

In its efforts to perpetuate the forest resources of the province on a sustained-yield basis, and to rehabilitate the areas that cannot reconstitute themselves, the Division has established 24 nurseries, the first of them at Berthierville in 1908. Some of them are large permanent establishments covering all phases of production and others are secondary or movable nurseries working with partly grown seedlings. The present stock of all nurseries is in the neighbourhood of 70,000,000 plants. Plants for the re-stocking of private properties are supplied free on request.

**Ontario.**—The boundaries of Ontario enclose an area of 412,582 sq. miles—83 p.c. land and 17 p.c. water. Forest lands comprise 75 p.c. of total land, of which 105,262,000 acres are classified as productive. The Crown owns 90 p.c. of the productive forest land.

Although 84 tree species (exclusive of the hawthorns) occur within Ontario, four species (black spruce 29 p.c., poplar 19 p.c., jack pine 13 p.c. and white birch 11 p.c.) account for almost three quarters of the total volume of standing trees. The total gross volume has been estimated at 151,000,000 M cu. ft —61 p.c. softwoods and 39 p.c. hardwoods.

Crown forests are administered and managed through the Department of Lands and Forests, which has 10 branches at Head Office and 22 forest districts (grouped within seven regions). The Branches may be classified as service (Accounts, Law, Operations, Personnel, and Research) and operating (Fish and Wildlife, Forest Protection, Lands and Surveys, Parks, and Timber). The list of operating Branches indicates that a multi-use concept of forests is practised but only the programs that foster the growth and use of timber as a crop are discussed here.

**Management.**—The original function of the Timber Branch was to arrange for the orderly sale of timber and this important function is still carried out along traditional lines—operators are granted a licence to cut specified timber for which they pay stumpage at contractual rates on the measurement (scale) of products removed. However, the details and techniques of utilization are undergoing constant improvement. Although Ontario's forest-based industries have long been a Canadian leader in terms of diversity of products and value of shipments, there is still a surplus of allowable timber cutting over actual cutting in the province. To ensure the continuing supply of timber of the type required by industry, an effective management policy has been conceived. Continuing forest inventories, using aerial photographic methods in which the province pioneered, provide an up-to-date record of the forest wealth, showing the species and other characteristics of stands and their geographical distribution. Inventory data are then applied to management planning; the province has been divided into 216 management units, each homogeneous with respect to forest and use patterns. Long-term plans set out regulations on the volume and location of cuttings and include programs for regeneration and tending that will sustain yields. As of 1965, 162 plans (77 Crown, 66 company, and 19 agreement forest) were completed for approximately 170,000 sq. miles.

The Timber Branch is also responsible for the maintenance and improvement of forest production on Crown lands. It operates 10 forest tree nurseries (with their supporting tree seed collection, treatment, and storage plant), currently geared for an annual output of 60,000,000 units. In addition to plantings by Departmental staff, regeneration agreements have been signed with all major licensees under the terms of which they assume responsibility for the conduct of projects, receiving payment at an agreed rate for work completed. Other annual silvicultural measures include the direct seeding of over 5,000 acres, the scarification of 23,000 additional acres for natural seeding, and stand improvement treatment (cleaning, thinning, pruning, etc.) on 43,000 acres.

Over the past few years, the Research Branch has been developing a "tubeling" approach to planting, as a conventional planting substitute possessing greater flexibility both in nursery production and in length of planting period per year, so that unforeseen conditions, such as large burns, can be stocked promptly. Briefly, the procedure is to place 200 open-end, split plastic tubes (about  $\frac{1}{2}$ "  $\times$  3") in a tray, add soil, seed and covering material, and germinate in portable plastic-covered greenhouses. The tubes and