

various forest types can be mapped more accurately and more economically by this means than by ground surveys.

As a general rule aircraft are used in the more remote districts, while lookout towers connected by telephone lines and equipped with wireless are established in the more settled and more travelled forest areas. While these agencies have to a large extent supplanted the old canoe, horseback and foot patrol for detection of fires, a large ground staff with its equipment stored at strategic points will always be necessary for the fighting of larger fires and the maintenance of systems of communication and transportation and of fire lanes and fire guards in the forest.

The most important improvement in forest fire fighting equipment has been the portable gasoline fire pump. These pumps, which weigh a little over a hundred pounds, can be carried to a fire by car, canoe, motor boat, automobile, aircraft, pack saddle or back pack. They can deliver efficient water pressure three or four thousand feet from a water supply and, when used in relays, at a much greater distance. Smaller hand pumps are also used effectively in many cases.

In addition to these improved measures, legislation has also tended to reduce the fire menace. The establishment of closed 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.

None of these measures would be effective without the support of the general public, and in 1900 the Canadian Forestry Association was founded, with its chief object the securing of popular co-operation in reducing the forest fire hazard. This Association now has a membership of 28,000 and an income of \$137,000, mostly secured by voluntary private subscription. Fourteen of the Association's paid lecturers tour the country, using special railway lecture cars and motor trucks equipped with self contained motion picture equipment, showing special films taken by the Association. Two high class sporting and outdoor magazines, one in French and one in English, are published monthly by the Association as educational media. 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 different Dominion and provincial forest authorities also carry on extensive publicity work independently and in co-operation with the Canadian Forestry Association.

Another interesting development in forest protection has been the establishing of special meteorological stations for the study of the effects of weather conditions on the fire hazard, and the broadcasting of special forecasts of hazardous fire weather.

Subsection 3.—Scientific Forestry.

The practice of forestry in Canada has consisted chiefly in the administration and protection of existing forest areas. What little reforestation or afforestation has been done has been largely in connection with farmers' woodlots, shelter belts and reclamation or soil fixation, although some commercial reforestation has been undertaken by pulp companies. During recent years investigatory or forest research work has assumed considerable importance, especially in the Dominion Forest Service. The object of this work is to secure an inventory of Canada's timber resources, to ascertain the best methods of securing continuous production of desirable species by natural means and the economic possibilities of establishing forest by artificial means. In addition to silvicultural research, investigations are being carried on by the Dominion Forest Products Laboratories for the purpose of determining the