

As on the eastern shore of Clova Bay, the beds are of the same fissile nature and bluish colour, having quartz laminae and the same mineral distributed in veins. They strike 45° east of north and dip at an angle of 45° to the S.E. The highest of these metamorphic beds is the rock No. 2339, of which there is a small development at Harvey's, as mentioned previously. On this side of Clova Bay its relation to the older beds is plain. Overlying it is the ordinary sandstone, interstratified with a slaty breccia. The general dip is easterly at various angles from 45° to 20° from the horizontal, while the strike is 60° east of north. The raised beaches are quite absent on this section, and, in fact, seem only in evidence on the one section where found.

During all these examinations a strict search was made for fossils, and the operations were not confined to the coast sections, the creek, in the bed of which the imprint was found, being followed for a considerable distance, and also the bed of the Manaroa stream and others. Nothing, however, was found of footprints of struthious birds, nor any fossils.

W. A. McKAY.

List of Rocks collected at Manaroa.

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| 2332. Quartz in aphanite or chloritic schist. | 2345. Phyllite. |
| 2333. Phyllite. | 2346. Phyllite. |
| 2334. Semi-metamorphic sandstone, decomposed | 2347. Semi-metamorphic schistose rock. |
| 2335. Phyllite, with quartz veins. | 2348. Semi-metamorphic sandstone. |
| 2336. Semi-metamorphic breccia. | 2349. Semi-metamorphic breccia, decomposed. |
| 2337. Indurated semi-metamorphic sandstone. | 2350. Phyllite, decomposed. |
| 2338. Phyllite, Hopai Point. | 2351. Semi-metamorphic rock, decomposed. |
| 2339. Phyllite, western shore of Clova Bay. | 2352. Breccia of Palaeozoic age. |
| 2340. Green chloritic rock, with quartz veins. | 2353. Semi-metamorphic sandstone. |
| 2341. Altered Palaeozoic sandstone. | 2354. Indurated felspathic sandstone. |
| 2342. Indurated felspathic sandstone (quartz porphyry). | 2355. |
| 2343. Indurated felspathic sandstone (quartz porphyry). | 2356. Semi-metamorphic sandstone. |
| 2344. Phyllite. | 2357. Fine-grained sandstone. |
| | 2358. Semi-metamorphic breccia. |
| | 2359. Semi-metamorphic breccia. |

REPORT ON THE GEOLOGY OF THE TROOPER RANGE, CASTLE POINT DISTRICT, WELLINGTON.

By W. A. McKAY, Assistant Geologist.

MEMORANDUM OF INSTRUCTIONS for W. A. McKAY, Assistant Geologist.

By the earliest opportunity you will proceed by rail to Masterton, and thence take coach, or other means, of reaching Castle Point, on the East Coast of Wellington. Take with you light outfit for camping, consisting of 6 ft. by 8 ft. tent and fly, and personal requirements suited for fine weather at the present season of the year. Provide yourself with a pick-hammer, and a lesser hammer for dressing rock-specimens. See that your barometer is in working order, and set to the mercurial barometer before leaving Wellington. You require a good pocket-compass, note-book, and packing-paper. Thus provided, camp at the eastern base of the Trooper Range, two to four miles south of Castle Point, at the debouchement on to the flat of the most considerable creek draining the east slope of the range, and from there as a centre commence the examinations, the nature of which are specified below. The object of your work is to collect the rocks of the Trooper Range, from the Masterton-Castle Point road south, to where the range terminates on the lower Whareama Valley. The rocks likely to be met with are sandstones and shales, with indications of coal. The coal-seams are small, but some of moderate thickness may be discovered. Search industriously for plant-remains in the shales, and sea-shells in any of the beds forming the Trooper Range.

A fine section is exposed on each bank of the creek near which you will camp. This must be examined, and described with care, and its rocks collected always in duplicate, and in the case of the more remarkable rocks, four hand-specimens should be taken. It was from a boulder in the bed of this creek that in 1874 I collected a specimen of Lucite. Lucite has not been found elsewhere in New Zealand, and the locality at Castle Point is, therefore, of great interest to petrologists. The particular rock looks like a fine-grained grey or dark andesite; but, while particularly attending to this rock, collect every variety of igneous rock to be found, not in this creek only, but in the other creeks that descend from the range.

Provide yourself with a sufficiently large-scale map of the district, and mark the position of the more important rocks and boundaries of the different formations and subdivisions made, while in the field and on the ground. Specially note the mode of occurrence of the igneous rocks, and if as dykes, ascertain the bearing and dip of these, noting their thickness, and how far they affect the sedimentary strata, and, in a word, every matter of interest concerning them. Collect samples of the different coal-seams, however small, and let all samples and specimens be accompanied by a ticket or label that will leave no doubt as to the exact locality of the specimen.

This work will occupy you till about Christmas. During the holidays you may return to Wellington or continue in the field, at pleasure. Keep a full diary of your daily proceedings, and report the results of your work under cover, addressed to the Under-Secretary for Mines. On finishing this work you should prepare a report, accompanied by map and section, showing position of the strata, dykes, &c., and generally illustrative of the matter of the report.

Wellington, 15th December, 1893.

ALEX. McKAY.