

ness appears to be about 4 ft., but boring operations are not far enough advanced to indicate how large an area is covered by the ore.

(4.) *Petroleum-shales*.—A light-yellow clay, containing hydrocarbons, occurs about three miles north-east of Pungaere Settlement. Analyses show that the illuminating properties of the samples so far obtained are too poor to make the deposit of economic importance.

(5.) *Gold*.—A small quantity of gold is said to occur in the Whangaroa copper-ore.

Prospecting for gold has been carried on in the country on the right bank of the Waihou River, near the Waipapa junction, but so far with unsatisfactory results.

MR. E. J. H. WEBB, ASSISTANT GEOLOGIST.

At the beginning of 1907 Mr. Webb was assisting me in field-work in the Parapara Subdivision, and from the 5th April until the 7th September he was at the office in Wellington, aiding in the preparation of the bulletin on that area. On the 7th September he left Wellington to start operations in the adjoining Heaphy Subdivision, where he was engaged until the 7th February, 1908, save for a few days between the 28th January and the 7th February, when he accompanied me on a reconnaissance of the Mount Radiant Subdivision. Leaving Whakapoai, at the mouth of the Heaphy River, on the latter date, Mr. Webb proceeded to Parapara. He was there occupied until the 21st February in locating and mapping outcrops of iron-ore in the Washbourn Block, which had been exposed by development-work and scrub-fires since the geological survey of that area during the previous season. Mr. Webb then left for Mount Radiant, and commenced field-work in that subdivision early in March. It is expected that the investigations in the Mount Radiant Subdivision will be completed towards the close of next field season, when the preparation of a bulletin on that area will be undertaken. Mr. Webb presents the following interim report on the work carried out by him during last season:—

System of Work.

In my work in the Heaphy and Mount Radiant subdivisions chain-and-compass traverses were made of all streams and tracks affording outcrops, as well as of some of the main ridges. The coast-line in some cases, where giving information of geological interest, was also carefully traversed. This work has been plotted on a scale of 20 chains to an inch, and the results added to the topographical information available from the Lands and Survey Department.

Work in the Heaphy Subdivision.

The Heaphy Subdivision comprises the survey districts of Paturau, Wakamarama, Kahurangi, Whakapoai, Goulard, and Anatoki. Geological investigations were confined to the Paturau and Wakamarama survey districts. In the latter, however, only the northern portion as far as the divide between the Anatori and Turimawivi rivers was examined.

Physiographic Notes on Paturau and Wakamarama Survey Districts.

Broadly speaking, the Paturau and Wakamarama survey districts present two main physiographic features—a relatively low-lying upland country close to the sea, and an elevated old land interior. The uplands, which are about a mile and a half wide, abut against the coast in a line of cliffs which are practically continuous save where broken by stream-courses, and have a gradual rise towards the interior. They represent physiographically the Miocene strata later to be described. The uplands are separated from the old land of Pre-Miocene rocks by a broad valley now occupied by minor streams and by the basin of Lake Ngutuihe. The valley, which is bordered to the west by an escarpment of calcareous sandstone forming a typical cuesta, marks the erosion in the softer Miocene strata underlying the sandstone, and indicates the extent to which the latter has been eroded from the old land against which it formerly lay.

The old land exhibits a mountainous country of relatively mild relief, deeply dissected by the numerous streams which drain it. The greatest elevation is that of Mount Stevens (3,980 ft.), which lies just beyond the boundary of the subdivision.

The cuestas are brokenly continuous in a south-westerly direction from the eastern boundary of the Paturau Survey District to and beyond the southern branch of the Anatori River.

The main watercourses of the area examined are, in the Paturau Survey District, Sandhills Creek, and, in the Wakamarama, the Anatori River. The headwaters of the latter drain altogether an area of about thirty-five square miles.

Lake Ngutuihe, a mile and a half in length, which lies near the centre of the Paturau Survey District, has an average width of 7 chains in its western portion, and a maximum of 35 chains near its eastern extremity.

Flood-plains are of small extent, and are confined to the mouths of the water-channels.

A noticeable feature of the "old land" in the south-east of the Paturau Survey District is the picturesque rift-valley of Slaty Creek, between Mount Baldy and the Golden Ridge, showing possibly by its comparatively fresh appearance that severe earth-movements have been in evidence in no very remote geologic age.

General Geology.

General Classification.—The area under examination being the western extension of the Parapara Subdivision, the rocks encountered in both districts are lithologically and stratigraphically