

Forest fire protection is a vital problem and is therefore a major concern of federal authorities. In forest fire research the Federal Forestry Branch is working towards full co-operation with the provincial forest services in achieving the best methods of forest fire protection. The leading contributions of the Branch have been in the field of fire danger measurement and in the development of equipment and techniques for fire fighting. Some of the more important studies being undertaken at present include the development of fuel-type classification methods and mapping techniques, the development of a method for rating fire season severity and fire protection organization efficiency, and the testing of fire-suppression equipment, such as back-pack tanks and hose.

Research in forest inventory methods is of increasing importance because of the greatly expanded inventory programs being conducted in most provinces. Data from air photographs are correlated with field work to develop new techniques of timber estimating, which is being facilitated by the use of stand volume tables. Various methods of field sampling are being investigated and compared. Research is continuing in methods for measuring tree images and tree shadows to determine heights, crown widths, canopy density and other data from photographs taken in different seasons of the year under various conditions. The use of large-scale photography of sample areas is also being investigated and studies are being made in the identification of species and sub-types. Construction of suitable photogrammetric and other scientific apparatus includes those required by the forestry tricamera method of air photography which has been developed to provide maximum forestry information at minimum cost, and the shadow height calculator, which facilitates the determination of tree heights from shadows in air photographs.

Research in forest economics is concentrated on problems associated with the production of wood in the forest, land use, land tenure, taxation, forest legislation and administrative techniques, forest, management, forest labour and the valuation of forest lands. Economics research also involves continued study of the broad developments in forest industries. Further information on research is given in a special article on The Forest Products Laboratories of Canada in the 1955 Year Book, pp. 455-461.

Subsection 2.—Provincial Forestry Programs

All forested land in provincial territory, with the exception of the minor portions in National Parks, forest experiment stations, military areas and Indian reserves (*see* Table 2, p. 19), is administered by the respective provincial governments. The forestry program of each province is outlined below.

Newfoundland.—Of the estimated 30,505 sq. miles of productive forests in Newfoundland, 12,758 sq. miles lie on the Island and the remainder in Labrador. Most of Labrador's forests are leased but as yet virtually untouched although there is enough timber for the establishment of several large paper mills. Because of this lack of development the area is supervised by one Forest Inspector and a Forest Warden.

On the Island 63 p.c. of the forested area, mostly in the interior, is owned by, or leased to, two large paper companies. Of the remainder, 32 p.c. is unoccupied Crown land and 5 p.c. private holdings. A belt of coastal timber about three miles wide is retained to supply domestic firewood and construction material and each household has the right to cut 2,000 cu. feet of such wood each year. In most districts this form of cutting is done without restrictions but a policy is now being introduced whereby cutting in certain management areas will be controlled by forest officers.

Commercial timber cutting on unoccupied Crown lands has been by permit since 1952; for amounts up to 120 cords per person permits are issued by the field staff but for larger quantities permits must be approved by the Lieutenant-Governor in Council. The number of large permits varies from 10 to 25 each year and usually cover stands damaged by gales, fire or insects. Unoccupied Crown land is divided into 21 Forest Inspector Districts of varying size, averaging 281 sq. miles. The Island is also divided into three Forest Regions each with a Supervisor who is in charge of Inspectors and is responsible to the Minister of Mines and Resources and the Forestry headquarters staff.