

about 1,000° F., and has a pressure at the blower of 20 oz. and at the tuyeres of 16 oz. The height of the blast-furnace is 46 ft. 3 in. over all. The diameter at the top is 6 ft., at the boshes 9 ft., and at the hearth 4 ft. Air heated by waste gases is utilized for a hotblast. This furnace has a water-jacket and water-cooled tuyeres.

The following is an analysis of the ironsand after magnetic concentration :—

Silica (SiO ₂)	..	..	..	..	5.40
Alumina (AlO ₃)	..	..	..	..	1.53
Lime (CaO)	..	..	..	..	1.81
Magnesia (MgO)	..	..	..	..	2.80
Phosphoric anhydride*	..	..	..	..	0.69
Titanium dioxide (TiO ₂)	..	..	..	..	10.45
† Ferrous oxide (FeO)	..	..	..	..	28.71
† Ferric oxide (Fe ₂ O ₃)	..	..	..	..	48.61
					100.00

PETROLEUM.

No development of commercial value occurred during the year as the result of oil-prospecting operations, and none of the existing bores yielded oil in payable quantity.

Taranaki Oil-wells (Limited): During the year no drilling was carried out by this company, operations being confined to relining No. 2 bore with 8 in. casing to a depth of 3,045 ft., and No. 5 bore with 8 in. casing to a depth of 1,500 ft., the total depth of No. 5 bore on the 23rd May, 1918, being 2,950 ft.

The Taranaki Oil Lands Acquisition and Development Company (Limited) has been engaged deepening its Blenheim bore at Moturoa, which on the 24th May, 1918, had attained a depth of 5,130 ft., this being the deepest bore in the locality. This hole is lined with 5 in. casing. The stratum penetrated is Tertiary blue marine clay (papa). At a depth of 2,200 ft. a small flow of petroleum was obtained and stored.

Consolidated Oilfields of Taranaki (Limited): The Huiroa bore of this company, situated fifteen miles from Stratford, was stopped at a depth of 4,921 ft., no oil having been proved. At a depth of 4,900 ft. the bottom length of casing became detached: this was never recovered.

Kutuku Oilfields Syndicate: This company's Kaimafa bore, situated near Greymouth, was stopped when a depth of 1,335 ft. had been attained, the stratum being then considered unfavourable. In this hole marl, sandstone, and conglomerate were penetrated, the bottom of the hole being in quartz conglomerate. Previous holes by this company reached primary rock.

SULPHUR.

Tauhara North No. 1 Block, near Taupo, owned by a number of Natives, and containing valuable deposits of native sulphur (referred to in my last annual report), has been prohibited by the Government against private alienations; and the Native Land Purchase Board, having decided to purchase the block, has already acquired about one-fifth of the total interests.

At Rotorua, from Section 3 of the Sanatorium Reserve, situated near the Postmaster bath on the southern shore of the lake, Messrs. Kempthorne, Prosser, and Co. (New Zealand Drug Company) during the year obtained 1,120 tons of crude sulphur, and paid a royalty of 15s. per ton thereon in accordance with their lease from the Tourist and Health Department. The total quantity of crude sulphur obtained by this company from that ground to the end of 1917 amounted to 4,841 tons. The sulphur is used at chemical-works owned by them. A few Maoris are engaged digging the sulphur from fumaroles; it is then carted by drays to Rotorua Station for transport by rail. The crude sulphur is of medium grade, but is very cheaply obtained.

CINNABAR.

The Inspector of Mines for the North Auckland District, Mr. Boyd Bennie, reports favourably (see Annexure A accompanying this report) upon the operations of the Whangarei Cinnabar-mining Company. This company having installed a furnace at its mine, has successfully treated two trial parcels of ore with the following results: 1917—68 tons of ore yielded 1,500 lb. of mercury; 1918—130 tons of ore yielded 2,625 lb. of mercury. This mercury sold at 5s. and 7s. per pound respectively f.o.b., Auckland. Inspector Bennie estimates that there are 3,000 tons of ore in sight for stoping. Cinnabar-prospecting operations have also been carried out in the locality by Messrs. McLeod Bros., and at the Joffre Mine by Messrs. Collins Bros. The number of persons employed at the North Auckland cinnabar-mines is sixteen.

For the purpose of encouraging the cinnabar-mining industry the Government on the 1st August, 1917, published in the *New Zealand Gazette* a notice that a bonus of 4d. per pound would be paid on the production of the first 100,000 lb. of good marketable retorted quicksilver, free from impurities, from any mine in New Zealand on the following conditions: (1.) That at least one-half of the quantity is produced on or before the 31st March, 1920, and the remaining half on or before the 31st March, 1921. (2.) The first instalment of the bonus will be paid when 50,000 lb. of quicksilver has been produced as stipulated to the satisfaction of an officer to be appointed by the Minister of Mines, and on whose certificate alone the bonus will be paid. (3.) In the event of more than one person producing the required quantities of quicksilver before the dates named, inquiry will be made by the officer above referred to, when, if it is found that each applicant is equally entitled to a bonus, the amount will be divided in proportion to the quantities produced by each applicant, but in no case shall any bonus be paid until at least 50,000 lb. of quicksilver has been produced in the aggregate.

* Equivalent to phosphorus, 0.30 per cent.

† Equivalent to metallic iron, 56.36 per cent.