

soils involved are generally unsuited to any type of agriculture and the only productive use to which they can be put is in some form of high forest ; the solution of New Zealand's indigenous-forest problems is a prerequisite to the success of any rational land-use policy.

Intrinsically less complex than the indigenous forests, the exotic forests nevertheless present many problems for research.

The numerous exotic-timber species introduced during the past century have provided accumulative evidence of silvicultural characteristics which, in many respects, differ from those found in their countries of origin. Sufficient time has elapsed since their introduction to determine, by process of elimination, the most important species for New Zealand conditions, but much research remains to be done in the silvicultural evaluation of such species, by qualitative observation and quantitative measurement, which will, for example, disclose for each species the optimum and limiting site factors, the effect of different spacing distances and different treatments, the effects of mixtures, and the conditions necessary for successful natural regeneration.

By their relative uniformity and rate of growth, the exotic forests are more adaptable to intensive management than indigenous forests, and the experience of past decades (largely, of necessity, the result of trial and error) is being drawn up as the basis of a number of co-ordinated research projects (paragraphs 78, 80, 81) the continuity of which has been provided for by the establishment of the Forest Experiment Station.

In the field of forest products research the immediate requirement is the provision of facilities for more intensive studies. New Zealand, as a timber-producing country, cannot divorce its problems of timber use from those of forest management and silviculture, and the centralization of *all* aspects of forest research at the Rotorua Forest Experiment Station will be an important step forward. Some of the most urgent forest products problems to be investigated are necessarily those concerned with the timber trees in the indigenous forests, which are most amenable to forest management, but which occupy a relatively insignificant place in the wood-use picture to-day. Very many problems relate to the timbers from planted forests the products of which depend so largely for quality upon silvicultural treatment ; the nature and number of defects and density of the wood are the most important factors determining the value of the timber or round products, however those products may subsequently be improved to fit special use requirements. With both of these groups of problems is indissolubly linked the conservation of the major indigenous softwood timbers by their *intelligent* use—that use must inevitably become more restricted.

79. *National Forest Survey*.—In contrast to the long-term aspect of the national forest survey project already discussed, the more immediate task is the provision of reliable estimates of the Dominion's indigenous forest resources. Progress during the year has been steady and has brought the total area covered by ground sampling up to more than 1,000,000 acres. Much of this is merchantable forest, and although it represents a small part of the total forest area it is a significant proportion of all merchantable or potentially merchantable forests.

In the North Island, broadly speaking, about half the important podocarp stands have been dealt with, a small proportion of the mixed and hardwood forests, and very little of the (mainly) protection beech forests ; in the South Island the podocarp and beech areas in western Southland are nearly completed, and a start has been made on the large tracts of rimu in South Westland, but the very extensive merchantable and protection beech forests of north-west Nelson have not been commenced. Work will be concentrated in the western Southland and Westland units in the coming summer, when it is hoped that both units will be completed.