves, the sands have been thrown into dunes of some fifteen to twenty feet in height. The whole territory, extending for some miles along the shore, appears to be the delta of a small stream called Dead River, which here finds its embouchure after cutting its way through the elevated bluff of glacial clays that forms the original boundary of the lake, and rises thirty or forty feet above the water.

The surface of this extended plain is made up of a succession of narrow, low, flat ridges, separated by shallow depressions, usually containing water—these are generally but a few rods wide, and their trend is parallel to the coast of the lake; they seem to be old shore-lines, like the higher ridges along Lake Erie in Ohio. At present there is little or no arboreal vegetation, though there are evidences of some ancient forest growth, and an occasional white-pine tree still standing gives proof of an ability to produce trees. The dry ridges have a scanty covering of inferior grasses and other herbaceous vegetation, with here and there patches of shrubby growth, consisting of bear-berries, low willows, aspens, cornels, spruces, and on those more elevated a few white pines, with the more abundant, but very scrubby black oaks and some other trees and bushes, among which are junipers, notably: the trailing form of *juniperus sibirica*, and known as the "Waukegan-Trailing."

In many places, however, and wherever the herbaceous covering is disturbed and the surface is exposed to the action of the winds, particularly near the lake, broad areas are perfectly bare, and composed of drifting sands, that

are thrown into dunes and changed in form from year to year. The depressions between the ridges are clothed with native grasses on their sides, with typha, rushes, and other aquatic plants where they are deeper and covered with water—here, of course, there are accumulations of vegetable debris, but the bottom is everywhere firm sand. In these depressions wooden growth is rare, and consists of button-bush (*Cephalanthus*) and some willows, until you reach the last depression under the bluff, where the black-oak of small size is found.

Such a tract of land would seem to be rather unpromising to the tree-planter; being on one part too wet for tree growth, and on the other, composed of pure sand to receive the scorching rays of a midsummer sun and liable to reach a temperature of more than 100° Fahrenheit in the daytime, alternating with cold, at night, of perhaps 50°, as a result of radiation, and exposed to very low temperature with the trying winds of winter.

Notwithstanding the unpromising, even forbidding aspect, the natural indications were such as to encourage the attempt, which was made, and which has been made successfully, to clothe this waste with a profitable crop.

Great encouragement was given to the enterprising planter by the results of his observations upon the plans Nature had adopted to enable the spontaneous growths to protect the sands from the baking heat and biting cold—and thus to secure a more temperate stratum of soil near the surface for the feeding roots of the trees. The scanty herbage of the grasses could do little in this way. The trailing-junipers, however, soon covered the surface and caught the drifting sands that formed cumuli about them—on other spots of the dunes a close carpeting of the *Urtica urtica* concealed the sand, making it possible for tree-seeds to germinate and to survive the summer heats, and so the arboreal vegetation gradually spread over these ridges.

The most interesting forestal study here was the behaviour of the *Pinus strobus* on these sands. Feeling the necessity for a cooler soil, the upward growth of the young trees was arrested, and the lateral branches were extended quite near the surface, until, in some cases, they had reached a diameter of a rod or more, when at length an aspiring leader would shoot upward, and the growth of that tree was assured.

Planting, under such conditions, was a very simple affair. On the sand, the mark of wagon-wheels was sufficient. Furrows were plowed on the dry ridges and the trees were set either in pits or by *notching*, according to their sizes. The species selected are mostly coniferous—the common pines and larches prevail, while some ailanthus and catalpas were also planted. All seem to be doing well in their new homes, with some failures, of course, in removal from the upland nursery grounds to these flat sandy lands, and from the shelter of the close rows to their more scattered stations on the exposed hot sands, the transition was more than they could bear until Nature provided the necessary shade by lateral branches as observed in the native *Pinus Strobus*.

