

native grass-grub (*Odontria zealandica*). This beetle, so well known in the larval form as one of the most destructive pasture-insects, is liable to cause extensive damage to seedling trees by eating through the main root just below the ground-surface. The methods that are adopted at all the nurseries—of fallowing a certain number of seed-beds and by continuously cultivating them during the summer—have, however, kept this pest in sufficient check to render it comparatively harmless. It is, however, always liable to occur in more or less destructive numbers; but if the present methods are continued, it will never cause any serious loss.

A disease which occurs especially amongst the larch-seedlings, the New Zealand root-fungus (*Rosellinia radiciperda*), causes a good deal of loss. This fungus, which is generally found in country that formerly carried forest, is one of the most serious of our native fungi so far as tree-destruction is concerned, and its worst feature is its power of remaining in the living state in the soil for several years. The methods adopted against the grass-grub will probably be found sufficient to keep this fungus in check in the seed-beds. In certain cases it may be found necessary to lime more heavily than at present, and in cases of very bad attack the ground may have to be rested and kept cultivated for several years. These two diseases are the main ones that are present in the nursery beds at Rotorua, and it is fortunate that none of the serious seedling-diseases such as *Phytophthora omnivora* and *Herpotherium nigra*—often the cause of widespread destruction in European forest-nurseries—have as yet made any appearance. The latter disease is often of such violence as to necessitate the abandonment of nurseries established at great cost and labour. Special attention should always be paid to any undue loss in the seedling-beds, and the causes should at once be investigated, and in that case any local infection could be dealt with before it had assumed a too serious character. The majority of the seed used being of foreign origin, there is always a liability to diseases being introduced owing to this reason.

TAPANUI NURSERY.

The Tapanui Nursery is remarkably free from any disease, the grass-grub being the main one that has to be fought against, but the excellent methods of control adopted reduce its effects to a minimum. The large extent of pasture land in the vicinity of the nursery will always render this insect of importance, as infection from without will always occur more or less. The seedling-trees at Tapanui were at the time of my visit looking really splendid, and the large breaks of sturdy uniform young trees could not have been bettered. It is doubtful—and this also refers to the Rotorua Nursery—if in any part of the world the raising of seedling-trees is carried out with more success than at the Tapanui Nursery. I have no recommendations to make regarding the nurseries other than that suggested previously. In the practice of raising trees the Forestry Branch has set an extremely high standard, and it is certainly not an exaggeration to say that in this part of the work there can be very little to learn from other countries where afforestation is carried out.

THE DISEASES OF THE PLANTED TREES.

Rotorua and Waiotapu.

The plantations are, on the whole, in an extremely healthy and vigorous condition. A certain number of diseases are, of course, present, but none of them are of a character that are liable to be the cause of future damage.

The New Zealand root-fungus appears to attack isolated individuals of the larches, and wherever this occurs the trees should be removed and burnt, and the soil well limed; or, better still, a little sulphate of copper should be spread on the ground; it will also be advisable not to replace the trees for two or three seasons.

The pine white-aphis (*Chermes laricis*) is fairly abundant on some of the pines, but it appears to select trees that are of weak constitution, and will probably more or less disappear when the trees are older.

An introduced Australian weevil (*Oxyops concreta*) is extremely serious on the few blue-gums that have been planted, and, largely owing to this insect, its cultivation has been abandoned. I should advise the gradual removal of all the trees (there are not many) of this species of gum, and replace them with those which have been shown to be immune from the attacks of this insect. Another Australian insect (*Psylla acaciae-baileyana*) is at present on the plantations of black wattle (*Acacia decurrens*), but so far has done little harm. If it should be found to be on the increase, it will be well to introduce those natural enemies that keep it in check in its native home.

Tapanui (Conical Hills and Dusky).

The plantations at Tapanui can at present be looked upon as virtually free from any diseases. There is a small amount of pine white-aphis, but not sufficient to cause any alarm. During the summer a considerable amount of defoliation occurred amongst the larches, and it was feared that the destructive larch needle-cast (*Sphaerella laricina*) had made its appearance. This, I am happy to say, is quite without foundation, the cause being due entirely to the unusually dry summer that had been experienced. After the breaking of the drought the fallen leaves were all replaced by a fresh healthy growth, and at the time of my visit the trees were in perfect condition. I was agreeably surprised at the absence of the spruce red-spider (*Tetranychus bimaculatus*), which is at present giving indications of becoming a serious menace to the successful growing of certain species of *Abies* in the Canterbury District.