near the Kaukapakapa–Silverdale Road, but, although this type of rock makes a good road for rubber-tired vehicles, it is little used. The andesites that cover considerable areas north and south of Helensville are good tough rocks, and form a reserve of roadmaking material which is practically neglected. The argillaceous limestone, though soft, is used locally, and would be of service as a foundation to support a well macadamized road.

Perhaps the greatest immediate economic result of the present survey is the topographical and lithological map. This map, with slight modifications, would form a soil-map such as that required by all those concerned with the broader aspects of agriculture. Five types of soil, which accord with the rocks from which they are derived, cover the greater part of the countryside referred to in this report. The almost barren claystone soils of the Onerahi Formation around Wainui, White Hills, and Redvale, once worked for their kauri-resin, have reverted to fern and stunted manuka. The sandstone soils of the Waitemata Series may be separated into two subtypes which grade into one another. The sandstone hills near Warkworth and Puhoi in Rodney County are covered by fertile soils which support rich pastures, but in the northern portions of Waitemata County the rocks of the same series form less fertile soils. Here the land was once covered by kauri forests, but now it carries only poor pastures, and in places none at all. The andesitic soils are likewise of low fertility, but, being more retentive of water, are more drought-resistant than those on the Waitemata sandstones. The older sand-dunes on the western side of Kaipara Harbour are covered by good pasture. The newer dunes farther to the west are either thinly grassed or form wastes of drift sand. In this western stretch of country there are large areas which would lend themselves to afforestation. Near Helensville, in the valley of the Kaipara River and its tributaries, are valuable and extensive alluvial flats.

3. Kaitangata Subdivision.

(M. Ongley.)

During the past field season, from the 6th November to the 30th May, the writer continued field-work in the Kaitangata Subdivision, and for three months of this time was assisted by Mr. R. G. Penseler, M.Sc., of Otago University. Some 190 square miles west of the district examined in 1923–24, and 204 square miles north-east of it, were geologically mapped on the scale of 20 chains to the inch. The western part comprises Warepa and Pomahaka survey districts, and the north-eastern part Mangatua, Otokia, West Taieri, and parts of East Taieri and Waihola.

Topography.

In the western area the land rises gently away from the Molyneux River from 250 ft. to 600 ft. above sea-level, but is being dissected by the Molyneux and Pomahaka, which have here cut their main valleys down to 60 ft. above sea-level. South-west of the lowland country are the Kaihiku Ranges, a series of parallel hog-back ridges 2,000 ft. high, of which a part twelve miles long from north-west to south-east and eight miles wide is in the subdivision.

In the middle of the north-eastern area is the Taieri Plain, twenty-five miles long from north-east to south-west, and four miles wide. In the southern part of it the tidal lakes Waihola and Waipori cover six square miles. From them the plain rises gradually northward to 100 ft. near Wingatui and North Taieri. East of the plain an unsymmetrical ridge rises steeply 600 ft. high in the south and 1,000 ft. in the north, and slopes away gently eastward to the coast. On its crest are the volcanic masses forming the two peaks of Saddle Hill (1,565 ft. and 1,414 ft.) and Scrogg's Hill (1,162 ft.). West of the Taieri Plain Maungatua Mountain rises steeply to a height of 2,944 ft., and descends gently to 2,000 ft. at the western boundary of the subdivision, four miles away.

General Geology.

The rocks of the Kaitangata Subdivision are similar to those in the Tuapeka District described by Marshall in Geological Survey Bulletin No. 19. On the evidence available the rocks so far examined are classified as follows :—

Nature of Beds.	Approximate Age.
Loose conglomerates and gravels (100 ft.) Lignite, clay, and conglomerate (30 ft.)	Recent and Pleistocene.
(Erosion interval.)	
Basalt Scoria and conglomerate (50 ft.)	Upper Tertiary.
(Erosion interval.)	
Limestone and greensand (150 ft.)	Ototaran [Oligocene].
(Erosion interval.)	
Glauconitic mudstone and sandstone (800 ft.) Fossiliferous sandstone (1–10 ft.) Fine conglomerate of quartz pebbles (900 ft.)	Lower Tertiary.
(Erosion interval.)	
Fossiliferous shell-rock (50 ft.) Fine conglomerate of quartz pebbles, with finer beds and coal-seams (100 ft.)	Upper Cretaceous.
(Erosion interval.)	
Coarse conglomerate of greywacke and schist pebbles, with finer beds and coal-seams (500 ft.)	Upper Cretaceous.
(Erosion interval.)	
Argillaceous greywacke and argillite, with one bed of plant-remains at the top and two beds of marine Jurassic fossils (5,400 ft.)	Jurassic.
Arenaceous greywacke and argillite, with five beds of upper Triassic fossils, coarse conglomerate of greywacke, diorite, porphyrite, &c. (4,500 ft.)	Upper Triassic.
(Erosion interval.)	
Greywacke and argillite, with a bed containing Upper Palaeozoic fossils, coarse conglomerate of greywacke, diorite, porphyrite, &c. (5,000 ft.)	Permian or Carboniferous.
(Erosion interval.)	
Hard greywacke, in places intruded by diorite, porphyrite, &c. (of great thickness) Quartz and mica schists (of great thickness)	Middle or Lower Palaeozoic.