

by natural re-seeding, which is very much more uncertain than would be artificial seeding, for the reason that white and red pine trees seed only about every five years and if the fire which cleared the soil occurred before a seed year the ground would not be in proper condition to receive the seed and there would be no result therefrom. All the pine forests have been produced when fires ran over the ground on a seed year, or one year before, but from the above you can see this was a slow and uncertain way of reproducing a forest.

In addition to the above, I might suggest that all fire rangers be instructed, in seed years, to use mattocks or hoes and prepare patches of ground under the large trees that would be loaded with seed. Then you would have natural reforestation with the aid of artificial preparation of the ground. This would be the cheapest way of reproducing the forests but as many of the areas are now covered with poplar and jack pine trees that have attained a considerable growth, it would be quite a laborious job to clear any very great spaces around the big pine trees that have remained after the fires, and that could in this way be utilized for re-seeding, but small patches of ground could be found near all seed trees that could be prepared in this way and the result would be in every case a good crop of pine. Also, the fire rangers could be instructed, and for this purpose their numbers augmented. During the months of September and October they could be provided with seed and instructed to prepare the ground in patches and sow the seed. This would be a cheap way of getting numerous patches over large sections reforested every year. In addition to this, every fire ranger will have noted that in thousands of places a few small pines that have germinated are struggling to get their top out to the sun, but are being smothered by the more worthless forest growths that spring up more quickly, and grow much faster in the start. By carrying an axe the fire rangers could cut down a tree or a few bushes that are smothering a pine and give it a chance to get its crown out to the sun, after which it would be able to hold its own. Trees saved in this way would in time become seed trees and while the forest, in this way, would come back very slowly, it would certainly, at a minimum cost, materially help the bringing back of the pine forests.

White and Red Pine trees will not grow and flourish in a shade—they must have their tops out to the sun. The writer has had occasion, at various times, to study the condition of our natural forests, how they produced, etc., etc., and to give a case in point: A forest on Muskeg River was examined. The soil was white clay, with clay loam on surface; the land was

generally dry and rolling. On this section on twenty or thirty square miles there was a dense ninety-year old forest of Poplar, Balm, Birch, White Spruce, Jack Pine, Balsam, and in low places Black Spruce and Cedar. The height of this forest was about eighty feet, and scattered through it there were a few very large white pine trees, 4 or 5 to the acre. These towered 70 to 90 feet above the under forest, and were about 250 years old. Now the examination proved, **first**, that

the area was originally covered by a forest of white pine; **second**, that the forest was about 150 years old, when the fire that destroyed it occurred; **third**, that it was a fall fire (August or September); for the ground must have been exceedingly dry and the forest floor littered with inflammable material; **fourth**, a considerable number of the trees were not killed—their tops being so far from the heat that they were not scorched. **Fifth**, it not being a seed year for Pine, the ground

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