

- (7) The redistribution of *Rhizobius ventralis* should still be continued where necessary, as its host (*Eriococcus coriaceus*) attacks *Eucalyptus viminalis* and *Eucalyptus obliqua* as well as *Eucalyptus globulus*.
- (8) Every effort should be made by suitable publicity methods to encourage private and public owners of plantations to improve the condition of their stands.
- (9) The immediate needs are to deal with the major pests, improve the conditions of the plantations, supervise the importation of foreign timbers and seeds, and increase the number of suitably trained field observers. The last point is most important, as these men are continually in the field and are literally the "eyes" of the Service.

The time is yet too early for publishing any detailed results of the forest survey, but everything examined has been fully recorded, and it is hoped the project thus inaugurated will be carried quickly to completion. A knowledge so obtained of New Zealand forest-insect life will place this branch of research on a much more satisfactory footing than ever in the past. One point of first importance, however, has already been established, and deserves more than passing comment. Among the privately-owned plantations there are one or two which have been more or less completely burned, the damage being so great that they can never produce timber of value. The forest survey has already established the fact that these areas are now carrying a dangerously large insect population, the numbers present being quite disproportionate to the numbers in neighbouring unburned plantations. Where no steps of any sort are being taken to put such plantations in reasonable order, they are plainly jeopardizing other plantation property, the owners are receiving rating concessions which are unjustified, and the unhealthy plantations are exactly analogous to untended and derelict orchards. Eventually legislation may be required to cope with this menace in the same way as orchard pests are dealt with, and meantime evidence will be assembled in order that this problem, which will undoubtedly be of the first magnitude in future forestry, may be effectively met in advance.

2. SILVICULTURAL RESEARCH.

During the past year the research into the silvicultural requirements of rimu in the West Coast forests of the South Island was pursued by Messrs. Foweraker and Hutchinson, of Canterbury University College School of Forestry. This line of research has been subsidized by this Service for the past eight years, and has been perseveringly and enthusiastically carried on first by Mr. Foweraker alone, and later, by both working in collaboration.

This type of research is necessarily slow and laborious, and great care must be exercised to avoid publication of premature results, which are often misleading, and not infrequently do more harm than good. Both investigators have exhibited most commendable restraint in this direction. This work has been proceeding for eight years, and it is now particularly gratifying to be able to report that definite results have been obtained worthy of publication and justifying both a continuation and an extension of the work. Publication of full reports of some of the work in professional papers, so that it may go on permanent record as scientific work of value, has been authorized. Results in brief to date are—

- (1) It has been definitely established that the sex distribution of rimu is approximately uniform both numerically and spatially. This will have an important bearing on silvicultural treatment of the species.
- (2) Proportion of available crown-space utilized by rimu in an average West Coast natural stand has been ascertained.
- (3) Conditions necessary for germination of rimu-seed in the forest humus have been investigated and definite results obtained so far as the forest-floor is concerned. Further investigations on the next stage—viz., forest cover and environment to secure optimum survival—are amply justified.
- (4) Interim results of the increment studies on rimu poles and standards are encouraging, but no definite figures will be published until 1933 at the earliest. However, it is fitting to record here that the investigators state that "there seem to be good grounds for maintaining that the increment in rimu is greater than popular opinion will admit, and that there is every reason to push forward the full investigation of growth throughout the whole life-cycle of the tree."

In connection with these results it is well to reproduce here the third resolution of the Empire Forestry Conference concerning forestry in New Zealand:—

"*Management of Indigenous Timber Forests.*—The silvicultural study of the indigenous species has been commenced, but has not yet proceeded sufficiently far to warrant the adoption of any definite system of management, and all that has been done so far in the interests of the forests is to protect them from damage by fire and grazing. We understand that as soon as sufficient knowledge has been gained as a result of silvicultural study some suitable system of management will be applied. We would here take the opportunity of emphasizing the necessity for extending silvicultural research to the utmost extent possible. When sufficient information is available regarding the rate of growth of the various indigenous species and the possibility of regenerating them economically, the question will have to be decided to what extent they are to be perpetuated or to be replaced by exotic species of faster growth should these prove to be of greater economic value. We would emphasize the importance of retaining large areas of indigenous forest for the production of commercial timber, as well as for scientific and sentimental reasons, provided it does not prove to be the case that results more beneficial to the country at large can be obtained by the introduction of exotic species."