Soil Surveys

General Survey, North Island.—Sheets 1 and 3 of the soil map of the North Island were published during the year. Sheet 8 is with the printer.

North Auckland.—The draughtsmen are preparing the soil maps of Whangarei County for publication.

Mid-Hawke's Bay.—A bulletin, "Soils and some Related Aspects of Agriculture in Mid-Hawke's Bay," is in the press and will appear during August.

Hutt and Makara Counties.—The field survey of Hutt and Makara Counties was completed and the distribution of the twenty-nine soil types and ten phases shown on a scale of 1 mile to an inch. The map demonstrates that large areas of uniform soil type occur only on the steep land and that most farms comprise two or more soil types. On the rolling and easy hill land the soil pattern is more complicated. Analyses of soil samples collected during this survey showed a general low phosphate level and a low to medium supply of bases. Examinations were made of the clay minerals and the sand residues, and it was evident from the latter that some minerals were present that had not come from the greywacke, but from volcanic ash deposits blown from central North Island.

Wairarapa Plains.—A soil survey of the Wairarapa Plains was commenced and the mapping of the area west of the Ruamahanga River and south of the Waiohine River completed. The soils are chiefly derived from alluvial deposits, and soil differences are due to depth, texture, drainage, and age of the soil. Considerable areas of soil show evidence of high water-table, indicating the need for improved drainage.

Westland.—In co-operation with the Department of Agriculture, a report on the soils and agriculture of Westland has been prepared and a soil map drawn on a scale of 4 miles to an inch. Analyses show that the older soils are very poor in plant nutrients.

The young soils are low in bases but surprisingly high in phosphate. This is a combination not met with in other New Zealand soils.

Plains and Downlands, Canterbury.—A survey of the plains and downlands of Canterbury on a scale of 2 miles to an inch is almost completed.

On the plains the recent alluvial soils deposited within historic times are chiefly of light texture, except for the Templeton Series, which has a silt-loam texture and is of high natural fertility. The Recent Meadow soils of small total area are found in low-lying areas near the coast. In their natural state they are poorly drained, but when this defect is remedied they become the most fertile soils on the plains. Tussock soils occupy much the greater part of the plains, the most extensive of the younger soils of this group being the Orari soils. Their fertility depends mainly on depth of soil overlying gravel. Of the immature soils, the most important are those of the Aylesbury Series, which are silt loams, pastures and crops on which benefit considerably from the application of lime and superphosphate. Small areas of podzolic soils occurring near the foothills of the Southern Alps are of very low fertility.

The downlands have a thick coating of loess of a fairly uniform silt-loam texture. Four soil types have been mapped :—

Tussock soils—

Timaru silt loam, under less than 24 in. rainfall, moderately fertile.

Clermont silt loam, under from 24–30 in., lower fertility.

Opuha silt loam, under same rainfall but higher humidity, lower fertility, fairly high lime requirement.

Immature podzol : Hurunui silt loam, least fertile, high lime requirement.

Timaru and Clermont silt loams have been cropped successfully, yielding from 40 bushels to 50 bushels of wheat to the acre. Opuha silt loam has been cropped with moderate success in the past, but now yields only about 25 bushels of wheat to the acre. Hurunui silt loam is mostly used for grazing.