lish a new crop is in favor of natural regeneration, avoiding the cash outlay necessary to start the crop by artificial means, sowing or planting by hand, in the end result the latter often proves the cheaper.

To use Nature as a planter requires knowledge, judgment and skill not only, but lucky weather conditions of the ground for germination and growth of the seedlings. This combination of favorable circumstances does not occur frequently. On the other hand, by growing seedlings in nurseries where they can be given the best care, and setting out plants, success can be forced, and especially time can be saved.

Hence, early attention should be given to finding out the best materials and methods of planting.

Jack Pine Problem.

Large areas of sandy soils are covered with a dense growth of pure Jack pine, standing so dense that each tree has little chance for development, hence the individual development is extremely slow. By reducing the number per acre, i.e., by thinning, as it is technically called, the remaining stand can be given opportunity for better development.

The problem is to find out at what time of the life of the stand to thin and how many trees to the acre promise the most satisfactory result.

The most valuable use of the Jack pine is for railroad ties, and it would, therefore, be desirable to grow tie trees. For this purpose, there is no need of freedom from knots, hence branchiness is no objection, and the increase in increment due to fully developed crowns that can develop in open stand may be secured without injuring quality. That means an early and severe opening up is indicated, only taking care not to expose the soil too much at a time.

The Jack pine is a rapid grower when young, but not persistent, hence this tendency should be utilized by giving it a chance to develop its rapid rate early. This may, perhaps, be done by reducing the number in the stand early to say, 300 or 400 trees per acre or perhaps even less.

The narrow-minded manager will object that the operation would not pay because, perhaps, he could not dispose of the material coming from the thinnings profitably, but if it could be shown that instead of having to wait 80 to 90 years for a 5-tie tree to develop, a full crop of railroad ties, 1,500 to the acre, could be produced in 40 to 50 years, the profitableness of the operation might justify its inauguration even without the possibility of disposal of the thinnings. Experiments, then, for determining the most satisfactory density of these stands should be undertaken at once.

The possibility of shortening the time of production of sizeable materials by a rational thinning practice has even in Germany been fully realized only during the last 30 years, and now, not only are from 25 to 50 and more per cent. of the final harvest crop secured by thinnings, without reducing the amount of the harvest crop, but the rotation as far as it is designed to produce sizes can be reduced at last 20 years.

It is desirable to institute thinning experiments in other than the Jack pine stands.

The Muskeg Problem.

Such experiments suggest themselves at once also for the Black spruce stands on the peaty muskeg areas which occupy such large extent in the reserves, and usually grow in overcrowded condition, retarding the development to size of the single individual. Whether by thinning, the rate of growth can be changed could be easily found out. The probability, however, is that lowering the water-table would show better results.

Altogether, the problem of the