

The following are analyses of crude sulphur collected by me at Tikitere :—

| | Sulphur. Per Cent. | Moisture. Per Cent. |
|-----------------------|-----------------------|------------------------|
| Average grade | 71·76 | 4·14 |
| High grade | 84·33 | 0·91 |
| Highest grade | 91·23 | 1·34 |
| Black | 69·41 | 0·74 |

Whale Island.—A few years ago sulphur-mining operations were commenced on a small scale at Whale Island, off Whakatane. A small refining plant was installed at Tauranga, but the operations did not prove a financial success, owing principally to the limited quantity of sulphur and the occurrence of hot springs, which hindered mining operations.

Te Tarata.—About twelve miles by road north-east of Rotorua, on No. 3 Block, Whakapoungakau, a hot lake and a number of hot springs known as Te Tarata are situated. From this locality during 1902, and a few years prior thereto, about 5,000 tons of crude sulphur, averaging about 67 per cent. sulphur, was mined and loaded into drays by the Maori owners, for about £1 per ton, for Captain H. R. Macdonald. This ore was punted on the lake to Rotorua, and from thence carted to Rotorua Railway-station. Some of this was sold for exportation to Sydney for about 11d. per unit on trucks at Rotorua. By these operations nearly the whole of the sulphur in sight was removed. In all probability there remains a moderate supply of sulphur under the hot lake, but to drain this a tunnel of considerable length would be necessary, and without prospecting this is not warranted.

The following is an analysis of crude sulphur from Te Tarata: Sulphur, 71·30 per cent.; moisture, 3·13 per cent.

Rotorua.—The Department of Tourist and Health Resorts during 1916 granted to Messrs. Kempthorne, Prosser, and Co., New Zealand Drug Company, a three-years lease of Section 3 of the Sanatorium Reserve, situated near the Postmaster Bath at the extreme southern shore of the lake. A royalty of 15s. per ton is required for all crude sulphur removed. Prior to 1916 this company removed 3,204 tons of native sulphur from pockets in the sinter on the lake-shore, and this was refined at the company's works at Auckland. For this sulphur a royalty amounting to £801, being at the rate of 5s. per ton, was paid to the Department of Tourist and Health Resorts.

During August last, after the lease was obtained, the company recommenced operations, and at the end of the year had obtained 466 tons of crude sulphur from their lease. A sample of fragments of crude sulphur, obtained by me from this lease, upon analysis was found to contain—Sulphur, 77·37 per cent.; moisture, 2·26 per cent.

In August last the price of roll sulphur on the London market was approximately £13 per ton. Thereafter the price began to rise, and in March roll sulphur was quoted at £28 per ton, flowers of sulphur at £29 per ton.

PETROLEUM.

Operations in search of petroleum have been confined almost entirely to Taranaki. No new wells were commenced during the year, and no development of importance occurred.

The Taranaki Oil-wells (Limited) was principally engaged in recasing No. 2 well to a depth of 3,045 ft. with 8 in. pipe. The other wells of this company remain in the same condition as referred to in my last annual report; the production of oil therefrom has somewhat declined. The Taranaki Oil Lands Acquisition and Development Company (Limited) has deepened its Blenheim well to a depth of 4,777 ft.* A small flow of petroleum occurs at about 2,200 ft. It is stated by this company that 15,300 gallons of crude oil was produced from the Blenheim well during 1916.

The Consolidated Oilfields, Huiroa bore, has attained a depth of 4,788 ft.† Gas and traces of oil have been encountered at various depths. The bore is cased with 6 in. pipe throughout.

CINNABAR.

The Whangarei Cinnabar-mining Company has been engaged with a small staff driving levels on the lode, and it is reported that favourable assay value has been obtained therefrom. The extraction plant was found unsatisfactory, and its use is now discontinued.

PHOSPHATE.

The only operations in connection with the quarrying of phosphate were those of the Ewing Phosphate Company at Clarendon, Otago, which produced during the year an output of 7,600 tons. The total output for this company from 1902, the year of its initiation, to the end of 1916 is 102,472 tons. The known quantity of phosphate of commercial value in the Dominion appears small.

KAURI-GUM.

The quantity of kauri-gum exported during 1916 amounted to 5,448 tons, value £339,343, as compared with 4,575 tons, value £279,133, during 1915, an increase of 873 tons and £60,210. The total value of kauri-gum exported to the end of the year amounted to £17,875,483.

The European market for this fossil resin, used in the manufacture of varnish and linoleum, being greatly restricted by the present war, new but smaller markets have been obtained. During the year the distillation of kauri-gum oil from peat in North Auckland was resuscitated after a lapse of years. The peat yields from 20 to 30 gallons of oil per ton; and about 25 per cent. of the yield is stated to resemble petrol, and it is being used to propel motor-cars and launches. The residue is said to contain twenty-eight different kinds of heavy oils.

* During recent months the bore has been further deepened, and on 2nd July, 1917, was reported to be 5,014 ft. deep.

† During the past few months the Huiroa bore has been further deepened, and on 2nd May its depth was reported to be 4,921 ft.