

## FOREST TREE CULTURE.

BY HON. H. G. JOY.

The following valuable article appears in the last report of the Montreal Horticultural Society and Fruit Growers' Association of the Province of Quebec:—

The European traveller who visits only the settled parts of this Province, is invariably disappointed at the scarcity and meanness of our trees. Of course, if he leaves the beaten tracks of travellers, and goes far enough into the wilderness, up the Ottawa and the St. Maurice, he will see fine timber, but, in our settlements, we can only show him, here and there, at long intervals, one solitary elm, model of grace and beauty, and the traveller will feel, as we do, grateful to the man who spared that tree.

On a warm summer's day, the Desert of Sahara, with its lovely oasis, would be suggestive of coolness, compared with our country. No trees to shade the dusty roads, to shelter the panting cattle, to set off the neat white-washed houses; only far away, hidden nearly out of sight, the patch of small neglected timber which the farmer is compelled by our storm winters, to spare from the general slaughter, as he will do, without fuel.

If every acre of ground were covered with valuable crops, one would try and get reconciled to the absence of trees, and bow to the iron rule of our age which converts everything into cash. But what a small proportion of all that ground is used profitably! We can find plenty of spare room for growing forest trees: they are not only the most beautiful ornaments to a country, and the most useful product of nature, giving fuel, timber, shade, shelter, retaining moisture and a protection against droughts, &c., &c., but, considering the question from a strictly money-making point of view, the culture of forest trees is perhaps the best and safest investment that can be made.

It is rather difficult, I admit, to induce people to plant forest trees in this Province, where, for generations, they have been brought up to look upon the forest tree as their natural enemy, to be got rid of at any cost, hacked down, burnt out of the way (for want of a better mode of disposing of it), and still troubling the settler for years with its everlasting stump, an obstacle to thorough cultivation. The children and grandchildren of the settlers remember too well; they cannot be expected to love the forest tree, but self-interest ought to conquer instinct and prejudice. With us, land is not too valuable for forest tree culture. In Europe, where land is scarcer and more valuable than it is here, they plant, every year, thousands and thousands of acres in forest trees.

To those who say that our country is too new, to think of that, I will answer that New Zealand, the Australian Colonies, India (so far as the settlement of the land by Europeans is concerned), are newer countries than ours, and they are all taking active steps toward the planting of forest trees on a large scale. In the United States, the Federal as well as the States' Governments encourage the culture of forest trees by grants of land, and money, and exemption from taxation, and powerful societies are co-operating with energy and liberality. The Government of Canada has begun by offering free grants to those who undertake the planting of a certain number of trees on the Western prairies, but I will here observe that it will require more active measures to set the people in motion, and especially the establishment of nurseries, where the people can buy young trees and seed, and the beginning of some large plantations, as an example, to show to the people, by practical results, that the culture of forest trees is within the reach of every one.

We see in the papers that the Western railways have started the culture of trees on their own account; the St. Paul, Minneapolis and Manitoba railway is reported as having appointed a superintendent of tree culture, who has just contracted for three hundred thousand trees, and most of the roads west of the Mississippi and Missouri rivers have also begun to raise trees, in order to insure a supply of trees, and for other purposes.

How many give as their reason for not planting forest trees, that they will not live long enough to get any profit out of them. You do not hear that in Europe. Are people more sel-

fish in America than they are in Europe? Or is the feeling of self-reliance so much more developed in America that the people here expect the next generation to take care of itself as they take care of themselves? Then leave them some timber, if you wish them to have the same chance that you had. It was but a heathen who wrote, more than eight hundred years ago, "Arboris erit diligens agricola quorum fructus numquam videbit." "The good husbandman plants trees whose fruits he shall never see." But I must not drift away from my subject into philosophical considerations; it will be more to the point to show that the profits of forest tree culture are not only enormous, but that their realization is far from being delayed to an indefinite future.

I do not pretend that the whole of our farms should be planted in forest trees; that would be too absurd. Our farms are generally too large for two small number of hands to employ; there are always some odd corners, idle strips, stoney or damp patches which it does not pay to cultivate; begin and plant forest trees there, suiting the tree to the nature of the soil—you will find some for every kind of soil. Once planted and fairly started, they will take care of themselves, give no trouble and increase yearly in value, in a wonderful ratio, so well expressed by the Honorable F. B. Hough, chief of the Forestry Division of the United States Agricultural Department, in the address lately delivered by him at Columbus, Ohio.

