

A large number of so-called oil-indications in the Waitara Survey District were visited by the writer, but, so far as surface features are of value, none seemed very important. In the majority of cases the "oil" proved to be a film of iron-oxide formed by the oxidation of ferrous carbonate. In other cases the scum appeared to be organic in origin, and due either to abundant fresh-water algae or to the decomposition of buried organic matter.

Several wells the water of which had proved unfit for use were examined, especially those belonging to the farmers on Bristol Road near its junction with Everett Road, and on the southern part of York Road. Investigation showed that, although in some cases petroleum was said to have formed a scum on the surface of the water in the wells, and to have distinctly flavoured it, the water was usually unpotable owing to the presence of an excess of iron-compounds, and in a less degree owing to organic impurities, all of quite superficial origin. It may be noted, however, that on the left bank of the Manganui River, just above the Bristol Road crossing, very abundant seepages of iron-oxide, which possibly contain some petroleum, occur.

Three reported occurrences of petroleum may be mentioned in more detail. Close to the farmhouse at the junction of Kelly and Ackworth roads petroleum is said to be frequently found as a scum on the surface of spring-water, especially after heavy rains. The writer was assured that this scum has been collected and burnt by means of a small wick. The scum seen by the writer on the occasion of a visit during a prolonged spell of dry weather was collected, but proved to be only iron-oxide.

Thirty-five years ago strong traces of oil are said to have been found by Messrs. Vickery and Hicks when digging a sheep-dip near the old military settlement of Tikorangi. Almost the exact location of this sheep-dip was indicated to the writer by Mr. Hicks, and two holes were dug to what he considered the depth at which the oil had oozed out in former days; but no trace of oil was found.

In early days large patches of oil are said to have been noticed floating on the sea at the mouth of the Waitara River. This was long before the erection of the freezing-works or the initiation of other commercial enterprises that by their operations might have given rise to the oily matter. It is just possible, however, that the oil had drifted from the "Sugar Loaves" near New Plymouth, where large patches of petroleum are frequently seen floating on the surface of the sea.

GAS-VENTS.—Gas-vents are of comparatively rare occurrence in the Waitara Survey District, and, so far as the writer has observed, are confined to an area of about three and three-quarter square miles, extending one mile and a half northwards from the southern boundary of the survey district, and bounded on the east and west by the Waitara and Manganui rivers respectively. Escaping bubbles of gas may be seen in most of the swamps and sluggish streams throughout the survey district, but may usually be ascribed to the decomposition of recently entombed organic matter. In the area defined above several escapes, more especially those in the Waitara River, appear to be too strong and constant to have such an origin.

There are two localities in which gas is escaping in fairly large quantity and is almost certainly of deep-seated origin. The first is at the junction of Bristol and Junction roads south of the boundary of the Waitara Survey District, and outside the area defined above, and the second is on Mr. Bishop's property, beside the Mangaone Stream, nearly two miles above its junction with the Waitara River. In both these places gas is escaping with some force. No analyses of the gases have yet been made.

Conclusion.

From what has already been said concerning the structure and arrangement of the Miocene Rocks it is evident that in all probability strata of the same horizon as those that are reached only by deep borings near New Plymouth will be found nearer the surface in the Waitara Survey District and still nearer the surface further to the east. It is evident also that the impossibility of locating well-defined anticlines and synclines in the Waitara Survey District, or, rather, the entire absence of such, prevents any definite indication of the most promising sites for bores in that area. It is, however, quite possible that further research in the Taranaki oilfield will show that the "anticlinal theory," which is not always a guide to the finding of oil, must be disregarded in this area, and that some other principle should be followed in choosing sites for bores. There is some reason to expect that explorations to the south and east of the area at present under review will prove that the anticlinal structure will there become more definite, and possibly the "oil-indications" more promising. It must be noted, however, that, unless some definite conclusion as to the mode of origin of the oil at Moturoa can be arrived at by further geological studies in that neighbourhood, boring for oil in the Waitara Survey District will be of a rather speculative character.

In connection with the possibilities of the country further to the east it may be noted that there are many well-authenticated reports of gas-vents in that direction. Moreover, lumps of bituminous matter have several times been picked up on the coast-line near the Petone Creek in the Mokau district. The largest of these weighed about 43 lb.

A sample recently submitted to analysis in the Dominion Laboratory gave the following results :—

Fixed carbon	..	..	..	..	..	..	..	26.00
Hydrocarbons	..	..	..	..	..	..	..	70.94
Loss at 100° C	..	..	..	..	..	..	..	2.81
Ash	..	..	..	..	..	..	..	0.25
								<hr/> 100.00
Specific gravity	..	..	..	..	..	..	..	<hr/>1.037

Dr. Maclaurin remarks that the sample closely resembles Syrian asphalt.