

FORESTRY FOR CANADA.

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The forest does not only supply the invaluable commodities of fuel and lumber, it exercises a great influence on the climate, and on agriculture. If science has not yet admitted that the presence of forests increases the rainfall (by condensation of vapour held in the atmosphere, owing to the lower temperature of the forest land, or by other means,) it is universally admitted that the forest regulates, throughout the year, the distribution of water in our streams, contributes to retain the moisture favorable to vegetation, retards evaporation, and checks the effects of drying winds.

Unfortunately, it is only after the forest is gone, that its value is truly appreciated, as in the South of France, Spain, Italy, Greece, and many other countries, once fertile, now barren and unproductive. The two great remedies, long drought and disastrous inundations, are due to the same cause, viz: the wholesale destruction of the forests, especially on the mountains, the birthplace of the streams. The soil of many a fertile valley is now hidden under a thick bed of sand, gravel and boulders (as we often see in Switzerland) brought down by torrents from the mountain slopes, where the trees which once retained the ground with their roots have been destroyed. The rain, instead of soaking gradually through the moss, vegetable mould and roots, and feeding, by degrees, the springs and streams, as it did, while the forest lived, rushes down to the valleys below, as it falls, as from the sides of a roof, in irresistible torrents, carrying with it the ground that nothing now retains on the steep mountain side.

It is most interesting to follow the work of re-afforesting carried on, principally in France, on the Landes for nearly a century, and on the barren mountain slopes, and to notice their beneficial results. The efforts of the "Ligue du Reboisement de l'Algérie" to repair the harm done in Algeria, by the burning of the forests on the slopes of the Atlas, deserve the warm sympathy of all those who can appreciate perseverance and devotion to the public good.

But the subject before us to-day, is "Forestry for Canada." It is difficult to awaken any interest in the question among us. We are apt to consider Forestry as a superfluity, here, as if our forests were inexhaustible. They would be so (saving accidents by fire) with judicious management and sufficient protection. The aim of Forestry is not, as many believe, to preserve trees for ever, or until they decay and fall. Quite the reverse; it is to select and cut down every tree ripe for the axe, making room for the young growth, and thereby insuring a continued reproduction and a steady revenue. As it is, we are not only spending our revenue, we are drawing largely every year upon our capital.

The pride of the Canadian forest, the white pine, is getting very scarce; the proportion of first class wood is decreasing year by year, while the distance from which it is brought is increasing. How many mill owners, who would have scorned sawing spruce logs a few years ago, are only too glad to get them now, and though spruce reproduces itself much more readily than pine, we can force the time when it will get very scarce, at the present rate of cutting.

The late James Little, of Montreal, who was the first to sound the alarm, deserves to be gratefully remembered by Canada. When every one treated our pine as if the supply were inexhaustible, he was the first to call attention to its rapid disappearance. His warnings were met, not only with indifference, but with ridicule. Now, the eyes of the most sceptical are opened, and they must admit that he was right; but it is sad to see them turn around now and affirm that it is no use devising means for the protection of our forests, because there is nothing left in them worth protecting. There is still a great deal left worth caring for and improving. It is late, but not too late.

The great American forester, F. B. Hough, in his Report to Congress, draws attention to the fact that: "although the 'system of management of the Canadian forests is crude in its provisions, and destitute of any policy tending to secure the 'growth of new forests, it has one redeeming feature, as the 'title to the land itself remains vested in the Government, and, 'after the expiration of the first temporary leases, under which 'the native timber is cut, it will be available for any course of 'management that experience may suggest. This last consideration prepares the way for any system of Forestry that the 'wants and resources of the country may, in future, demand, 'and, even without a system, the natural growth of a new 'forest where the old one has been cut away, especially where 'the spruce timber prevailed, is, in many places, bringing forward a supply for future use, although much less effectually 'than under proper care would be obtained."

Mr. Hough was right to assume that the forests of Canada belong to the Crown, as the proportion in private hands is comparatively insignificant. The Government holds them in trust for the people and is answerable for their good management.

