

THE PROBABILITY OF FINDING COAL IN THE WAIROA GORGE, WAIMEA COUNTY, NELSON.

REPORT on, by ALEXANDER MCKAY, F.G.S., Mining Geologist.

Mr. A. MCKAY to the UNDER-SECRETARY of MINES.

SIR,—

Wellington, 9th June, 1896.

On the 21st October, 1896, I examined the Wairoa Gorge for the purpose of determining the nature of the indications of coal said to occur there, and which were reported to the Department about the middle of 1894. Below I have the honour to report what the nature of these indications are.

REPORT.

At the mouth of the Wairoa Gorge, where the river leaves the hills to traverse the Waimea Plain to its junction with the Wai-iti, there is a development of soft brown sandstones and shaly beds, followed to the westward by more marly strata, containing concretions of cement stone, that are often crowded with a variety of fossils, chiefly marine shells. The fossiliferous higher beds of this series have always been considered as of Miocene age, and in some ways the correspondent of the shelly beds at the base of the Port Hills series, near the town of Nelson. The brown sandstone at the base of the series might, however, be of the age of the Jenkins's Hills coal-bearing series, and, before making the examinations about to be described, I naturally assumed that the discovery had been made in these younger strata.

On examining the banks of the river, no trace of recent prospecting could be discovered till the older rocks at the mouth of the gorge were reached. Making inquiries, I learned that the discovery of coal had been made at a point nearly half way through the gorge, and in a locality at which it was moderately certain no Cretaceo-tertiary coal-bearing rocks could be present. Calling on Mr. Silcox, on whose land the prospecting for coal had been carried on, he showed me what had been done. The so-called outcrops of coal are situated on the left bank of the river close to the water's edge, but at the time of my visit no coal-seam could be seen, nor was there any indication that such would be found. Throughout a given thickness of strata numerous carbonised plant remains were present, and these when of sufficient mass formed small nests of bright coal, or, where less in size and aggregated in greater numbers within a given space, they formed a coaly shale. I saw one or two bands of this description, but they continued for no distance exceeding a few feet, were not more than 6in. or 8in. thick, and were so impure that no part of them could be called coal. The formation belongs to the Upper Trias or Otapiri series, and consists of conglomerates that are more or less breccias—sandstones and sandy shales. The rocks specified recur as distinct strata again and again, as shown in the section along the bank of the river, and the whole forms a syncline, the sides of which dip N.W. and S.E. at an angle exceeding 45°. These rocks rest on the *Monotis salinaria* and *Mytilus problematicus* beds, and the beds in which these fossils are found have by Hochstetter and others been determined as of Triassic age. These and the overlying beds, arranged as a syncline, stretch along the outer range of hills from Richmond to Eighty-eight Valley, and at one time or another have been fully explored by me. In different parts of the hills to the south-west of the Wairoa Gorge the beds prospected for coal have been closely examined, not, indeed, with the view of finding coal, for that, indeed, does not exist, but for the purpose of collecting the fossil remains, of which this horizon is a great repository, both of marine and terrestrial forms. And yet, during the various examinations that at different times have been made, no trace of a coal-seam has been discovered. It is true that many ferns and rare plants have been collected from the beds, but these occur associated with marine organisms in such a way as, with the nature of the rocks in which they lie imbedded, teaches clearly that the conditions were not favourable for the formation of regular coal-seams.

At the time when these beds were being prospected for coal some samples were tested in Nelson, and, it is said, proved to be bituminous coal of excellent quality, containing not more than 4 per cent. of ash. There can be no doubt that the coal is, or the carbonised plant remains as above described are, of a bituminous character; this merely agreeing with the evidence as to the nature of the thin coal-deposits that occur in this formation in many places in the South Island. The Lias, Rhætic, and Trias formations have in all parts of New Zealand given signs of being coal-bearing, but no coal-mine has ever been worked in any of these formations.

The Under-Secretary of Mines, Wellington.

ALEX. MCKAY,  
Mining Geologist.

THE ENNER GLYNN COAL-MINE, AND THE COAL-BEARING AREA WITHIN BROOK STREET VALLEY, NEAR THE TOWN OF NELSON.

REPORT on, by ALEXANDER MCKAY, F.G.S., Mining Geologist.

Mr. A. MCKAY to the UNDER-SECRETARY of MINES.

SIR,—

June 12th, 1896.

Between the 15th October, 1895, and the end of the month I made different examinations of the area of coal-bearing rocks situated within the upper part of Brook Street Valley, Nelson, within which the Enner Glynn Coal-mine is being worked. I also made some examinations to the south-west, in the direction of Jenkins's Hill, and the extension of the same coal-measures; thence