

DISTRIBUTION OF TREES FOR EXPERIMENTAL PURPOSES.

The proposal outlined in the last annual report to distribute collections of *Eucalypti* plants amongst farmers for the purpose of extending our knowledge of this important class of tree was given effect to, and forty-three collections, each containing on the average twenty-five species, were sent out. Very few reports have been furnished by the persons to whom the collections were given, and in this respect the results are very disappointing. Some careful and painstaking reports have, however, been received, which give evidence of the deep interest which some of the farming community display in the question of tree-planting. Very many of the failures reported were undoubtedly due to the abnormally dry weather experienced, and it was most unfortunate that the initial effort to get the farmers to co-operate with the Department should have thus been handicapped. As far as the information goes, it would appear that *E. Macarthuri* and *E. viminalis* have generally been the most successful species tried, and that practically no newly tried species has succeeded to any extent. The stringy-barks have mostly been failures; but this can in some measure be accounted for by the difficulty usually experienced in transplanting these owing to the nature of the rooting-system, which consists of a strong taproot almost devoid of any fibrous rootlets. Eucalypts are, with a few exceptions, difficult trees to transplant; but if strong plants are used they very often come away surprisingly well, even if the tops wilt and die off immediately after transplanting. Generally, little growth is made during the summer after transplanting takes place, but immediately the autumn rains commence vigorous growth usually results. Considering this aspect of the question, it is thus possible that a great deal more information may be obtained from those who received the collections, and who may have hastily concluded that many of the species tried were failures.

At Rotorua very encouraging results were obtained with a number of species hitherto untried in this district. The red stringy-bark (*E. capitellata*), Victorian spotted gum (*E. goniacalyx*), white-ironbark (*E. leucoxyton*), tuart (*E. gomphocephala*), Sydney blue-gum (*E. saligna*), and bastard box (*E. Cambagei*) have all made very good growth, but definite information as to their hardiness cannot be given until the plants have been through a winter.

THINNING OF PLANTATIONS.

The advanced state of the trees on some of the areas planted has necessitated this new phase of the afforestation-work being dealt with, and, as may be seen by referring to the portions of this report dealing with the Whakarewarewa and Waiotapu Plantations, a considerable area of larch plantations has already been thinned. As far as was possible and desirable, the methods employed have been in keeping with those adopted in Europe, but the peculiar conditions obtaining in New Zealand make it impossible to adhere strictly to European practice. These conditions may be briefly summed up under two principal headings, namely: (1) The difficulty of getting a sale for thinnings; (2) the cost of thinning. In Britain the thinnings from a plantation find a ready market, and it is generally calculated that the sales of these will cover the cost of the thinning-work done. The first thinning, therefore, entails practically no outlay whatever. In New Zealand the position is very different, because, in addition to the fact that the work costs much more than in Britain, there is at present small prospect of finding a sale for the produce. From a twelve-year-old larch plantation the thinnings taken out average about 2,000 trees to the acre. These trees, for the most part, are straight thin poles, 400 of which average in diameter about 5 in. and in length about 16 ft., while the balance of the thinnings average about 2 in. in diameter and in length about 10 ft. The larger-sized poles could be made use of for mining or fencing timbers, the demand for which is at present, and in most districts will be for some years to come, met by the product from the indigenous forests.

At the present time there is no demand for the exotic timbers, which, being quickly grown, are in most cases not very durable, and it would appear as if the State must be at some loss with the thinnings from the plantations until such time as the indigenous timbers are exhausted.

Larch planted 4 ft. apart will, at from the tenth to the twelfth year, have reached a condition when thinning becomes necessary; the side branches on about 14 ft. of the trunk are dead, and can easily be knocked off with a walking-stick, and the heads of the trees are too crowded. During the past three years experimental thinnings on a small scale have been made on larch plantations from nine to thirteen years of age, and it was found that from the tenth year onward the diameter-growth rapidly became less each year, thus indicating that the trees required a larger growing-space. The cost of thinning in the first area of twelve-year-old larch was £10 an acre, which includes £3 for hauling out the poles. On this area the bracken had been very strong, and the dead fronds were intertwined with the branches of the larch, making it impossible to mark the trees without first underscrubbing. The nature of the undergrowth largely influences the cost of the work, and it has been found that underscrubbing has varied from 11s. to £2 15s. per acre. The cost has been gradually reduced as the workmen became more used to the work, and, as the poles are not now being hauled out unless required, trees of this age can be thinned at from £3 15s. to £5 10s. an acre. Owing to the fact that no market for the thinnings was available it was decided that such an expenditure would reduce the chances of the plantations being a success financially, and accordingly consideration was given to the possibility of growing timber without incurring so much expense, or, at any rate, to reducing the expenditure to a minimum consistent with the production of a marketable article. The distance apart at which the young trees were planted was the first point considered. In the past it has been deemed advisable to plant at such distances as would tend to produce timber free from knots and other defects; but as the cost of thinning, owing to the causes previously mentioned, is likely to be very high, it would seem to be better policy to aim at the production of a lower-grade timber for at least some years to come. In railway-sleepers, fence-posts, scantling and packing-case timbers knots do not detract a great deal from their utility, and consequently a large proportion of the planting could be