It is a good sign to find in the Dominion Statute Book, 47 Vict., cap. 25, sect. 5, proof that the importance of preserving the forests on the Rocky Mountains is well understood. The Governor-General-in-Council is empowered to make provisions "for the preservation of forest trees on the crests and slopes "of the Rocky Mountains, and for the proper maintenance, "throughout the year, of the volume of water in the rivers and "streams which have their sources in such mountains."

In the absence of a regular system of Forestry, there are practical means of protecting our public forests which I will now review as briefly as possible.

FIRST, and most important.—A careful classification of Public Lands, under two heads: Lands fit for agriculture, which alone ought to be open to settlement—lands unfit for agriculture, which ought to be carefully closed against settlement and kept in forest. The best timber lands, especially the pineries, are generally totally unfit for agriculture, it is a cruelty to decoy settlers there. How many hard working men have wasted the best part of their lives in trying to get a living out of such poor soil, and are tied down to it for want of means to move away with their families; the only result of their work being the ruin of a fine forest and their own ruin. The Quebec Legislature had enacted a wise law in 1883, the Timber Reserve Act, which, I regret to see, is on the point of being repealed. As to the relations between the settler and the lumberman, where there is good faith on both sides, those relations ought to be of the most friendly nature.

SECONDLY.—The Government ought not to force every year, thousands of square miles of timber limits on the market in advance of the legitimate requirements of the trade, and with the unavoidable result of glutting the European market. The Province is interested in the successful carrying on of the timber trade, as it provides the whole of the raw material which keeps the trade going and ought to get returns for the value of that raw material, proportionate to the earnings of the trade. It will not come amiss here to quote John Stuart Mill's opinion of the status of our timber trade, from his Principles of Political Economy: "The timber trade of "Canada is one example of an employment of capital, partaking so much of the nature of a lottery, as to make it an "accredited opinion that, taking the adventurers in the aggregate, there is more money lost by the trade than gained "by it, in other words, that the average rate of profit is less "than nothing." Even supposing the timber trade firmer now than when John Stuart Mill wrote, the Government is not justifiable in encouraging over-production, as it does, and it would appear wiser, not only for the sake of the forest, but for that of the Exchequer, if the Government kept the limits not actually required for the reasonable wants of the trade, so that the Province might hereafter benefit by the unavoidable rise in the price of those limits.

THIRDLY.—Strict regulations as to the minimum size of logs allowed to be cut, and encouragement to convert trees into saw logs, instead of square timber, which wastes one-third of the tree in the squaring.

FOURTHLY.—Protection against fire which destroys more trees than the axe, precautions in lighting fires in the woods and in clearing lands by fire, for settlement; this last subject is closely connected with the question of the classification of lands and keeping of settlers from lands unfit for agriculture. Fires are more to be apprehended in pineries and among resinous trees, where the soil is very often unfit for agriculture, than among hardwood trees where the quality of the soil is much better as a rule. Our Provincial Legislature is now considering a good measure calling on the lessees of timber limits to contribute one-half of the costs of protecting their limits against fires, the Province paying the other half. It is, I think, the law in Ontario.

FIFTHLY.—Export duty on saw logs—a most important question. Sir John Macdonald was asked, a few weeks ago, by an influential deputation of lumbermen to repeal the export duty on round logs. He reminded them that in 1886 that export duty had actually been increased at their own request, and told them that the Government would consider before all, the good of the country at large.

We are striving to increase the numbers of our people; we deplore the large emigration from Canada to the United States. Shall we encourage that emigration, by sending away the logs which feed our saw-mills, so that they may get sawn by our neighbours? The sawyer will follow the logs, and we shall drive away thousands of industrious men who will follow the raw material in which they find their work. True, we are offered by the United States free entry for our sawn lumber (or rather there is a talk of its being offered) if we repeal our export duty on logs. On the other side, we are threatened with an addition to the present import duty on sawn lumber, equal to the amount of our export duty on logs, if we persist in retaining it.

Very likely that threat will not be carried out; but whatever happens, unless we give up forever all considerations for

the welfare of our own country, we must retain our export duty on logs, thereby protecting our forests and securing work for our own people.

CREATION OF NEW FORESTS.

