

About one-third of the trees were strong, healthy, dominating specimens, the same proportion were beginning to show evidence that the struggle for existence was becoming too keen, while the remainder were either suppressed or dead. The thinning-out of all the dead or suppressed trees would benefit the remaining ones, but at the present time the dense, tangled mass of bracken and tree-branches make it almost impossible to get in amongst the trees, and the work could only be carried on at great expense—about £4 per acre. If it were possible to dispose of the thinnings, this would put the question in quite a different light, but the only probable use for the thinnings is for fuel, and in this district, where the native timbers for this purpose are abundant, the disposal of thin larch sticks would be difficult. The conclusion arrived at is that about the twelfth year from the time of planting a larch-plantation may be thinned without unnecessary expense. By that time many of the branches will have dropped off, and what still remain will be sufficiently brittle to knock off easily.

Although larch is a light-loving tree, it is evident that it will remain in close plantation for a considerably longer period in this part of New Zealand than is considered advisable in Great Britain or parts of Europe. A difference in this respect would probably be found between the North and South Islands of New Zealand, according principally to the amount of sunshine recorded at different parts. When this area was cleaned and thinned, a number of different trees were planted under the larch in order to ascertain the amount of shade they would endure. *Thuja gigantea* and totara bear the shade well, Douglas fir and Weymouth pine require considerably more light, while the other species planted were not suitable for bearing shade except in a very slight degree; these were heavy pine, Californian redwood, *Catalpa speciosa*, and *Eucalyptus Stuartiana*.

#### SURVEY-WORK.

Accompanying this report are plans of Whakarewarewa and Waiotapu Plantations, showing the areas under different classes of trees, and the roads and fire-breaks. When afforestation was first started here the yearly operations were much smaller in extent than they are at present, and there was not the same necessity for subdivisional plans as now. As a consequence, much of the data relating to the date of planting and number of trees in each compartment is somewhat obscure, but the tables which have been prepared showing this information is as accurate as was possible under the circumstances, and it is sufficient for all practical purposes. These tables give the approximate number of trees at present existing in each block, and for comparison the actual number planted is also shown. The difference between the number planted on new area and that shown as trees existing is accounted for by numbers of trees grown experimentally in the early years of the operations in this district, and afterwards found unsuitable. The greatest losses were amongst eucalypti, many species of which were tried and found to be too tender. *Catalpa speciosa* also accounts for a large number, while the Californian redwood, which were mixed with the larch, are reckoned as being all dead.

The actual number of trees planted, while being of a certain value for statistical purposes, does not convey as much information as does a record of the area planted. These numbers will be wholly unrepresentative of the growing stock as soon as thinning commences, and this is actually the case now in a few of the oldest blocks, where a proportion of the trees have succumbed in the struggle for existence.

#### FORESTRY LITERATURE.

The best publications on forestry and allied subjects are being procured for circulating amongst the officers of the Department, and it is intended to gradually work up an index of all volumes in the library.

During the year papers on set subjects were written by officers, and the prize of £2 given by the Department for the best paper of the year was won by Mr. R. Glass, Plantation Foreman at the Whakarewarewa Prison Camp.

#### PROPOSALS FOR 1911-12.

*Rotorua Nursery.*—The available stock of trees suitable for permanent planting, numbering 5,000,000, will be sent to the plantations during the coming winter.

*Whakarewarewa Plantation.*—Preparations are now well under way for planting 2,000,000 trees. An area of 740 acres will thus be added to the plantation during the year. It is anticipated that the general upkeep will be unusually heavy next summer, owing to the strong growth of bracken which is prevalent on some of the steep hills recently planted. The work at this station is gradually becoming further away from the Rotorua Township, and it is intended to erect several huts for the accommodation of the free labourers. Tents have been used in the past, but these, besides being uncomfortable during the cold winters, are costly when the upkeep and renewing of them is taken into consideration.

*Waiotapu Plantation.*—Afforestation-work to be undertaken includes planting an area of 1,100 acres with 3,000,000 trees. The shifting of the prison camp as mentioned elsewhere, and the upkeep of the plantation generally. Huts for workmen will also be erected, as there is no accommodation obtainable at Waiotapu, and once the prison camp is shifted the work will have to be undertaken by free labour entirely.

*Puhipuhi Plantation.*—It is intended to try and get a local settler to act as caretaker of this plantation. A large part of the area will require no attention for some years, or until thinning is necessary; and beyond the danger from fire, which exists at any of the plantations, the work here will be principally confined to the prevention of trespass by either persons or stock and the apprehension of offenders.

#### CONCLUSION.

I am much indebted to the Plantation Foremen and the staff generally for the able and cheerful assistance received in carrying on the work. From the Prison Department's officials with whom we are