

The area in which coal-measures occur has been exactly delimited; and numerous coal-outcrops, many hitherto unknown, have been located, and are shown in exact position on the field-maps. The coal-measures proper are about 100 ft. in thickness, and contain in most places several seams of coal. The thickest outcrops observed, however, were only 5 ft.; one of these occurs on Section 2, Block I, Ohura Survey District (Aitchison's farm). The seam, however, does not maintain this thickness, but along the strike thins to 1 ft. 3 in. in 10 chains, and on the dip to 3 ft. in 20 chains. On the east side of the Tangarakau Gorge there is also a 5 ft. outcrop, but this contains some shaly bands. The thickest outcrop of clean coal elsewhere in the gorge is 3 ft. 9 in. In places faulting is prominent.

It is quite certain that under present conditions the coal of the Tangarakau Gorge and that near Tatu and Ohura cannot be profitably worked on a large scale. Small mines to satisfy local requirements may possibly be established at some future time, but in view of the important field of coal near Waitewhena, north of Ohura, immediate action in this direction does not seem advisable.

In several places thick but variable bands of conglomerate suitable for roadmaking purposes have been found.

The Ohura County Council intends opening a quarry in Gorge Creek, three miles west of Ohura. Here the conglomerate is 100 ft. thick. Mr. Ellis, as a result of the geological examination of this locality, was able to indicate to the County Engineer a much better site for the quarry than that originally selected.

To sum up the economic results of the survey:—

- (1.) A good topographical and geological map of the area examined can now be produced.
- (2.) The area in which coal occurs has been defined, and the coal-outcrops have been exactly located.
- (3.) Roadmaking material has been found.

PICTON COAL.

(By P. G. MORGAN.)

INTRODUCTION.

From the 23rd August, 1920, until the 28th, with the exception of the 25th, I was at Picton examining the coal-measures and other rocks of the district. On the evening of the 23rd, after my arrival at Picton, I was interviewed by members of the Chamber of Commerce. On the 24th, guided by Messrs. Thomas Allport and Walter Webster, members of the Picton Coal-prospecting Company, I visited Shakespeare Bay, Mount Pleasant, and other localities. From the 26th to the 28th I examined the whole of the environs of Picton.

Largely on account of coal having been discovered near Picton many years ago, the district has been frequently examined and reported upon by geologists. All the reports were adverse to the prospect of such coal as does occur being worked at a profit. My recent investigations, as might be expected, lead me to the same conclusion. In the hope that those interested will be able to understand the evidence which has caused several geologists, as the result of examinations widely separated in time, to form one and the same conclusion I will give a summary of all previous reports, and will give full reasons for my conclusions.

In 1864 Sir James Hector (then Dr. Hector) visited Picton, and observed indications of coal-measures being present. (Rep. Geol. Explor. during 1874-76, No. 9, p. 33, 1877.) Coal was discovered at Shakespeare Bay in May, 1874, and immediately thereafter Mr. Alexander McKay was despatched to Picton in order to examine the find. In a report which lacks detail McKay mentions "marls containing nests of coal, sometimes traceable as thin irregular seams for a few yards." These occurred on the east side of Shakespeare Bay. On the west side of the bay he noted rolled fragments of coal amongst the shingle on the beach. At The Elevation he saw "recent accumulations" of reddish gravel and clay, containing thin beds of carbonaceous matter and some remains of trees. Finding that "there was little probability of coal being got in paying quantities," he returned to Wellington. (Rep. Geol. Explor. during 1874-76, No. 9, pp. 32-35, 1877.)

In October, 1878, McKay again visited Picton, and reported in more detail concerning the coal than the year before. He states, however, that no discoveries of greater value than those he had previously inspected had been made, and his unfavourable opinion of 1877 was therefore fully borne out. Coal, he writes, was first found below high-water mark on the east side of Shakespeare Bay, where it occurred as a small seam not more than 3 in. or 4 in. thick. As a seam this continued for but a few feet along the strike of the rocks, and, followed downwards, became little more than a parting, separating the beds between which it occurred. A little to the north-east a shaft was sunk under the direction of Mr. Pugh to a depth of 27 ft. From the bottom a drift was made in a westerly direction for 12 ft., and a winze sunk from this to a depth of 6 ft., but apparently no coal was found. A new shaft-site was then selected on the foreshore a few feet to the west of the outcrop of coal first discovered. At 10 ft. a seam of coal 2 in. thick was encountered. This dipped to the westward at an angle of 45°, but, according to Mr. Pugh, when followed, first assumed a vertical dip, and then, turning over, dipped to the south-east at low angles.

McKay further states that thin irregular outcrops of coal were found on the western side of the valley at the head of Shakespeare Bay, and a shaft was sunk on one of these to a considerable depth, cutting a small seam 4 in. or 5 in. thick. In this shaft the strata were found to dip very steeply to the westward, and apparently passed under the schists, an outcrop of which showed within a chain