

and other causes is compiled, and information respecting the annual production of various forest products is assembled.

Inventory investigations are facilitated by the use of air photography. Large sections of Canada have been photographed from the air by the Royal Canadian Air Force and by private companies. The interpretation of these photographs has been developed by a special technique to the stage where it is possible not only to plot the various timber stands but to estimate with considerable accuracy the volume of standing timber.

*Silvicultural Research.*—Research in the field of silviculture is centred in the five forest experiment stations located in New Brunswick, Quebec, Ontario, Manitoba, and Alberta, but supplementary studies are conducted in other areas in co-operation with the provinces and industry. The main objectives are: to determine and demonstrate the best methods of treating existing young timber stands that have come in naturally after cutting or fire, and to devise systems for the cutting of mature stands so as to ensure natural regeneration of the more desirable species. Intensive studies are made on small sample-plots and then the results are applied to larger areas more representative of commercial operations. The experiments include improvement cuttings in which undesirable species and defective trees are removed, thinnings to promote growth, and pruning to improve the quality of the wood. Records of costs and of the revenue from the sale of timber removed are kept in order to determine the financial practicability of applying these methods to commercial operations.

*Forest Fire Protection Research.*—Research in forest fire protection is conducted at the forest experiment stations and in co-operation with the provinces and the National Research Council. Annual statistics of forest fire losses are compiled from returns submitted by the provincial authorities, and the efficiency of new equipment and methods used for combating forest fires are investigated.

The outstanding accomplishment in this field has been the development of a system for the daily measurement and forecasting of forest fire hazard. This system, developed from studies begun in 1929, is now used throughout Quebec and New Brunswick. In each region intensive research into the factors influencing fire hazard must be undertaken. Field investigations are now being conducted in the western provinces with a view to applying this system in those regions.

*Forest Products Research.*—This branch of research is carried on at three laboratories. The main Forest Products Laboratories are located at Ottawa. All phases of wood utilization are dealt with except those relating particularly to the manufacture of pulp, paper, and related products. The latter are conducted at the Pulp and Paper Laboratory at Montreal.

The Pulp and Paper Association, in addition to providing accommodation for research, makes a yearly grant to the Laboratories to assist in financing the work, and, through a Joint Administrative Committee consisting of representatives of the Government and the Association, takes an active part in formulating and forwarding the work of the Division. Close co-operation is also maintained with McGill University.

A third laboratory is maintained at Vancouver to deal with special problems in connection with the forest products of British Columbia.

Research projects in connection with timber mechanics, wood preservation, lumber seasoning, wood chemistry, timber pathology, timber physics, and wood