11. WAIPATIKI OIL-WELL, NEAR WEBER.

(Summary of Report by P. G. Morgan.)

On the 16th September, 1920, I visited the bore being drilled by Waipatiki Oil-wells (Limited), at Waipatiki, about three miles north-west of the township of Weber. This bore, formerly known as "Kotuku Oilfields bore No. 1," is on Oparae Road, three-quarters of a mile south of its junction with the Dannevirke–Weber Road. The chief reason for drilling here was the existence of a large gas emanation or spring in the neighbourhood. When its No. 1 bore had reached a depth of 2,336 ft. the Kotuku Oilfields Syndicate suspended drilling, and concentrated its efforts on No. 2 bore, some distance to the south, on Mr. A. D. Herrick's land. At a depth of about 3,000 ft. this bore entered a hard light-grey rock, most likely of greater age than the possible petroliferous beds. The Kotuku Oilfields Syndicate then ceased drilling. Some time later its plant was sold, and in the end was acquired by the Waipatiki Oil Company, which later became Waipatiki Oil-wells (Limited). This company decided to deepen No. 1 bore, and at the time of my visit its depth was about 3,600 ft. The rock being penetrated was calcareous claystone, stated to yield "shows" of oil.

It is quite possible that, as the shareholders hope, oil in quantity will be struck by continuing the bore, and hence the boring operations cannot be condemned outright. At the same time the prospects of this one bore, considered by itself, are not, in my opinion, bright. Since, however, no detailed geological survey of the district has been made, the most important factor for forming a reliable opinion is wanting.

The known evidence for and against the occurrence of petroleum in quantity in the Waipatiki district may be summed up as follows:—

(1.) Dr. J. Wanner, a well known oil-geologist, in 1911 reported favourably on the Weber (Waipatiki) district as a possible oilfield.

(2.) Near No. 1 bore is a large gas-emanation. The composition of the gas favours—and in fact almost proves—the view that it is associated with petroleum. Other gas springs occur in the district. On the other hand, the petroleum may be only in small quantity, and many natural-gas occurrences are not directly associated with profitable accumulations of petroleum.

(3.) On Mr. Frank Giddens's farm at Pukehinau, south of Waipatiki, a greasy substance occurs in the ground close to a gas spring. This material has been described as like ozokerite, but it burns with difficulty, and is perhaps dopplerite. It may possibly be much the same as the "paraffin dirt" of Texas (a peaty substance), which is generally regarded as an oil-indication.*

(4.) Petroleum undoubtedly does exist in small quantity in the strata being bored, but there is no evidence of large accumulations or "pools."

(5.) The strata are of a character favourable for the formation of oil.

(6.) The structure of the strata appears to be favourable for the accumulation and retention of petroleum. On the other hand, the existence of an "oil-sand" or stratum capable of acting as an oil-reservoir has not been proved.

As is now almost universally admitted, detailed geological survey should precede oil-drilling, for, although the existence of oil in quantity can be proved only by drilling, the fixing of bore-sites by geological survey greatly increases the chance of early success if oil should be present. If, however, oil is lacking in an apparently promising locality a few boreholes directed by the geologist will give practically absolute proof of its non-occurrence, and will save much useless boring.

There is a fair prospect of petroleum being found in payable quantity somewhere in southern Hawke's Bay or eastern Wellington, but geological survey is the first essential, not boring.

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12. SUPPOSED COAL-MEASURES, LAMB VALLEY, NEAR GLENHOPE.

(Summary of Report by P. G. Morgan.)

On the 16th February, 1921, I inspected the area being prospected by the Lamb Valley Prospecting Syndicate, situated in Blocks III and VII, Hope Survey District, near Glenhope, Nelson. A short adit (100 ft.) had been driven by the syndicate on the east side of a small tributary of Lamb Valley Stream, in soft claystones and sandstones resting on decomposed granite and dipping to the north-east. The locality is about 1,350 ft. above sea-level, and a little over three-quarters of a mile south-east of Glenhope Railway-station. Some of the claystone layers were carbonaceous, and contained numerous pieces of carbonized wood, but there was no defined seam of coal, and in my opinion no prospect of any being found in that locality.

Half a mile to the south claystones with carbonaceous layers are seen on the roadside resting on granite. These beds strike 145°, and dip at 15° to 30° to the north-east.

A bluff on the east side of the Hope River, half a mile north-east of the Glenhope Railway-station, was found to be composed of claystone, sandstone, and conglomerate, containing several carbonaceous seams and numerous pieces of lignitized wood. Similar beds occur farther north towards Tadmor Saddle.

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* A. D. Brokau: "Interpretation of so-called Paraffin Dirt of Gulf Coast Oilfields." Trans. Amer. Inst. Min. Eng., vol. 61, pp. 482–509 (with discussion), 1920. Peaty material of the same nature as "paraffin dirt" occurs in Taranaki, associated with gas-escapes (see N.Z. Geol. Surv. Bull. No. 14, pp. 27, 43, 45; 1920).