

WHAKAREWAREWA PLANTATION.

(Assistant Forester, D. J. Buchanan.)

During the past year the planted area was increased by approximately 796 acres, making the total area now under trees 7,605 acres. In addition to this, 85 acres on which the *Eucalypti* were not making satisfactory progress were replanted, making the total area planted during the season 881 acres.

Trees to the number of 1,418,800 were dealt with: 1,183,850 being planted on new area, 234,000 to replace failures in the former year's work, and 950 were used for experimental underplanting. For the planting of new area the species used was *Pinus radiata* and Douglas fir, and the replanting of *Eucalyptus* areas was carried out with Spanish chestnut and *Pinus taeda*. Favoured by moist atmospheric and soil conditions during the spring, the young plants quickly became established, and suffered no serious set-back from the dry weather which prevailed during the summer months. The results obtained with all species are excellent, and 5 per cent. will easily cover the number of failures. All the area planted was very rough country, much of it consisting of high steep faces with outcrops of rock, and the whole covered with a dense growth of bracken and small native timber. The winter months being very wet made the work of clearing much more difficult and expensive by entailing more labour in heaping the scrub for burning off than would be necessary in dry weather. Land such as this on which the native growth is very heavy requires to be well cleared before planting, otherwise the difficulty of keeping down the growth of bracken, &c., amongst the young trees is considerably increased.

The average cost of clearing per acre was £1 17s. 8d. Pitting cost on an average 11s. 10d. per thousand, ranging from 8s. 9d. for *Pinus radiata* to 23s. 7d. for Spanish chestnut; the pits for the latter—which were large plants—being open, and 2 ft. in depth, and were prepared on land on which there was a heavy growth of bracken. With the planting of the different species the cost also varied considerably, the whole working out at 11s. 8d. per thousand. The roughest part of the area was planted with Douglas fir, and as they were mostly large-sized plants the distributing of the trees for planting added appreciably to the cost of the work. After being sledged for a considerable distance a great proportion of the plants had to be packed on horseback, and in a number of places had to be carried long distances by the men before they reached the ground on which they were to be planted. For the carting of trees through the blocks, a total length of 244 chains of narrow road was formed, 129 chains being done by free labour at a cost of 26s. 2d. per chain, and the remainder by prison labour. Subsequently about two miles of road was widened to 14 ft. by prison labour, and it is intended later on to improve the remainder of it, as this will be one of the main roads through the plantation.

Contrary to expectations, a considerable quantity of larch thinnings has been disposed of during the past year. A pumice-drying company which commenced operations within a mile of the thinned block have taken out some 400 cords of firewood, and 2,000 16 ft. poles were disposed of for mining-purposes. In addition to this, smaller quantities of firewood and poles have been sold to local residents, and, as many inquiries are now being received regarding fuel and poles for farm purposes, it is expected that a much greater quantity of thinnings will be utilized during the coming year.

The sum of £840 was spent in general maintenance-work, chiefly clearing growth amongst trees, planting blanks, thinning larch, maintenance of fire-breaks, and fire-ranging duties. Owing to the small number of men employed during the past summer it has been impossible to successfully cope with the growth of bracken amongst the young trees, and an area of fully 400 acres on which practically the whole of the growth is very heavy has still to be dealt with. The maintenance of fire-breaks, which has cost a sum of £270, has been carried out by cutting, burning, and ploughing. About two-thirds of the total area under fire-breaks is ploughable, and the remainder has to be cleared by hand at least once a year. Were the ploughable internal fire-breaks sown down in grass, a considerable reduction in labour and expense in maintenance would result, and the grazing of sheep might prove a profitable undertaking. The replacing of failures amongst *Pinus radiata*, which formed the bulk of last season's planting, and amongst which, owing to the dry season, there were somewhat more than the average number of deaths, was done chiefly by free labour, and was carried out at an average cost of 15s. 8d. per thousand. The daily average number of men employed was 25·11.

Prison Labour.—An average daily number of 15·35 men performed work to the total value of £1,717 15s. The work consisted of road-formation, clearing, pitting, and planting new area, and general maintenance-work, all of which has been carried out in a highly satisfactory manner. For the coming season's operations a new area of 390 acres is now being cleared, and when this has been planted the whole enclosure will have been completed.

When the planting season is over there will probably be from three to four months' work in improving roads and in general maintenance-work, which means that after the end of 1916 there will be no further work within reach of the camp on which the prisoners can be profitably employed. It will, therefore, be necessary to shift the prison camp on to a new site by January, 1917.

Generally speaking, good rate of growth has been maintained by the older trees throughout the plantation. The *Eucalypti*, Douglas fir, and pines have done equally as well as in any former year, and the same may also be said of the larch growing on the higher ground. On the flats, however, the larch were subjected to somewhat severe frosts in the early summer, and as dry weather set in soon afterwards the trees lost a considerable amount of foliage and made little height-growth. This is especially noticeable in the oldest block, the thinning of which has been followed by two dry seasons.

Proposals for 1916.—Within the present enclosure there is still an area of about 190 acres to be planted, which will be undertaken by free labour. Prison labour will be employed in planting an area of 390 acres, which has still to be fenced, and 150 acres of which remains to be cleared. For the planting of these blocks trees to the number of 710,000, approximately, will be required, and will consist chiefly of Douglas fir, *Pinus ponderosa*, *Pinus strobus*, *Pinus radiata*, and *Eucalyptus Macarthuri*.