

WHAKAREWAREWA PLANTATION.

The climatic conditions for the year were extremely variable, and for the most part unseasonable; a late spring followed a fairly severe winter, and tree-growth generally was at a standstill, excepting on the more favoured situations, until about the middle of January. An improvement then became apparent; frequent heavy rains, accompanied by a high temperature, brought on a new growth at a remarkable rate, particularly on the lower bracken country, where the growth now equals that of any previous year. Trees growing on the higher exposed country did not benefit to the same extent, as the growth, although healthy enough, is somewhat below the average. Very little new growth was made on the Waipa flats, all the pine compartments being much below the average, while sections of larch made no perceptible growth, and a large number of struggling trees round the cold swamp land were killed outright. During the spring severe frosts cut out the tops on some of the smaller Douglas fir and Sitka spruce. Fortunately, the affected areas are small, as a number of the trees have little chance of recovery.

Fires on adjoining properties were not of frequent occurrence, this being due principally to the moist weather conditions experienced during the summer months. Unfortunately, two small fires occurred while the burning-off of fire-breaks was in progress. The first was caused through a sudden gust of wind carrying the fire into a block of five-year-old Douglas fir, eighty-eight trees being destroyed before the fire could be got under control. The second fire resulted in an area of $1\frac{3}{4}$ acres of four-year-old *Pinus strobus* being burnt. In this instance the ground had become very dry, and, although every precaution was taken to ensure a safe burn, apparently some live sparks were not detected, and these, fanned by a strong breeze, burnt under the ground a distance of 5 or 6 yards, until the standing growth was reached some twenty-four hours later.

Insect and other Pests.—The small caterpillar which made its appearance in February of last year on isolated specimens throughout the pine compartments, and which has been identified as the larvæ of *Ctenopscus obliquana*, did very little damage. The affected trees quickly recovered, and could not be identified the following spring. The caterpillar has again made an appearance, at least three weeks later than last year, and apparently less numerically, as the affected trees are not so badly damaged.

Judging by the amount of damage done, red deer have apparently increased during the year, especially in the Moerangi section. Large numbers of chestnut have had the terminal buds nibbled off, very few trees escaping damage on the higher country. Some slight damage was also done on the larch and pine compartments at Kakapiko. The deer have shown no marked preference for any particular tree species; the amount of protection afforded by the side branches seems to be the deciding factor, and for this reason larch has suffered less than the pines. Several attempts have been made to thin out the herds, and as a result nine deer were shot during the year.

Tree-growth.—Notwithstanding the short growing season the plantation as a whole presents a healthy appearance, and some excellent growth was made on situations well above the cold low-lying tussock country. On the Moerangi foothills Monterey pine have made their usual vigorous effort, and vertical growth of from 8 ft. to 10 ft. is not uncommon. On the more exposed faces in the higher altitudes the trees have made a much smaller but by no means stunted growth. Later plantings of Douglas fir have also made good growth; those round about Lake Rotokakahi have now outgrown the bracken, and are remarkable for their strong, even growth, the average height being about 7 ft. 6 in. in the five-year-old trees. To the south of the lake increased height-growth up to 3 ft. 6 in. has been measured in the four-year-old compartment. Douglas fir growing in mixture with larch has resulted in very uneven growth wherever planted; a few splendid trees are in evidence, but these are in the minority. *Eucalyptus acervula*, twelve years old, growing on Block 15, are a particularly fine lot, and are the most promising of the gum compartments.

Establishing.—The 16,000 *Pinus radiata* and 700 *Cupressus macrocarpa* received from the Rotorua Nursery were used in replacing failures in last season's planting. The take, while not as good as usual, was sufficient for the requirements of the compartments.

Maintenance.—A considerable amount of the expenditure under this heading was for the upkeep of fire-breaks, clearing being necessary over large areas of the internal breaks where the heavy bracken growth alongside the trees had a tendency to smother out the grass. On the boundary fire-breaks ploughing was done wherever possible, and further protection was got by extensive burnings alongside the public roads. To improve the fire-break system and also provide better means of communication the swamps along the Waitapu Road boundary are being drained. A considerable amount of clearing had to be done round the recently planted trees, but as these are now rapidly outgrowing the bracken little further clearing will be necessary.

The average daily number of men employed during the year was 22·78.

Summary showing the Area of Whakarewarewa Plantation (7,966 Acres in Trees).

	How occupied.	Acres.
Pines	...	3,137·49
Larch	...	2,557·80
Eucalypti	...	1,468·70
Spruce and Douglas fir	...	643·31
Miscellaneous	...	159·04
Roads, tracks, and fire-breaks...	...	514·43
Land unsuitable for planting, including swamps and creeks, also residence reserves, paddocks, and water-main reserve...	...	1,490·23
Unplanted land	...	152·80
Total	...	10,123·80