The Scotch pines seem to have become reconciled the soonest to their new home, and grew off beautifully. The robust Austrian promises well, but the *Pinus rigida* and table-mountain pine have not done so well.

A recent report from the plantation (July 29) is very satisfactory. "Many Scotch pine, a few Austrian, and many white pines are now eight to ten feet high—some larches are two feet. Where the trees stand close, they run up about as fast as on good lands, but single trees have to spend some years in making laterals to shade the ground and then they shoot upward. My Larch-More plantation is really a study."

The trees are exposed to inroads of teams, skating parties, cattle and fires, and yet "they are far ahead of those on Cape Cod or any other barren-land plantations I have seen. . . . If the ailanthus would stand our climate, it would be the tree to cover all these wastes rapidly, and it would not be so liable to be burned as the conifers. Of course spruce, balsam-fir, arbor-vitæ, and red cedar will not grow in blowing sand, or in any very sandy land, but the white, red, and Scotch pines will grow as rapidly here as in good upland without cultivation."

Here are six hundred acres of forlorn waste,

marsh, and sands, that had furnished but a meagre pasture of inferior herbage, which are now put in the way of producing a grand forest by the planting of five hundred acres with timber trees.

The situation, too, is one than can not fail to attract the attention of travellers on the Chicago and Milwaukee Railroad, which courses along the base of the bluff, on the western side of the plantation, and commands a view across the flats.

Some forest trees planted on the upland are also worthy of note. A large nursery, well stocked with pine and larches, became unsaleable by their slow growth during a period of depression, and have now grown into a bit of forest covering twenty-four acres, and they show what the larch can do on such land. They are already twenty-five to thirty feet high, and many of them three to seven inches thick at the base, and would be available for hop-poles, fencing, and for many purposes.

Having named the locality as at Waukegan, Illinois, it will be unnecessary to add the name, Robert Douglas & Son, familiar as household words to all western tree-planters, and known indeed in all civilized countries whither the public mails have transported so many of their dollar-packages of little or baby forest trees, that have enabled men to gratify their desire to experiment in tree-planting, even in the uttermost isles of the sea, and upon the jungles of India, wherever civilization has sent the mail, bag have "these presents" gone as worthy pioneers of advancing and progressive American Forestry—a Yankee suggestion and far-reaching as thought.

THE USE OF THE MICROSCOPE IN TESTING TIMBER.

An interesting paper on this subject was recently read before the Franklin Institute, Philadelphia, by Mr. R. Grimshaw, O. E. Whilst disclaiming any intention of suggesting that the elastic limit, or even the breaking strain, of structural materials can be definitely determined by the microscope, Mr. Grimshaw insisted very strongly on the advantages attending its use in preliminary investigations, to ascertain whether materials are or are not worth the expense of testing further. If the microscope condemns the sample it is not worth further outlay. The larger the specimens requiring to be tested the greater will be the gain the microscope will effect in avoiding the cost of further proof, or the risks of using without such proof.

Mr. Grimshaw exhibited samples and microphotographs of American bridge timbers which had proved faulty after being built in, but which a preliminary examination with the microscope would have promptly thrown out. The timber from which these poor specimens were taken was a fragment from a railway bridge wrecked in 1879-80. The timber formed a portion of the sill of a draw bridge, consisting of two 12 in. sticks lying on upon the other. The turntable casting being somewhat too small, these 24 in. of timbers had to support one of the A frames of the bridge at a distance of 12 in. outside the bedplate. After a few days' service the strain became so great that, when an empty truck was passing, the A frame sheared the 24 in. timbers, wrecking the bridge entirely. The timber was so excessively poor that, on mounting a specimen on the plate of the microscope, its weak and porous nature was at once apparent. The annual rings appeared about three times as far apart as they would be in good wood of a similar kind, the medullary rays were few in number and short in length, whilst in good wood, on the contrary, they are of considerable length and so numerous that tangential sections present the appearance of a series of tubes seen endwise, or a number of parallel chains. After once seeing and comparing samples of good and bad wood, it is easy to recognize the difference with a pocket magnifying glass.

