

QUARTZ-MINING.

NORTH ISLAND.

This branch of the gold-mining industry continues to be conducted on a much larger scale in the Northern District than in any other part of New Zealand, the most active centres being the localities of Waihi and Karangahake. Unlike the West Coast and southern goldfields, where alluvial gold-mining in varied forms is carried on in addition to that of quartz-mining, the operations of the northern goldfields are confined to the working of quartz reefs and the subsequent treatment of the ore for the extraction of gold and silver.

The Waihi Mine retains the premier position among the mines of the colony, and also takes rank among the larger gold-mining properties of the world. During last year the ore raised from the mine and treated at the Waihi Gold-mining Company's Mills at Waihi and Waikino (the Waihi, Union, and Victoria Mills) amounted to 298,531 short tons (2,000 lb. to the ton), for a yield of bullion of the value of £693,671 14s., or equal to an average of £2 6s. 5·7d. per ton. Dividends to the amount of £322,339 11s. were paid during the year, the total amount of dividends paid since the mine was opened being £1,924,617 16s. 6d.

The number of stamps at the several mills (amounting to 330 in the aggregate) has not been increased, but their capacity has been augmented by the introduction of tube mills and other appliances for the efficient treatment of ore.

At the mine there are now six shafts, the raising of quartz being carried on at three of them, whilst a fourth is to be equipped for winding purposes. A large pair of direct-acting modern winding-engines is shortly to be erected at one of the shafts. Among the plant which has been erected at the mine during the past year may be mentioned a very fine two-stage air-compressor, with mechanically controlled valves, actuated by cross-compound engines. The latter, which are fitted with a jet condenser, have cylinders of 14 in. and 30 in. diameter and a stroke of 3 ft. The initial steam-pressure is 150 lb. per square inch, and at a working-speed of seventy revolutions per minute the engines are rated at 260-horse power. The air-cylinders are 16 in. and 28 in. diameter and set in line with the steam-cylinders, the connection being made by through piston-rods. The pressure to which the air is compressed is 100 lb. per square inch, and the capacity 1,780 cubic feet of free air per minute. Altogether this plant is a very fine example of modern air-compressing machinery.

Underground somewhat extensive development-work was carried out during the year, and at the lowest or No. 7 level the Martha Lode was proved to be of enormous width, five crosscuts driven through it proving the reef to vary from 77 ft. to 110 ft. in width, or equal to an average of 92·2 ft. The other lodes also continue to show good promise, and it is evident from present appearances that the ore-deposits yet to be worked are such as will give life to the mine for years to come.

During the year the average number of persons employed by the Waihi Gold-mining Company at the mine, mills, and other works was 1,396. With such a number of persons it is only natural to expect that among them are to be found many who are careful as to their own safety and that of their fellows, whilst on the other hand it is equally to be inferred that careless and indifferent men will be included among the employees. That such is really the case was very clearly demonstrated to me whilst making an exhaustive inspection of the mine in September last, subsequent to the occurrence of a number of accidents. I found, with much satisfaction, a keen interest on the part of the management for the safety of the men employed, that there was no desire or attempt to economize at the expense of safety, and also that no expense was spared in the provision of material necessary to maintain the mine in a safe condition. It must, however, be remembered that underground work is always a more or less risky undertaking, that the greatest care cannot altogether prove an effective safeguard against accident where unseen dangers have to be encountered, and that it is incumbent on the men employed to satisfy themselves, so far as is reasonably practicable, of the safety of their own working-places.

The Waihi Grand Junction Gold Company (Limited)—who own the Waihi Grand Junction Mine, adjoining that of the Waihi Mine—have carried out a large amount of new work during the year. Operations underground have apparently satisfied the company as to the existence of good ore-bodies of an extent sufficient to warrant the erection of a fairly large milling plant and other machinery of an up-to-date character. The battery, a practically new plant of forty stamps and all requisites for the extraction of gold by the cyanide process, was, as intimated in last year's report, purchased from the Kauri Freehold Gold Estates Company (Limited), who formerly carried on operations at Opitonui. The re-erection of this has been put in hand, and a quantity of new machinery, including rock-breakers, tube mills, &c., added. It is intended to increase the number of stamps to 100, sixty more being on order. For steam-raising purposes three Babcock and Wilcox water-tube boilers are installed, their working-pressure being 200 lb. per square inch. These supply steam to three steam turbine engines of the Richardson-Westgarth-Paasons type, each engine being capable of developing 580 actual horsepower or 1,740-horse power in the aggregate. Each engine or turbine is coupled direct to a dynamo, the electric current generated being used for driving, by means of motors, the several sections of mining and milling plant as required. It is intended to wind the ore up the shaft by means of an electric winding-motor. In this latter respect, and the use of steam turbine engines for work in connection with mining, the Waihi Grand Junction Gold Company (Limited) may be regarded as pioneers so far as New Zealand is concerned. From the nature and magnitude of the works undertaken it is naturally to be expected that this company's mine will shortly be included among those properties which are regarded as steady producers of bullion, and add its quota to the output of precious metals.

At the Waihi Extended Mine, which so far may be regarded as a prospecting venture, the work during the year consisted in the deepening of the shaft from a depth of 518 ft. to 652 ft. and in driving crosscuts to prove the country at that depth. A body of quartz, which it is thought may possibly correspond with the No. 1 reef of the Waihi Grand Junction Mine, was met with somewhat unexpectedly.