

desirable aim, and if it can be brought about in all cases, a great step forward has been made. To do this the holder must have some assurance of permanency in his tenure and must feel the necessity for providing a permanent supply of material. The first proposition hardly need be discussed at length, but its bearing on the main question should not be overlooked or misunderstood. Permanence of tenure, of course, does not mean perpetual tenure or unchangeable conditions, and a serious error will be made if they are confounded. In order to supply the second condition, there can be no more compelling motive than the investment of a large capital which is only made revenue-producing by a supply of wood material, and which will be practically a dead loss if the supply should fail. This is exactly the position in which the Canadian pulp mill owner finds himself. He invests millions in obtaining the necessary plant for his business, and would be utterly lacking in common sense if he did not take precautions to see that a permanent and convenient supply of raw material was assured. The exporter or foreign importer of pulpwood has no such responsibility upon him, and it may be a question as to whether or not the Canadian forests are exploited at times to save the forests abroad. When the wood is manufactured into pulp, the difference in the contribution to the wealth of Canada is about the difference between \$3.50 a cord for pulpwood and \$40.00 per cord for the finished product. The objections to the adoption of a policy requiring manufacture in Canada, are interference with the farmer's market for such pulpwood as may be upon his land and the necessities of revenue. There seems to be no valid reason, however, for considering that a Canadian manufacturer would not be as willing to buy the settler's pulpwood as the exporter, and, unless the necessities of revenue are very pressing, indeed, it would certainly not be a statesmanlike policy to sacrifice the future for the present, while the great reduction in Quebec of the dues on pulpwood for export seems to be largely a sacrifice of both.

Another question is as to the reproduction of the crop. It may be doubted whether the regulations are always strictly adhered to, but that may be left out of consideration for the present. The Government has not taken steps for an adequate investigation of the rate of growth and conditions of reproduction, and recourse must be had to estimates which are largely guesswork, to calculations made by private persons which are on too small a scale to give results of sufficiently general application, or to investigations elsewhere which cannot with safety be adopted as an absolute criterion for Canada. The investigations made by foresters of the United States with the Adirondack spruce (*Abies rubra*) show an average growth of one inch in nine years in the original forest, and the same in seven years on cut-over lands. The average number per acre of spruce trees over ten inches in diameter, breast high, was 31.40—yielding 3,703 feet, board measure—out of a total of 73.44, made up in addition of birch, beech, hard maple, hemlock, balsam, soft maple, white pine, ash, cedar and cherry in descending ratio. The number of spruce trees six inches in diameter and over was 68; two to six inches, 75; two inches and over, 143; under two inches, 158. The conditions for white spruce (*Abies alba*) are probably somewhat similar in Quebec, as Mr. E. G. Joly de Lotbinière found an average growth of one inch in eight years in one hundred specimens examined by him. Of course, individual trees will show faster growth, but, on the other hand, some will show a slower growth. In New Brunswick the claim is made that spruce has grown from the bud to a merchantable log in thirty years, and a growth of half an inch in a year has

been known, but this certainly is not an average, and while Mr. Joly records one instance of a growth of one inch in four years, there is over against it a growth as slow as one inch in thirteen years. While there would seem to be no special reason, so far as the present diameter regulations are concerned, why a continued crop might not be secured, it does not necessarily follow that the best return is secured by cutting to the diameter fixed, and Mr. Joly shows that if the trees were allowed to grow to thirteen inches, the increase in diameter and height would mean an increase from 52 feet board measure, to 84 feet board measure; thus, the time required to add only two inches in diameter, would mean an increase of more than one-third in volume.

The diameter regulation is not the only consideration, though it has a place of importance and may be effective as far as it goes. Is it at all certain that in taking out the mature timber, proper care is taken that the young trees should not be destroyed? Even if such care is exercised, is there any assurance that the less valuable species which are left uncut will not have gained the ground to the exclusion, or, at least, the suppression of the spruce? Another result of the trimming out of a forest frequently is that the trees left are unable to stand unsheltered against the wind, and so have to be removed or left to destruction.

On this subject a quotation may be made from the remarks of Dr. Fernow:

"When a lumberman says that the reproduction is such that in twenty years he can go back, he means that in twenty years some of the trees which he did not cut, have grown up, but the young crop that starts without a diameter may not be there. When you are in the woods you can see that the new crop is beyond your control to a very large extent. You find that the very kind of crop that you do not want to produce is the one that seeds. And it is generally so. Nature seems to take a delight in reproducing weed trees rather than the good trees. Whenever you begin to apply a particular diameter, it is useless to put it on paper merely. It must be looked to in the woods, or else there will not be any obedience to your rule, and there will be mischief otherwise. As Mr. Cary has pointed out, there are conditions in your spruce wood that when you cut only to the twelve-inch diameter, you do more mischief than if you had cut down to a seven-inch diameter. My very first experience in the college tract was in that line. We, too, were struck by a gale, and the nice trees that we allowed to stand for the future generation and for reproducing themselves—that is, for throwing seed over the area—were blown down by those winds, and we had to go to the extra expense of going to the same ground again and taking away the less valuable material. There are many cases in which there would not be any satisfaction in the diameter limitation, which points out the necessity of having educated foresters direct the work of cutting the trees."

The last word has not, however, been said upon the question, and an expression of views or records of any observations bearing on this subject, will be welcomed from our readers. The Canadian forestry problem is distinct from that of any other country, and must be considered from its own standpoint. Information from those who have seen the conditions and know whereof they speak, is a necessity for any rational conclusion, and we therefore urge that this subject, so important to the future of the Province of Quebec and of Canada, be taken hold of and fully discussed.