

Petroleum Company, Ltd. In addition to No. 1, mentioned above, three new boreholes have been drilled, known as No. 2, No. 4, and No. 5 respectively; while another, No. 3, was continued on the site of the old No. 4 of the Samuel syndicate (the third borehole sunk by that company).

#### DESCRIPTION OF NATURAL PETROLEUM-SEEPAGES AND GAS-EMANATIONS.

Petroleum oozes out along the beach just east of the breakwater at Moturoa, and this was the indication which led to the drilling in the immediate neighbourhood. No very definite spring from which this oil issues can be located, but it is believed that it comes from a crack or break in the underlying rocks 50 ft. or more in length, or from the upturned edge of these strata resting against the hard rocks of the Sugar Loaves. From this source it would easily well up through the loosely consolidated overlying tufa. However, only very small quantities ever reach the surface—merely traces here and there beneath the boulders on the beach.

A scum of petroleum is frequently seen on the surface of the sea near the breakwater, when the bottom is being dredged.

Gas issues somewhat intermittently in two creeks on Laurent's property near the Carrington Road. As both streams are very muddy and flow over boggy ground, it is thought that the bubbles may merely be marsh-gas, due to decomposition processes near the surface, and not emanating from a deeper source.

Higher up the Carrington Road, above the bore of the Standard Oil Company of New Zealand, and on the property of Mr. A. S. Petch, a number of gas-emanations appear on a small creek, a tributary of the Huatoki. Two (about one chain apart) are especially conspicuous. The upper issues on the edge of the stream on the left side, while the other bubbles forth in a small pool of water filling an artificial excavation. When lighted both burn vigorously for a few minutes, with almost a foot of flame of a yellowish colour. When first discovered and somewhat opened out, the upper jet of gas is said to have burned continuously for ten days.

Further ebullitions of gas on a smaller scale appear on the Huatoki above and below the entrance of the small stream above mentioned. Much of the surface soil of this locality is composed of a curious resin-coloured peat (?), but I am not of the opinion that such strong flows of gas could be derived from this source. They are probably of more deep-seated origin.

About three-quarters of a mile lower down the Huatoki Valley, on a tributary entering on the right side, other jets of gas appear like those on Petch's farm, and apparently almost equally strong. Here some advantage has been taken of the gas, a roughly made cone being placed over the vent to concentrate the gas and give a constant flame when necessary for boiling water, &c., by the men working in the neighbouring fields.

Still lower down the Huatoki Valley, about half a mile from the right bank of its tributary known locally as the Huatokiti, and on the property of Mr. Grooby, Franklyn Road, there is a very strong ebullition of gas issuing on the edge of a tiny puddle of water in an artificial excavation in tufa. The jets flow from several small cracks occurring in an area about 18 in. square, giving when lighted a strong flame 18 in. or 2 ft. in length, which burns without cessation unless somewhat violently extinguished.

Near the Manganui Stream, east of Inglewood, there are several gas-emanations. One, near the Norfolk Road, was not seen by the writer, but it is said to be of considerable dimensions. Somewhat farther south, on the property of Joseph Butler, there occurs on the left bank of the Maungamawhetei Stream—a tributary of the Manganui—a pronounced outflow of gas, issuing from a crack a few inches long. This jet formerly flowed out on the bank of the stream, but now the main one issues at the inner end of an artificial cut at some 10 ft. from the water's edge, though minor jets appear between this point and the water. The flame which rises when the principal jet is lighted is strong and well defined, burning to a height of about 18 in., with an orange flame, and said formerly to have risen to fully 4 ft. Above these are other ebullitions of gas for about 50 ft. up the stream, and all are fairly strong emanations issuing from consolidated tufa. This gas and that on Grooby's property are probably the most powerful in the district, and it seems remarkable that they are not utilised for household purposes by the neighbouring farmers.

#### DESCRIPTION OF THE PRINCIPAL EXISTING BORES.

The Taranaki Petroleum Company, which, as seen in a previous paragraph, is operating at Moturoa, has some five bores, numbered from 1 to 5. No. 1 is what is known generally as the Birthday Well. Small but promising quantities of oil were obtained in Nos. 1, 2, and 3. No. 4, the most easterly well, was drilled to a depth of 1,600 ft., but not a trace of oil or gas was found. No. 5 bore was merely started, being sunk to a depth of only 40 ft.

According to the manager, Mr. W. E. Simpson, the depth of No. 1 borehole at the time of the writer's visit (28th October, 1909) stood at 2,345 ft. The bore has yielded small quantities of oil at various times, but at exactly what depths could not be ascertained. When the petroleum-pool was first pierced the oil rose with violent pressure, and was for a short time a gusher, but now it is purely a pumping proposition. The bore is said to be in a very bad state, the case being bent and even parted, and the hole clogged. It is difficult to ascertain exactly what amount of oil has been obtained from the bore altogether, but the quantity obtained by the present company has not been commercially important.

The No. 2 bore, according to the manager, was at a total depth of 2,346 ft. at the time of the writer's visit. Gas is said to have been struck at 1,500 ft., at 2,183 ft., at 2,192 ft., and at 2,205 ft. A stratum containing oil accompanied by large quantities of salt water was pierced at 2,209 ft. in sandstone, and somewhat lower down another flow was encountered. For some time the oil pumped amounted to ten barrels a day, and was running at that rate when the hole was closed down. The daily quantity was, however, very irregular, being sometimes only four barrels, or even less, and some days much