

## TOPOGRAPHY.

Along the coast are sandy beaches and rock platforms (below high-water level), and raised beaches 20 ft. and 50 ft. above sea-level. From the lower ground near the coast a tilted block, in part covered with Cretaceous and Tertiary sedimentary rocks and in part exposing an old eroded surface of Palaeozoic schist, rises gently inland. The crest is 600 ft. high, and on it are the volcanic peaks Saddle Hill (1,565 ft.), Jeffrey's Hill (1,414 ft.), and Scroggs Hill (1,162 ft.). From it there is a steep descent to the Taieri Plain. The plain rises from 2 ft. above sea-level at Taieri Ferry, Henley, &c., to 60 ft. at Mosgiel (twelve miles from Taieri Gorge), and to 100 ft. at the north end (three miles beyond Mosgiel).

North-east of the Taieri Plain rise the volcanic hills about Dunedin, and west of it are the steep eastern slope of Maungatua (a dissected fault-scarp) and the gently rising slopes near Clarendon dotted with volcanic peaks. West of this lies a plateau about 2,000 ft. above sea-level, formed of schistose rocks.

## GENERAL GEOLOGY.

The rocks of the district are similar to those examined in 1923-25, and can be classified as in last year's report in the table here reproduced with slight alterations:—

Strata.	Thickness.	Approximate Age.
Clay, lignite, and gravel .. .. . ( <i>Erosion interval.</i> )	100 ft.	Pleistocene and Recent.
Agglomerate, basalt, &c. .. .. . ( <i>Erosion interval.</i> )	Varies.	
Grey sandstone .. .. .	60 ft.	} Awamoan.
Greensand, sandstone, and limestone .. .. . ( <i>Erosion interval.</i> )	300 ft.	
Greensand and marl .. .. .	200 ft.	} Ototaran.
Fine quartz conglomerate and sand (tuffaceous) ( <i>Erosion interval.</i> )	200 ft.	
Grey sandstone .. .. .	30 ft.	} Lower Tertiary.
Glauconitic sandstone and mudstone .. .. .	200-300 ft.	
Grey sandstone .. .. .	50 ft.	
Fossiliferous sandstone near Wangaloa and Boulder Hill .. .. .	1-10 ft.	
Fine conglomerate of quartz pebbles .. .. . ( <i>Erosion interval.</i> )	400-900 ft.	
Pebbly shell-rock with belemnites at Brighton .. .. .	30 ft.	} Upper Cretaceous.
Fine conglomerate of quartz pebbles with finer beds and coal-seams ( <i>Angular unconformity.</i> )	60 ft.	
Coarse conglomerate of greywacke and schist pebbles with finer beds and coal-seams ( <i>Strong angular unconformity.</i> )	500 ft.	Upper Cretaceous.
Sandstone with plant-remains and thin coal .. .. .	} 5,400 ft.	Jurassic.
Argillaceous greywacke and argillite with Jurassic fossils .. .. .		
Arenaceous greywacke and argillite with Upper Triassic fossils .. .. .	} 4,500 ft.	Triassic.
Greywacke and argillite, non-fossiliferous (thick) .. .. .		
Coarse conglomerate of greywacke, diorite, &c. .. .. . ( <i>Erosion interval.</i> )	} 5,000 ft.	Upper Palaeozoic.
Greywacke and argillite with a bed of Carboniferous or Permian fossils .. .. .		
Coarse conglomerate of greywacke, diorite, &c. .. .. . ( <i>Erosion interval.</i> )	} Very great	Middle or Lower Palaeozoic.
Greywacke in places intruded by diorite, &c. (very thick) .. .. .		
Quartz and mica schists (very thick) .. .. .		

## ECONOMIC GEOLOGY.

The magnetite rock mentioned in last year's report as occurring in a bed in the Jurassic greywacke at Dromedary Hill, Lochindorb Station, Warepa Survey District, has been analysed by the Dominion Analyst and found to contain over 70 per cent. of iron oxides and 8.62 per cent. of titanium dioxide. The analysis supports the view that the magnetite rock is of sedimentary origin.

According to Mr. D. Finlayson, of Lochindorb Station, the coal which two dowers asserted occurred in the Jurassic greywacke at Awatea, Catlins district, has been further searched for, but only thin streaks of coaly material have been found.

The coal opened in 1925 in the New Mosgiel Colliery, Saddle Hill, has been found to be cut off by old workings, and mining there has ceased. The Willowbank Colliery has continued working its seam on the west of Jeffrey's Hill, and Mr. Scurr, the owner, has trenched other coal outcrops near at hand. There is a small plug of basalt on the hill close ahead of the dip, which will soon be struck in the mine. Over the hill, half a mile south of the mine and 100 ft. lower, occur boulders of conglomerate formed of schistose pebbles, the Kaitangata conglomerate, with pieces of coal 6 in. thick, like the Kaitangata coal. As this conglomerate occurs on the low slopes on the north-west of Saddle Hill below any of the coal worked there, that part should be further prospected by boring to the underlying schist.

In the winter of 1925 a huge slip in Hut Creek, on the north of Boulder Hill (Trig. Station L., Dunedin and East Taieri Survey District), exposed a better outcrop of the lower part of the quartz-conglomerate coal-measures than can be seen elsewhere in the vicinity. At 120 ft. above the underlying schist there is a prominent cliff containing crushed coal (1 ft.), dark mudstone with streaks of coal (6 ft.), coal (3 in.), dark mudstone with streaks of coal (5 ft.), fine quartz sandstone with streaks of coal (10 ft.), and dark mudstone (3 ft.). Similar outcrops in different parts of the hill have been opened; but no payable seam has been found, the best being the one near Salisbury mentioned in last year's report.