

EXPERIMENTS WITH EUCALYPTI.

The various species of *Eucalypti* present so many forms, which are due largely to the influence of climatic conditions—as well as to hybridization—that extensive experiments will yet require to be made before the possibilities of our own climate for the cultivation of this genus are fully realized. And with the object of extending our knowledge of this important subject a considerable number of species were grown, which will be found enumerated on the schedule attached to the report on Rotorua Nursery. It will be noticed that some of the species mentioned were procured both from New Zealand trees and from Australian-grown trees. The object of this was to ascertain if there was any actual difference as regards hardiness between the seedlings raised. Up to the present our experience goes to show that most of the species indigenous to Tasmania will thrive moderately well in the Rotorua district, and that it is preferable to obtain seeds of these from New Zealand trees, or, if this is impossible, direct from Tasmania. A few of the species found in Tasmania are also found in Victoria and South Australia, but the continental-saved seed is not likely to give as good results generally in New Zealand as is the Tasmanian seed. Certain of the continental species may yet prove to be very hardy, provided that the forms found in the inland mountainous districts are selected. A form of *Eucalyptus eugenoides*, one of the stringy-barks of New South Wales and Victoria, has proved hardy at Rotorua and on Mr. Reynold's farm at Cambridge. It is of slow growth, but produces a valuable and durable timber.

E. Muelleriana—yellow stringy-bark—has also proved fairly hardy at Rotorua; but, like the *E. eugenoides*, it is of slow growth. In the Whangarei district several valuable species have been grown successfully, including *E. resinifera* (mahogany), *E. capitellata* (stringy-bark), *E. regnans* (mountain-ash), and *E. Gunii* (cider-gum). The plantations at Puhipuhi are composed chiefly of *Euc. resinifera* and *Euc. Gunii*, and both species make very vigorous growth in this district. Both transplant well, and on this account are comparatively cheap trees to handle. We find that most of the stringy-barks and the mountain-ash do not transplant easily, and as a consequence the death-rate is usually very high.

As only a small proportion of the seedlings grown experimentally will be required for our own use, it has been decided to distribute collections of species to tree-growing enthusiasts throughout the Dominion. In this way a much wider range of climatic conditions will be dealt with, and the value of the experiments greatly increased.

PROTECTING THE PLANTATIONS FROM FIRE.

The scheme as outlined in last year's report has been partly given effect to, and it is intended to perfect the system before next summer. Three huts, each 16 ft. by 12 ft., were erected on Whakarewarewa Plantation, and two on Waiotapu Plantation. One of the huts at each plantation is occupied by a Ranger, whose sole duty during the dry weather is to patrol the boundaries and keep a watch for fires. The Rangers' huts are connected by telephone with the officer in charge. The remainder of the huts are occupied by plantation labourers, whose assistance in case of fire will thus be quickly obtained. Although very dry weather was experienced during the summer months, the only outbreak of fire which needed to be suppressed was at Waiotapu, and the damage caused by this was very slight. This fire started on Crown land adjoining the plantation enclosure, and was caused by the galley-chimney at a roadman's camp becoming ignited and spreading the fire into the scrub. It was noticed by the Ranger almost immediately it started, who promptly procured assistance, and had the outbreak suppressed before it had time to extend and become unmanageable. The damage to the plantation, which consists of about an acre of six-year-old Austrian pines being scorched, was caused by the hot smoke being carried over the road and in amongst the trees, those nearest the roadside suffering most.

INSECT PESTS.

Practically no damage has been wrought in the nursery or plantations by insects or plant-diseases during the year. The measures taken to protect the larch seedlings from the attacks of the brown beetle (*Odontria puncticollis*) have been most successful, both the one-year and two-year old trees being almost entirely free from any injury by this pest.

PROPOSALS FOR 1914.

Rotorua Nursery.—Of the 8,500,000 trees in the nursery, about 4,500,000 will be sent to the plantations during the coming planting season. The remainder, which are mostly too small for permanent planting, will be kept for another year in the nursery. Provision will also be made for growing the Douglas fir to a larger size than those usually sent out, and about 700,000 larch will be treated in a like manner. These large trees are required for planting on country where the heavy growth of bracken would make the planting of small trees very unsafe. The tree-seeds on order for sowing next spring are sufficient to produce five million seedlings (approximately), and compose the following species: *Pinus strobus*, *P. ponderosa*, *P. radiata*, *P. Laricio*, *Pseudo-tsuga Douglasii*, and *Castanea sativa*; also the following for experimental purposes, small lots of each being ordered: *Pinus excelsa*, *P. Laricio* var. *calabrica*, *P. Laricio* var. *cebnensis*, *P. Laricio* var. *taurica*, *P. sylvestris* (Finnish seed), and *P. sylvestris* (seed from West Norway). It is also intended to make further experiments with the *Eucalypti*, chiefly *Euc. regnans* and *Euc. Macarthuri*.

Whakarewarewa Plantation.—Trees to the number of 1,500,000 will be planted here during the next planting season, and preparations for their reception are now well forward. Of the above total 1,200,000 will be *Pinus radiata*, which it is intended to plant in rows 6 ft. apart, with the trees 3 ft. apart in the rows. This course is being adopted owing to the very heavy growth of bracken and tutu which covered the land prior to the clearing, and which will come away again and compete seriously with the young trees until they are sufficiently grown to hold their own. The balance of the planting