

out in Western Southland, in Fiordland as part of the programme of work of the New Zealand—American Fiordland Expedition, in the Rakaia, Waimakariri, and Hurunui Catchments in Canterbury, in the Grey and Ahaura Valleys in Westland, in the Inangahua, Buller, and Maruia Valleys in western Nelson, and, for the North Island, on Mount Ruapehu and in the Lake Waikaremoana watershed.

27. The most obvious progress during the year has been made in the delimitation of optimum intensive management units for silver beech in western Southland and for red beech in western Nelson. In both cases it is believed that all major silvicultural and economic difficulties are well on the way to solution and, in the former case, intensive management on a large scale, as opposed to small-scale experimental management, has already been initiated.

28. The most serious problem encountered is the problem of the maintenance in an efficient condition of the watershed protection forests in the catchments of eastern rivers in the face of pressure from heavy deer populations. In the silver beech production forests the presence of deer is also serious, but in this case there is ready access and a solution is possible. No such solution is in sight, however, for the equally important but frequently remote protection forest areas. The rifle only postpones the crisis. This problem will require continued and unremitting study. To sum up, it might be said that work in the beech forests during the year justifies a degree of optimism in the case of the production forests, but the same cannot be said in the case of the watershed protection forests of the lower rainfall areas.

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29. *Yield Tables.*—Data collected from temporary sample plots in Rotorua Conservancy were used as the basis for preparation of an empirical yield table for ponderosa pine. The range of age-classes in the larch forests was found to be too small for a satisfactory table to be compiled. A note describing the method of preparation and explaining the limitations of the empirical yield tables for insignis pine, Corsican pine, Douglas fir, and ponderosa pine was written for issue with the tables.

30. *Tree Volume Tables.*—A change in the method of presentation of volume tables for exotic coniferous species has been introduced during the year. Hitherto generalized tables showing volumes, usually above stump to 6 in. and 4 in. tops inside bark, have been prepared for all height classes combined. These have now been replaced by basic tables, which are in effect combination taper and volume tables showing volumes up to and diameter inside bark at stated heights above the ground. There are separate tables for each 10 ft. total height class. Generalized tables to any desired standard of utilization can be derived arithmetically from the combination tables without re-examination of the data and can be assumed to have the same accuracy as the parent tables. Basic volume tables by height classes were compiled for European larch and ponderosa pine in Rotorua Conservancy and for Corsican pine and ponderosa pine in Southland Conservancy. Similar tables for insignis pine and Douglas fir in Rotorua Conservancy are under preparation. A generalized table for *Pinus radiata* in Rotorua Conservancy to a 9 in. top inside bark, was supplied in response to a special request.

31. The central North Island volume table for rimu, issued in 1926, was critically examined, and a new table based on more data prepared. The existing Westland rimu table was also tested. Though found accurate for the data from which it was prepared, it failed in all tests for other trees. During the course of this study it was discovered that there was a possibility of compiling a rimu table which would be satisfactory for the three main production localities (central North Island, Westland, and Southland) and information is being collected for an investigation on these lines.