It is difficult to compress within the narrow limits of one article all the branches of Forestry. After considering the preservation of existing forests, we cannot ignore the necessity for creating new ones, on the prairies of the North-West and our old settlements, denuded of trees, in the East.

As for the North-West, what we want, first of all, is practical experience. Many theories have been propounded to explain the absence of trees on the prairies, and Mr. A. T. Drummond, of Montreal, a zealous worker in the cause of Forestry, has written some very interesting essays on that subject.

No use dwelling on the benefits to accrue from the planting of trees on the North-West prairies. Let the Government make a beginning, by starting experimental Forestry stations, nurseries and plantations of trees, under the care of the Mounted Police, at everyone of their permanent headquarters. It will be an example to the settlers; the young trees raised from seed, at a nominal cost in the nurseries, can be given to them. The work will not interfere with the duties of the Mounted Police, and it will interest and improve the men, in every way. Practical experience will soon indicate what trees to select, where and how to sow and plant.

I would recommend the *Ash-leaved Maple*, (*Acer negundo*) to start with. The rapidity of its growth, its resistance to the drought, the value of its sap for sugar, which has been scientifically demonstrated by Doctor B. J. Harrington, in a series of experiments, the results of which have been communicated by him to the Royal Society of Canada, in a most interesting paper; all these recommend its culture as a starting point. With that tree, plant cotton-wood, poplar, willow, every kind of fast-growing tree, however inferior in quality, so as to start wind screens, behind which slower growing but more valuable trees can be cultivated, and fields of grain sheltered from the baneful effects of the drying winds.

If, in the absence of any serious attempts at forest tree culture in the North West, we are still puzzled how to proceed there, here, in the East, we know beforehand that we are bound to succeed, with proper judgment and care. We know that every soil here, whatever its nature, can grow some kind or other of tree, and that, in many instances, the intrinsic value of the tree is quite out of proportion with the value of the soil: pines on sandy soil; sugar maples on rocky hill sides; ash, on cold, wet soil; tamarac and cedar in swamps; white birch on the worst soil and under most unfavorable climate, and, of course, oak, elm, butternut, black birch, &c., &c., in good soil.

It appears logical to choose the most valuable of trees for a new plantation, when the nature of the soil admits of it, though we often see valueless willows and poplars planted on the best soil and even in gardens. I have tried the black walnut, which sells for a dollar a cubic foot, in Quebec—nearly the price of mahogany. Trees raised from the nut have given me nuts after twelve years growth, but, as my experiments do not extend over fourteen years, however satisfactory to myself, I cannot yet assert that the success is complete. Certainly it is very encouraging, and, I hope, will lead others to try the experiment, which is not an expensive one.

It is impossible to enter into the details of tree planting now, but there are two points which ought not to be overlooked: in our climate, experience shows that it is better to plant trees in the Spring, especially if the soil is in the slightest degree wet or even retentive of humidity, and consequently affected by the frost, and, secondly, it is useless to attempt tree culture without good fences, as cattle will destroy all the young trees. In fact, there are thousands of spots where the cultivation of the soil has been given up, which, in a few years, would be covered with a growth of self sown trees, if the cattle were only kept out by fences.

The results of Forestry are so far removed, and, at the same time, of such national importance, as to make it incumbent on the Government to encourage it by every means: experimental stations, especially in the North-West, a change of the Mounted Police and the Indian Agents and teachers, nurseries of forest trees and gratuitous distribution of the same, rewards in land grants or exemption from taxation, encouraging the observance of Arbor Day, a School of Forestry, or, until that point can be reached, sending some well qualified young men to study Forestry in the French and German schools, and last but not least, educating the people, beginning with the children.

Teach, in all the schools, the elements of tree culture, joining practice with theory, whenever possible. No better way to develop in the child the qualities necessary to his success as a man. He will learn forethought, in choosing the proper season, the soil, the tree; care and patience, in digging up and transplanting that tree; perseverance in watching over it, watering it, supporting it, pruning it, cultivating the ground round it; unselfishness, in feeling that he works not only for himself, but that others will enjoy the fruits of his labour.