

per cent. ; graphite, 2.64 per cent. ; clay and sand, 79.12 per cent. (See "Graphite in New Zealand," N.Z. Jour. Sci. & Tech., vol. 2, p. 204, 1919.) If the graphite came from the Trias-Jura rocks south and east of Picton it is not likely to have any economic value, but an occurrence in the schists would perhaps deserve further investigation.

Cement Materials.—Limestone, clay, and coal are required in order to make Portland cement. Proximity of the works to a port is also desirable. Picton has, of course, an excellent harbour, and at The Elevation is a fairly large deposit of calcareous claystone suitable for cement-manufacture. Limestone, however, is the principal substance required for cement-manufacture, and of good limestone there is very little in the Picton district. Coal also does not occur in quantity, nor is it very probable that any can be mined on a commercial basis. The almost total lack of limestone condemns Picton as a centre for cement-manufacture, and thus the attempt made a few years ago to establish cement-works necessarily ended in failure.

Gold.—At Mahakipawa, a few miles west of Picton, gold was discovered many years ago. It is believed that much unwon gold yet lies beneath the surface of Mahakipawa Flat. The source of this gold is probably the schist range west of Picton, but no lode from which it could have been shed has yet been discovered. As bearing on the auriferous character of the schist it may be mentioned that a 5 oz. nugget is said to have been found on the Picton side of the range. A little desultory prospecting is still being done in the valley of Cullen Creek, &c.

Many years ago an auriferous-quartz lode was worked at Jackson Head, west of the entrance to Queen Charlotte Sound. Later a mine called the Golden Point was unsuccessfully worked by a Picton syndicate. It was situated on the north-western side of Queen Charlotte Sound, but I have not ascertained the exact locality. It is mentioned by McKay as being "on the north side of the sound, opposite Picton." (Rep. Geol. Explor. during 1878-79, No. 12, pp. 89-90, 1879.)

Antimony.—At one time an antimony-mine was worked with some success at Endeavour Inlet, a deep bay on the western side of Queen Charlotte Sound. Mining operations ceased many years ago.

MAP.

The sketch-map herewith shows the approximate boundaries of the coal-measures near Picton and Shakespeare Bay. In order to illustrate the geology of the area correctly a good topographical map on a large scale is a necessity. The present map, therefore, cannot be accurate in every respect. It embodies some information taken from McKay's map of 1882, with which it agrees tolerably well. The detail is greater, and—a most important point—the principal faults are clearly indicated.

CONCLUSION.

In order to elucidate the somewhat difficult geology of the Picton district a lengthy examination, based on good topographical maps, would be necessary. The object of my recent visit, however, was not so much geological as to ascertain what were the coal-possibilities. Unfortunately, no reason for changing my opinion of 1914 (which was in agreement with that of other geologists) has been found, and my recent investigation simply shows more plainly than ever that the Picton district cannot be regarded as a potential coalfield. It may perhaps be said that the geology is difficult, and has not been thoroughly worked out. This may be correct to some extent, but the opinion expressed does not rest merely on geological details, but is founded on wide experience both of geology and mining.

The absence of a coalfield does not render a detailed geological survey of the Picton district unnecessary, but such a survey may be postponed until more important areas have been examined.

6. OIL-SEEPAGE NEAR WARD, MARLBOROUGH.

(By P. G. MORGAN.)

On the 25th August, 1920, accompanied by Mr. Richard Forrester, the discoverer, I visited a small oil-seepage or spring situated about three miles north-east of Ward. This occurs at a height of about 450 ft. above sea-level, on the north bank of a small stream, near its head. The locality, which is roughly two miles and a quarter south-east of Taimate Railway-station and rather over three-quarters of a mile north-north-east of the trig. station on London Hill, is included in Small Grazing-run No. 180 (Cape Campbell Survey District).

Very little can be said about the seepage. What one sees is a tiny pool of water containing small masses of yellowish buttery scum, and about a square yard of rock stained dark brown by oil. The rock out of which the oil is oozing, apparently very slowly, is a fine-grained much-jointed greywacke, probably of Jurassic age. The weathered surfaces of this rock are dark-coloured, but freshly broken surfaces exhibit a light-greyish tint. The joints are stained dark brown or almost black with oxide of iron, probably containing some manganese oxide. Greywacke is a rock of the same nature as sandstone, but the latter name can hardly be correctly applied to the rock out of which the oil is oozing.

The seepage of petroleum under discussion is of interest, since it issues from a rock older than any of the known petroliferous series of New Zealand, but is probably in itself not of great importance. The greywacke itself is too close-grained to be a good reservoir rock for oil, but the fact that it is much jointed counterbalances the close grain and renders the rock capable of holding and yielding a large amount of oil. Almost certainly, however, if oil were now present in quantity there would be one or more large seepages in the area where greywacke outcrops, owing to the facilities which the jointing of the rock affords for the escape of any contained petroleum. Hence on this account alone