

fires from 1,558 in 1958 to 1,027 in 1959. In these two years, fires caused by lightning increased from 219 to 242 but, despite a heavier traffic of sportsmen and vacationists in forested areas, man-caused fires decreased from 1,339 to 785.

The Department's air fleet includes six *Otters* and 39 *Beavers*, designed and built to meet the requirements for aircraft capable of carrying substantial loads and of alighting on and taking off from small areas. From the air it is possible to spot fires in their early stages and to deliver men and equipment close to the fire line before the fire has had time to spread. Such rapid containment action has been mainly responsible for reducing the fire loss from an average of 75 acres per fire in the 1949-58 decade to an average of five acres per fire in 1959.

After two years of service, the Department's water-dropping equipment has proved its worth and is being duplicated by fire fighting agencies outside the province. The equipment consists of tanks (mounted on aircraft floats) which scoop up water as the aircraft taxis over a lake and then disperse it over the fire in effective wetting action.

To maintain forest yield and to eliminate wasteful cutting practices, cutting plans for Crown lands must be approved by the Department. Mills are limited to a size proportionate to the amount of raw material that will be steadily available. Integrated operations are required to ensure that no useful part of a felled tree is wasted. A telephone pole, a railway tie, pulpwood and other products may all come from the same tree.

At the end of March 1960, Crown forest areas were divided into 125 management units which covered a total area of 210,919 sq. miles. Of these, 48 were under licence to private companies which are held responsible for management plans over an area of 89,754 sq. miles. The 77 Crown units cover 120,165 sq. miles. By the end of the year, 33 of the licensed companies had submitted plans covering 66,043 sq. miles, and 65 Crown units had prepared plans covering 111,669 sq. miles: a total of 98 management plans covering 177,712 sq. miles. Within the Crown management units, 58 licensees (each covering more than 50 sq. miles) were responsible for management plans over 12,111 sq. miles. By the end of the year, 47 licensees had submitted plans covering 9,021 sq. miles.

During the year ended Mar. 31, 1960, 33,414,110 forest trees were supplied by the Department's nurseries, bringing the cumulative total to well over the 500,000,000-mark. During the year, 16,080,698 trees were planted on Crown lands; 12,986,865 were supplied to owners of private lands; and 4,109,640 were planted in forests belonging to municipalities or conservation authorities and managed by the Minister of the Department. These managed forests now have a total area of 135,964 acres.

As new nurseries come into production, the annual rate of reforestation is expected to increase to 60,000,000 trees. In the more distant future, the quality of trees planted is expected to improve considerably as seed orchards make better seed available. In addition, natural forest growth is being encouraged by improvement of the forest seed bed by scarification, by herbicides sprayed from aircraft to free valuable species from the competition of worthless vegetation and, most significantly, by cutting methods to increase the natural seed supply and promote the survival of seedlings. After several years of experimentation, important new hybrid species are being developed. Inoculations of white pine against blister rust have been successful. Of several pieces of equipment developed by the Mechanical Research Section, special interest was shown in a dusting machine which can be operated in thick bush terrain. Potentially important work is being done in many areas of forestry research conducted at Maple, Port Arthur, Cochrane, Tweed and Dorset.

Manitoba.—The forests of Manitoba are administered by the Forest Service, a Branch of the Department of Mines and Natural Resources. The Service is headed by a Provincial Forester and the province is divided into four Forest Districts—Northern, Southern, Eastern, and Western—each with a District Forester in charge. The Whiteshell