For years past, I have sought the best and cheapest mode of re-wooding our denuded lands, and have made some experiments; they have not yet been carried over a great many years, and are, so far, most encouraging notwithstanding my numerous mistakes and enforced absence at the best seasons, and they satisfy me as to the correctness of the statements made by the leading advocates of forest tree culture. I trust not to be charged with egotism if I now give the results of some of those personal experiments, rather than copy or condense what has been written by others, and it will be a great satisfaction if I can induce a few to try for themselves.

In selecting forest trees for planting, the first consideration ought to be the nature of the soil where they are to be planted; if the soil is not favorable to one kind of tree, do not waste your time in planting it there; you will find another tree that will suit the soil. After paying all due deference to soil and climate, you must be guided in your selection of a particular kind of tree:—1st. By the value of the timber. 2nd. The greater or lesser ease and certainty with which the tree can be grown. 3rd. The rate of growth.

I have tried principally black walnut, oak, elm, maple, ash, tamarack, Russian pine, and poplar, and will now give some of the results:—

**BLACK WALNUT.**—The value of that wood is so considerable (a dollar a cubic foot at the present time), and it is getting so scarce that it struck me as the most worthy of being introduced and cultivated here. True it did not grow spontaneously anywhere in the Province of Quebec, but this appeared to me no conclusive reason why it should not grow and flourish here. The lilac comes all the way from Persia, and it spreads out its leaves earlier and keeps them unchanged later than our typical tree, the maple. I did not fear our great colds, for in the West, the natural home of the black walnut, the thermometer often ranges as low as here, though for a shorter period at a time. It was well worth trying.

I procured a bag of black walnut nuts from the West in the fall of 1874, and sowed them at once; it was late in November; we had to remove the snow and break the frozen ground, but I thought the earth the safest place for to winter them. They began to come up about the tenth of June following; not five per cent. failed, and they have never been artificially sheltered in any way. It would not be worth while introducing them here if they could not take care of themselves.

Of those left undisturbed where they were sown, I have not lost one; they have now had six summers' growth. I have just had some of them measured, so as to be certain of their size; the height of the four largest is as follows:—

Fifteen feet and a half, fourteen feet and a half, fourteen feet, and twelve feet, and thick in proportion. These have not been transplanted; now notice the difference between them and those that have been moved.

In the fall of 1875, when they were only one year old, one lot were transplanted, but the soil was not favorable and they have not done well, so far; however, they are beginning to recover. In the spring of 1876 I transplanted another lot; the best are about eight feet high; and another lot last spring, the tallest of which are about ten or eleven feet. All these trees are the same age as the fifteen and fourteen feet trees; the difference in size results from the transplanting, therefore it is much better to sow them at once where they are to remain. Plant them thick, as the wood of the young tree is very soft, like that of our native butternut.

It is contrary to all preconceived ideas, even among those who handle timber every day, but nevertheless true, that the black walnut (*Juglans nigra*) and the Canadian oak (*Quercus alba*) as a rule increase much more rapidly in girth than our pine and white spruce. I conclude, from counting the rings on the trees after they are cut down, and from watching the growth of the living trees, that black walnut and Canadian oak generally gain one inch in diameter in about three years and a half, while our spruce and pine take about double that time to accomplish the same result; this can easily be ascertained by counting and measuring the rings. Of course there will be exceptions, and it would not be fair to judge by those only; I speak of the average.

It is now time to say something of the profits, and I must be careful to avoid exaggeration. Judging by the growth of the living trees and the rings of the timber, when cut, I do not hesitate to say that a black walnut, under ordinary circumstances, at the age of seventy-five years, will have attained twenty-one inches in diameter and will contain at least fifty cubic feet of timber, the actual value of which is about one dollar per cubic foot. (See for prices the *Lumberman's Gazette*, published at Bay City, Michigan, the numbers of the 26th January, 2nd February, and 2nd March, of this year).

For how many such trees, judiciously planted, will there be comfortable room on one superficial acre? It is difficult to find a regular plantation of any trees of that diameter here, to help us to a solution of the question, and the way in which trees are scattered in the forest and their irregular size leave but a vague impression on the mind, varying according to the personal experience of each. I am not ready to answer the question at present for want of full information, and will not venture a guess, but I do not feel the same hesitation where trees standing in one single row, with plenty of room on two sides, are concerned; in that case, trees twenty-one inches in diameter would not be too close standing at eighteen feet from one another. Take a farm three acres wide, with a road across the width and a row of black walnuts of an average diameter of twenty-one inches on each side of the road, the trees eighteen feet distant from one another, you get sixty trees containing fifty cubic feet each, three thousand cubic feet, worth, at the present price, three thousand dollars.

