

had in the preceding twenty. Different trees of the same species taken from the same tract would show a totally different variation.

After discussing all the possibilities of soil and elevation and climatic conditions, Mr. Howe gave it as his opinion that these could not explain variations so great and so complex. There remained but one other possible cause the variation of light area for the crown of the tree.

People interested in spruce reproduction maintained that the natural spruce forest could be cut over every ten or twenty years, the large trees taken out and the young ones allowed to grow, thus in the end arriving at a perpetual yield.

This system appeared very alluring at first, but the original clear boled trees rapidly disappeared with each cutting. The only trees to take their place were those which grew where clearances had been made sufficient to let the sunlight reach the ground and these trees were usually branched to the ground, producing very rough timber.

Nature's Plan.

Mr. Howe then described the natural growth of a spruce forest after a fire had cleared the ground. The trees came up by millions, ten or twelve seedlings to a square foot. The ground was completely shaded and all other forms of plant life killed. Then the survival-of-the-fittest struggle commenced and the weaker ones died by tens of thousands each year. In a period varying from thirty to sixty years the survivors reached three or four inches in diameter, and were then twelve to eighteen inches apart. The others had died and crumbled to dust. These saplings fifty feet high with no side branches, straight as rushes, with a small plume of foliage at the top, might be called the foundation of the tall timber forest. This was what was known as 'thicket growth' throughout the Maritime Provinces.

On examining this stand twenty-five or thirty years later it would be found that the trees now reduced in number to one for each four square feet had increased in size to five or six inches, or at an average rate of one inch in ten or twelve years.

The experiences of a number of investigators were here cited to show that often at this stage, where the forest was very even, the light proved insufficient to support the trees and millions of them died or they became so weakened that they became a prey to insects, fungi or wind. Up to two or three inches in diameter it might be deemed best to leave this small growth to natural thinning, but after reaching this stage if uniformity of size conditions existed suspended growth re-

sulted. Mr. Howe then called attention to some specimen sections of spruce. One section showed that the tree took eighty years to reach five inches, and then it suddenly put on heavy growth and in forty years expanded to sixteen inches. This was not an exceptional case, but such specimens were to be had in large numbers from cut over woods, showing that when the tree received increased sunlight it rapidly put on timber.

Mr. Howe argued that the full growth of foliage was reached at a very early age, and it could be shown that as large an amount of wood material was growing on an acre at an early stage as when larger sizes were reached. What then became of all these years of growth between, say, the three inch and twelve inch sizes? Mr. Howe had prepared a table showing what would occur if the growth was not too even. This table indicated a twenty-five per cent death rate of trees for every inch increase in diameter. This he said would give only sufficient increase to allow expansion and the number of dead trees would show what went to waste while the big trees were reaching maturity.

Was there not here an opportunity to assist nature in hastening the growth of the forest? It would be a most interesting experiment to try the process of thinning on some of these tracts of over three quarters of a century of suspended growth, working judiciously so as not to destroy the forest fringe or bulwark which protects the trees from being thrown over by the wind. With younger trees larger gains could be made and enormous waste prevented. The present plan of cutting the best trees would soon make large clear timber a thing of the past. It was not the 'survival of the fittest' but the survival of the unfit, the forest growing constantly worse from the removal of the best trees. He would be a bold projector to change present methods, but unless this were done from whence would good timber be obtained in a few years?

AN ECONOMIC WASTE.

A correspondent writing in the *Haileybury Haileyburian* claims that all along the shore of Lake Timiskaming and tributary streams, there are millions of dollars' worth of fine logs rotting because under present conditions and owing to their scattered character it will not pay to 'water' them, that is, to drag them to the water. They have escaped from drives and been left on the shore by the receding spring freshets. He claims that the Dominion Government should enact legislation to compel the gathering and the floating of these logs to the mills as a matter of forest conservation.