4. MARBLE IN RIWAKA–TAKAKA DISTRICT.

(Summary of Report by J. HENDERSON.)*

The Pikikiruna Range is in great part formed of massive layers of marble. In general this rock is medium to coarse grained in texture, and in colour varies from white to black. The Kairuru Quarry, from which the marble used in the Parliamentary Buildings is obtained, is about ten miles by road from Motueka. Close at hand is the Ngarua Quarry, belonging to the Nelson Marble Company. Here many large blocks at least 5 ft. cube occur on the surface as the result of weathering, and it is highly probable that the marble beneath is massive and will yield large-dimension blocks. Along the Takaka Valley are many outcrops of marble. The rock near the road is usually dark-coloured and fine-grained, and does not appear to occur in such large blocks as the lighter-coloured marble at Kairuru and Ngarua.

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5. NOTES ON THE GEOLOGY OF THE MURCHISON DISTRICT.

(Summary of Report by J. HENDERSON.)*

The main geological features of the Murchison district are similar to those of the Westport and Reefton districts, which lie to the south-westward, and are described in Geological Survey Bulletins Nos. 17 and 18. Several great zones of fracture traverse the district meridionally and divide it into a number of earth-blocks which have been warped and tilted. The western portion of the area mapped consists of an elevated mass, which extends southward as the Brunner-Victoria Range. Eastward the land surface is lower, and this portion of the area mapped is structurally depressed between the range just mentioned and a similar block lying to the eastward. The rocks that occur within this depression consist, in upward sequence, of conglomerate, grit, sandstone, and limestone. Coal exists towards the base of this series, but so far only comparatively thin seams have been discovered. Another unfavourable feature is that over large areas the coal-measures dip at high angles. Granite forms nearly the whole of the uplifted mass to the westward. Ordovician greywacke, metamorphosed by the intrusive granite, outcrops along the western boundary of the area shown in the accompanying map.

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6. TE KUITI DISTRICT.

(Summary of Report by J. HENDERSON.)†

The oldest rocks of the Te Kuiti district are intensely folded greywackes and argillites. Involved with them are less indurated shales and sandstones containing Inoceramus and other fossils, indicating probably a middle Secondary age for the rocks in which they are found. Overlying these with great unconformity are Tertiary strata, which occur in at least three sets of beds. Still younger are rhyolitic tuffs, the greater part of which was deposited subaerially during post-Tertiary times.

The Tertiary beds consist in part of thick layers of limestone. Plants for crushing this rock for railway-ballast and for grinding it for agricultural purposes have been erected near Te Kuiti.

The beds below the limestone are known to be coal-bearing in many parts of New Zealand, and since coal also outcrops eastward of Te Kuiti an examination of the district was considered advisable. This has shown that the beds underlying the limestone are but scantily developed, and that extensive seams of coal do not exist in those parts of the measures exposed on the surface.

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7. NOTES ON THE GEOLOGY OF THE WAIKATO VALLEY NEAR MAUNGATAUTARI.

(Summary of Report by J. HENDERSON.)*

The Waikato River southward from Cambridge has a remarkable course and valley. In the neighbourhood of the old volcanic cone of Maungatautari it flows in a general northerly direction for some miles, but at a point about ten miles from Cambridge it turns abruptly westward and reaches the lowlands of the Middle Waikato basin by way of a gorge between the northern spurs of Maungatautari and the Maungakawa Hills. The valley of the river east of Maungatautari is cut 500 ft. below the general surface, and is fringed with three well-marked terrace sets. The Waikato enters this mature valley after flowing through the Arapuni Gorge, and leaves it by the Maungatautari Gorge referred to above. The Arapuni Gorge is a narrow trench edged for several miles with vertical cliffs up to 200 ft. in height. On the eastern side of the southern end of the mature part of the valley the middle terrace widens into a high-level flat known as the Waipa Plain. Opposite, on the other side of the river, the same terrace is continued southward for several miles as the floor of a valley half a mile in width. From the bend in the Waikato just above the Maungatautari Gorge a similar depression, known as the Hinuera Valley, extends in a north-easterly direction towards Matamata. There is no doubt that when the Waikato formed the middle set of terraces its course was along these old valleys.

Rhyolite tuffs of late Tertiary and early Quaternary age cover the greater part of the area examined. Greywacke, presumably of Trias-Jura age, outcrops for over a mile at the eastern end of the Maungatautari Gorge. The same rock is reported two or three miles west of Putaruru Railway-station. Various details of the topography and geology of the district are indicated on the sketch-map published with this summary.

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* Dr. Henderson's full report is to be published in the *New Zealand Journal of Science and Technology.*

† A somewhat fuller report by Dr. Henderson is to be published in the *New Zealand Journal of Science and Technology.*