But it will be safer to sow the black walnuts in clumps, pretty close. They will protect one another when young, and, as they grow, they can be thinned gradually. Their culture will entail little trouble, apart from the preparation of the soil, and the sowing of the nut; the work of thinning will soon repay itself with the timber removed. The better the soil, the quicker the growth. Such a valuable tree as the black walnut deserves to be well treated. If possible, find some shelter against the strongest prevailing winds for the young plantation, a belt of older trees, or a hill. They are rather soft, like our butternut; it is the only drawback I have found out so far, but not fatal. Even the youngest trees will get several branches torn off and very ugly wounds without dying; they are wonderfully hardy.

The value of these plantations will increase steadily from the day they have taken root; they represent an over-increasing marketable value long before the expiration of that period of seventy-five years which I have indicated—

not as the limit of their growth; they will grow for centuries, but—as the period necessary to attain a profitable size, when they can be cut down without waste.

The BUTTERNUT grows spontaneously here; its beautiful timber can be worked with as much ease as the softest pine; it ranks immediately after the black walnut, and is inferior to it only in the colour of the wood, which is lighter. Rubbed with linseed oil, it takes the soft, rich hue of sandal wood, and if judiciously sawn, shows wonderful marks. I recommend strongly its culture, and will be glad to send nuts to those who will plant them, next fall, as we gather a large crop of them.

**WHITE OAK.**—The acorn ought to be sown as soon as possible after it drops, in the fall, as it loses its vitality rapidly, and to avoid the great check resulting from transplanting, it ought to be sown at once, if possible, where the tree is destined to remain. Its wood is tougher, and not so liable to break when young. I think it ought to grow with at least as much ease and rapidity as the black walnut; ours are rather behind, as they have been transplanted twice. The oak is so useful and valuable, and its culture so easy, that every plantation of trees ought to contain a good proportion of oak, provided the soil be not too poor for it.

**WHITE ELM.**—This splendid tree recommends itself sufficiently by its beauty and usefulness to dispense me from dwelling at any length upon it; it grows rapidly in a deep, damp soil. I have not grown it from seed, but by taking up young trees from a low island, where they grow in abundance. It appears to bear transplanting better than the oak, walnut or maple, and can be moved safely of a much larger size than any of those trees.

**MAPLE.**—If you wish to raise a maple sugary with the smallest amount of expense and trouble, go to an old maple grove in the fall; the ground is covered with a thick carpet of seedlings. After rain you can pull them up by hand with the greatest ease, without breaking any of their small roots, if you are moderately careful. Plant them at once in a corner of your garden, about two feet apart each way; weed during the first two summers with a light hoe. We found, after four years, the trees fit for transplanting, about five feet high, and the thickness of a man's thumb. As the ground was mellow and free, we took them up with little damage. Of course, there is still the objection of transplanting, but in a less degree than when you seek your maples in the woods, where their roots are mixed up with those of other trees, stumps and stones, and must be more or less torn up with violence. There is an immense difference in the comparative cost of the two processes, which will tell upon the hundreds of trees required to make a sugary worth working. These small trees never fail (at all events those we transplanted never did), while much larger trees, more injured in the removing from the forest, die in great numbers, and the survivors are seriously checked. I have been told that the seedlings would overtake them, but have not yet had time to verify that statement. Maples will begin to yield a reasonable quantity of sap for sugar when about twenty to twenty-five years old.

**THE ASH.**—It is well known, and its different varieties are found very useful, especially the white ash, which recommends itself for its elasticity; its wood is beautifully marked, and is largely employed in the making of furniture, panels, &c. It will thrive where the walnut, oak and maple refuse to grow, or only linger miserably. I remember part of a maple avenue, where, year after year, the maples had been replaced over and over, and failed; at last, we had recourse to white and black ash; none failed, and they are progressing most satisfactorily.

**TAMARACK** will grow in wet, damp ground; we have succeeded with them where even willows had failed; the value of its timber and knees is too well known to require any comment from me.

**RUSSIAN PINE** (*Pinus Sylvestris*).—In making new plantations, especially from seed, it is no more trouble to try foreign than Canadian seed, and, however strange it may appear, I find it easier to procure the seed of the Russian and the Himalaya than of the Canadian Pine. One