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FORESTRY AND ARBORICULTURE.

BRING THE FOURTH CHAPTER OF THE REPORT OF THE ONTARIO AGRICULTURAL COMMISSION.

In dealing with the large and very attractive subject of fruit-growing, the Commissioners have had occasion to use only the language of encouragement, but, in connection with the topic they have now to discuss, they have to utter words of warning, perhaps even to give expression to some alarm, for, from the day that the first pioneer settler entered Upper Canada until now, a process destructive to our forest wealth has been rashly, recklessly, wastefully, and it may even be said wantonly, going on.

No one seems to have stopped to inquire into the relations which, particularly in such a climate, the trees of the forest bore to the operations of the husbandman, affected the rain and snow fall, protected the crops, or served any other purpose than to supply fence rails or cordwood.

If the farmer who entered the country fifty or sixty years ago were told he might have secured for himself at this moment, in timber alone, an amount equal to the value of his farm at the highest given price, and that he could have obtained this without sensibly diminishing the area under cultivation, he might be meretricious. But there are, nevertheless, many districts where such an assertion would hold good, where a fortune which might have been saved has been split up into snake fences or sent whirling in clouds through the stove pipe.

Meantime, while men have toiled early and late to shelter themselves and their families—and let us hope their cattle too—in comfortable buildings, and to provide the necessaries of life, they have deprived the "staff of life" of its natural and necessary shelter, and soon, time and again, perish before their very eyes, the wheat and clover on which have depended much of their prosperity.

Small blame, it is true, attaches to the pioneer in a wooded country if he does cut and slash at all obstructions somewhat ruthlessly. The early settlers in Upper Canada often found themselves in circumstances almost desperate. They had neither roads, nor markets for timber if they preserved it, and, surrounded by what seemed to them an illimitable extent of forest, they naturally took small account of what might be the state of things in the days of their grandchildren or their great-grandchildren. But it is surprising to see that, even with the bare facts staring them in the face, our farmers who are practically to-day the owners of the remaining timbered lands of the Provinces in all the settled districts, are in a condition of profound lethargy or innocent unconsciousness of the dangers they invite or the losses they incur.

Still there is time even yet on many farms in not a few of the counties, for waste to be prevented, danger averted, and money saved, if men will only shake off the apathy they have

hitherto exhibited, and see the true state of affairs in the light of self-interest, not to say self preservation.

How little idea of providing against the continual depletion of the forests many of them have, was well illustrated by an incident that occurred during one of the early sittings of the Commissioners. The witness before the Commissioners was a gentleman enjoying beyond most the confidence of his brother agriculturists an admirable specimen of an intelligent and substantial yeoman. To the question, whether anything had been done in this district in the direction of replanting forest trees, he replied in an almost surprised manner.

"We do not think that we have reached the miserable condition which requires us to face that difficulty yet. We have more bush than there is in many parts of the West."

But it happened that, just before, this same gentleman had told the Commissioners, that his crop of fall wheat had been saved from winter killing, by what? *by the accidental shelter afforded it, not by his own, but by his neighbor's bush.* But for this the merest chance one of the best farmers in Ontario would not in all probability have had enough fall wheat to pay for the harvesting. And yet he almost scornfully repudiated the idea of planting a tree.

Nor is this all. Not only have the farmers of Ontario destroyed property of fabulous value, in the clearing process; not only have they denuded their lands of necessary protection, not only have they dried up their streams, and left dry ditches in many places to mark where once existed a valuable water power, but they have been, and still are, going on very fast with the destruction of their supply of fuel. Instances have come within the observation of the Commissioners, where men who took up bush land thirty years ago, have so thriftlessly managed their timber, that to-day they have used the last stick and are actually buying cordwood.

But there is hope yet. Ontario is not the only country that has had to face the situation in this respect, and is to-day, thanks to her prodigious forest wealth, better off than many. If some choice woods are nearly exhausted, many others of high marketable value still remain. There are, in the settled counties of Ontario, and altogether exclusive of free grant territory, containing every variety of timber used for economical purposes, forests as extensive in area as some not unimportant European principalities. The woods of Ontario consist principally of the elm, oak, ash, hickory, butternut, maple, beech, chestnut, poplar, birch, cherry, basswood, hemlock, cedar, tamarack, cotton wood, ironwood, whitewood or tulip tree, willow where it has not been wholly destroyed the walnut; and in addition to this the pines, balsams and spruces, in great variety. And all these have now a recognized place in the markets of the world. It is not the

duty or purpose of the Commissioners to discuss the relations of the Government to the lumberman, or of the latter to the settler. They look at this question solely as it affects the interests of the agriculturist, and through him the country, and while, as may be pointed out, the cultivation of the pine and other coniferous trees is to be encouraged on various grounds, it is with the deciduous (generally known as hardwood) trees they are most largely concerned, so far as relates to the question of timber supply or cultivation.