The trunks and limbs of exogenous trees, as is well known, are built up of concentric rings or layers of woody fibre, which are held together by radial plates acting like trenails in a boat's side or "bond" in brickwork. The rings representing successive years' growths, are composed of tubes, the interstices of which are filled with cellulose. The slower the growth of the tree,

the thinner these yearly rings, and the denser and harder the wood—other things being equal. Not only is the closeness of texture an indication of the hardness and strength of the timber, but the size, frequency and distribution of the radial plates which bind the annual layers together may be taken as a very close illustration or sign of the character of the wood and its ability to resist strains, especially a breaking stress. The microphotographs of good and bad timber show that in the strong kinds the concentric layers are close in texture and narrow in width, and the radial plates numerous, wide, long, and stout, while in poor stuff the opposite characteristics prevail.

The practical application consists in having such enlarged photographic sections, longitudinal and transverse, of standard pieces of timber, bearing a certain known maximum or minimum strain, and rejecting any piece which the assisted eye detects to have fewer rings per inch of tree diameter, fewer fibres, or fewer radial plates per square inch of section, or to use such pieces with a greater factor of safety.

The advantage of the method is that it allows every stick in a bridge or other structure to be tested before use.

Mr. Grimshaw concluded with some remarks on the application of the same test to metal-work in structures.—*Timber Trades Journal*.

AN ENGLISH WALNUT.

A reader of the *Builder's Weekly Reporter*, England, sends that paper an old and quaint account of a walnut tree, dated Nov. 17th 1817. It was as follows:

"Dimensions of walnut tree bought by Thomas Jones, gunsmith, Wrexham, of Miss Ormsby, for £60, October 15, 1809. It grew on a rock of limestone at Llanddyn farm, near Llangollen; its height was 25 yards, and its boughs covered a space of ground about 30 yards diameter; its contents in sound timber was 646 cubic feet 10 inches, besides what was cracked in falling, which was considerable. Six tons of strong boughs was used for coal props, and about two tons of faggots. The planks were all nearly sound, and converted as follows, viz., 1,630 gun stocks, 71 pair of pistol stocks, and wood for 232 chairs. When sawed, the first cut was nearly eight feet across. Several pieces were given to different gentlemen for tables and small pieces of furniture. According to a story in the neighborhood, this tree was very old. A man 95 years of age said that he remembered a bough of it being broke by the snow when he was a child, and that his grandfather used to tell the family that, in olden times, fairies used in the dead of night to celebrate their marriages under this walnut tree. In sawing this tree the cross roll over the saw pit broke and killed one of the sawyers.

Pine Lands Weakening.

The *Northwestern Lumberman* says:—"In some parts of Wisconsin there is a weaker feeling regarding logs and pine lands. Both capitalists and lumbermen are beginning to realize what the *Lumberman* has said for the past year, that it is risky to buy pine at prices that have been paid. Pine timber has a positive value, and this value should not be confounded with one that is speculative. In Michigan pine has been purchased at prices that are not likely to make the owners any money, but on the contrary, in case of a financial depression, these owners would surely be crushed. These fancy prices were due, to some extent, to the idiocy of the forestry bulletins, which have sadly deceived everybody who was not acquainted with the amount of pine there is standing.

Hardwood Wanted.

Hardwoods, of all kinds, of good quality, are wanted in all the leading markets. In Boston ash, cherry and oak, are in demand, and good hardwood of every quality is called for in New York. The *Lumberman* predicted two years ago that the time would never come again when there would be an oversupply of good hardwood lumber, and there is hardly a possibility but the prediction will prove true. With an increase of manufactories for the consumption of hardwood, and a decrease of standing timber, it cannot be otherwise. Every year the percentage of poor lumber grows larger.—*Northwestern Lumberman*.