

The area traversed is nearly all open country, with here and there a little bush. Considerable areas of scrub still remain, but are fast becoming cleared. The chief industry of the district is sheep-farming, for which the greater part of the country is excellently adapted.

PREVIOUS GEOLOGICAL OBSERVERS.

So far back as 1875 Mr. Alex. McKay travelled over the greater part of the area lately examined by the writer. His observations will be found in a "Report on Country between Cape Kidnappers and Cape Turnagain" (G.S. Reports during 1874-76, Vol. ix, pages 50-53). McKay made considerable collections of fossils from the district, but only a small number of the fossils were identified. In several later reports McKay again refers to the geology of the district (G.S. Reports, 1876-77, pages 73, 89, 90; 1877-78, page 24; 1878-79, pages 82, 83; and 1883-84, page 72).

The writer was informed that Sir James Hector many years ago visited the east coast, and expressed a favourable opinion regarding prospects of oil near Aohanga; but the writer has not been able to find any published reference to this statement.

In 1888 Professor James Park reported on an area extending from the Kaiwhata River northward to the Akitio River, and having an average width of about fifteen miles.* Park's opinion as to the probable occurrence of payable oil is not favourable. He gives as his reasons the shattered nature of the rocks, and the absence of shales containing such a proportion of hydrocarbons as to be capable of yielding mineral oil.

In 1906 Mr. H. Hill, of Napier, wrote a paper,† portions of which bear on the district lately examined by the writer.

GENERAL GEOLOGY.

From the eastern side of the Wairarapa Plain to east of Carswell's the prevailing rocks are bluish mudstones, containing in places recognizable fossils (shells). They resemble the Blue Bottom of Westland, but may be somewhat younger in age. Near Taueru a thick band of yellowish limestone is observable on the north side of the road. This limestone is correlated by McKay with the Napier limestone. It overlies the blue mudstones seen at the east of Taueru, but its relation to those west of Taueru was not observable. When observed the dip of the mudstones is generally at moderate angles to the west, and hard calcareous bands and concretions are often seen in them. Eastward of Carswell's bands of shelly conglomerate are seen in the mudstones, and finally a thick bed of shelly conglomerate or limestone appears at the base of the mudstones. The strike is N.N.E. to S.S.W., and the dip about 45° to the west. The shelly conglomerates are best seen on Awatoitoi Station (owned by Mr. Hugh Morrison), towards the head of Middle Division Creek. Here more than half the conglomerate consists of shells. The pebbles are nearly all small and well rounded. A more typical example of an ancient sea-beach could not be easily found. Southward of Cameron's Lookout the shelly conglomerate seems to die out, but northward large boulders of shell limestone are seen on Kerosene Ridge, and again north of the Mangapakia Stream. Here shelly rock appears towards the head of a small stream opposite Mr. Cameron's house.

The following fossils were identified by the writer as occurring in the shelly conglomerates and limestones:—

Dentalium giganteum.

Turritella gigantea.

Turritella sp. n. D.: very abundant in places.

Turritella sp. n. Dd.: very abundant in places.

Struthiolaria nodulosa (?): extremely abundant.

Glycimeris, sp. n. D.

Cucullæa alta (var. B of Hutton).

Cucullæa sp. n. D.

The fossils may be considered to indicate a Miocene age. East and north-east of Kerosene Ridge a brownish claystone is seen over an area of 500 or 600 acres. Park mentions other rocks which from his description appear to lie unconformably immediately below the Miocene shell rock. These are exposed in an old quarry on the eastern side of Kerosene Ridge. The brown claystones north and south of the area indicated do not seem to have any great development.

The next distinguishable rock to the eastward, and still in downward sequence, is a very thick, hard, and altered sandstone, seen south-south-east of Kerosene Ridge. This rock forms the gorge of the upper part of Kaumingi Stream, and also the various "taipos" near Langdale and near Tenui known as Elder's Taipos, Morrison's Taipos, and Maunsell's Taipos. The latter, or Tenui Taipos, show a strong westerly dip of about 50°. Here, according to McKay, the sandstone contains a few fossils, which, as judged by his list, have a Miocene facies. The sandstone, however, has a most ancient appearance, and is probably pre-Miocene in age.

Eastward of the "taipos" to the coast-line the rocks seen are, for the most part, much-faulted mudstones and sandstones. In general the dip is westerly at considerable angles. There is not probably an unconformity between the Taipo Sandstone and these rocks, but of this no certain evidence was obtained. Between Tenui and Whakataki Saddle the rocks seen in the road-cuttings are greatly crushed mudstones of various colours. About a mile and a half from Whakataki a

* "On the Probable Discovery of Oil and Coal in Wairarapa North County": G.S. Reports during 1887-88, Vol. xix, 1888, pp. 20-24.

† "Oil-wells and Oil-prospects along the East Coast": Trans. N.Z. Inst., Vol. xxxix, 1906, pp. 509-20.