It is proposed, therefore, now to notice—

1. The management on cleared farms of the bush, usually from five to twenty acres in extent.
2. The economic uses of the several varieties of timber.
3. The market value of various woods.
4. The age of trees maturing, and conditions in which they are merchantable.
5. Tree planting including choice of trees, methods, and cost.
6. The construction of wind-breaks or shelter belts in fields and orchards.
7. The planting of trees and shrubs for ornamental purposes.

Coppices.

The subject of coppices, or the cultivation of young timber from the stumps of a former growth, is discussed in Dr. F. B. Hough's very able report of 1877 to the United States Bureau of Agriculture. Some of the information given by Dr. Hough under this head will be of practical interest in the present connection. Dr. Hough says—

"The coppice is a growth of timber of various deciduous kinds, from the stumps of a former growth, and is usually cut before maturity, at intervals of from ten to forty years, according to circumstances and the uses to which the product is to be applied.

"This mode of cultivation is in great favor for the growth of firewood, and the smaller wood used in various industries, and is the means by which tanning materials are often produced from the oak, where reliance is necessarily had upon this means for supplies.

"The coppice of short period produces hop-poles, and the stakes and vine props so much used in vine growing countries, and in many parts of this country may be able to supply, with but little care beyond protection, the fencing material and other woods required for farm purposes. It is destined to be in future of great importance in the growing of poplars for paper-making.

"The trees that sprout best from the stock are the ashes, elms, oaks, poplars, cottonwoods, willows, chestnut, linden, mountain ash, maples, sycamore, birches, alders, and hazel. The beech will reproduce but slightly, except in very favourable conditions, and the conifers not at

all, with the single exception of the California redwood.

"Whatever may be the effect upon the durability of the timber by cutting at particular seasons, we have, in case of coppice growth, no alternative choice, and must cut in winter, and, by preference, toward the approach of warm weather but before the sap starts, as at this time alone will the stumps be in best condition for sending up a vigorous crop of young shoots. The months of February, March, and first part of April are generally best for this labor.

"In cutting, with the view of reproduction, the stumps should be left low, and the top sloping and smooth, so as not to admit water. It is sometimes the practice to dress off the stump in a convex form with an adze, taking especial care not to separate the bark from the trunk. It is along this line of union, between the wood and the bark, that the young shoots start, and if separated they will not sprout.

"In the cutting of coppice woods it is often the practice to leave a certain number of choice trees of the more valuable kinds to grow to full maturity, and thus acquire a much greater relative value than if cut small. These reserves may be kept through two or three periods or 'revolutions.' They influence the young growth by their cover and shade, and when properly distributed may be, on the whole, beneficial rather than injurious to the future crop. They should not cover more than a twentieth, or at most a sixteenth, part of the whole surface. As some stocks will be weakened by repeated cutting, care should be taken to secure new roots from time to time, and one means of doing this is to bend down the tops of some of the sprouts and bury them partly in the soil, by which means new roots will in some species form, and when fairly established they may be separated from the stock. Such sprouts should be held down by hooked stakes, and the tops kept in position by a piece of sod."

It will be seen from the foregoing how important a source of wood supply and of income too in many cases, the gradual and judicious removal of the larger trees, and the careful and intelligent cultivation of a second growth may become. If in clearing up land a strip or belt of timber were left on the north and west sides of every ten or twenty acre lot, and intelligently handled in the way suggested, not only would a very excellent wind break be maintained, but the farm would yield two crops annually in place of one, with very little loss of space and with, probably, a gain rather than a loss in the value of the grain crop.

Preservation of Standing Timber on Farms.

The usual treatment of the standing timber on a farm, unless cleared to be used as a grove, or where it consists wholly of sugar maples, is unscientific and wasteful to the last degree. Its final disappearance is looked upon as inevitable,