

patrol for the detection of fires, a large ground staff with its equipment stored at strategic points will always be necessary for the fighting of larger fires. A ground staff is also necessary for the maintenance in the forest of fire lanes, fireguards, and systems of communication and transportation.

The most important improvement in forest fire-fighting equipment has been the portable gasoline pump. These pumps, each of which weighs from 45 to a little over 100 pounds, can be carried to a fire by canoe, motor-boat, automobile, aircraft, pack-saddle, or back-pack. They can deliver efficient water pressure as far as seven thousand feet from a water supply and, when used in relays, to a much greater distance. Small hand-pumps supplied by 5-gallon portable containers are also used effectively in many cases.

In addition to these improved measures, the enactment of legislation has tended to reduce the fire menace. The establishment of close seasons for brush-burning, and seasons during which permits are required for setting out fires and for travel in the forest during dangerous dry periods, have been of enormous value as preventive measures.

Since its beginning in 1900, the Canadian Forestry Association has played an important part in securing popular co-operation in reducing the fire hazard. By means of its magazine, which has a circulation of over 16,000, by railway lecture cars and motor trucks provided with motion-picture equipment, and by co-operation with radio broadcasting stations and the press, the Association reaches a large proportion of the population of the Dominion. Special efforts are made through the schools, by specially appointed junior forest wardens and other means, to educate the younger generation as to the value of the forests, the devastation caused by fire, and the means of preventing such destruction.

Prepared lectures illustrated by slides and films are distributed to volunteer lecturers and other educational work is carried on in schools and at public meetings. The various governmental forest authorities also carry on forest conservation publicity work independently and in co-operation with the Canadian Forestry Association.

Another important advance in forest protection is the development by the Dominion Forest Service of methods for the daily measurement of the actual degree of forest-fire hazard which is expressed in the form of an index computed from the weather factors. In the forest types and regions in which the necessary research has been completed the forest authorities are able, not only to gauge the trend of increasing hazard at any given time but, by the aid of weather forecasts, to anticipate the trend one or two days in advance and so regulate their activities to meet hazardous conditions as they develop.

Subsection 3.—Scientific Forestry.

Up to the present, the practice of forestry in Canada has consisted chiefly in the administration and protection of existing forest areas. About 35 square miles is now being planted out annually, largely in connection with farmers' woodlots, shelter-belts, and reclamation work, while several commercial reforestation projects have been carried on by paper companies and by Provincial Governments on denuded Crown lands. The great forestry problem, however, is the management of Crown forests, first under provisional and later under more intensive working plans, so as to ensure a sustained yield. To this end, forest research activities are now assuming great importance. A special article on scientific and industrial research including information on forestry research appears in Chapter XXV.