

is intended to use in driving the tunnel later on. The water-blast is sending the air along the 2 in. pipe, while a small furnace connected with the 7 in. pipe is drawing out the smoke and warm air. This keeps the face cool and clear of fumes from the explosives. Blasting gelatine is used. This is found to be very effective, as the amount used per month is only 150 lb., while the distance driven is 80 ft., and the ground taken out is 10 ft. by 10 ft. The tunnel is fairly dry, the largest stream of water met with being in the face at present. In connection with and for the purpose of driving this tunnel a large air-compressor has been erected close to the mouth. This is to be driven by water-power, to be supplied from a new high-level water-race, which was constructed for this purpose. This race is connected with the 10 ft. Pelton wheel by 1,300 ft. of 14 in. steel pipes, giving an effective fall of 640 ft., which will enable the Pelton to be driven 190 revolutions per minute, developing 104-horse power. The compressor has a capacity of 820 ft. of free air per minute, at a pressure of 75 lb. to the square inch, with eighty-six revolutions. All this work is just about completed, and with the aid of the drills the tunnel should be carried on much faster and cheaper than at present. Besides this tunnel there have been two other drives driven—one in the Colonist Creek section of the property, driven on the course of the main reef a distance of 400 ft., at a cost of £795; and the other on a cross-lode known as the Silver King, on which 278 ft. was driven, at a cost of £486. The ore in both places is of a low grade. The average number of men employed for the period mentioned was forty-four, and the total amount of money spent in the same time is about £9,500. There has been no ore crushed, the battery being idle all the time.

Tui Gold-mines, Limited (Area, 100 acres; owners, Tui Gold-mining Company).—These claims are at present protected, but previously seventeen men were employed. Five levels have been opened, varying in depth from 30 ft. to 270 ft. The main reef, originally termed the Champion lode, is the only one yet worked on, and runs north-east and south-west, averaging a width of about 6 ft. The ore is fully charged with minerals, making it difficult to treat. Operations in the mine have been partially stopped, pending the completion of Campbell's works at Te Aroha for the treatment of ore by the thermo-hyperphoric process. On the completion of the works a quantity of ore will be immediately forwarded from the mine. Should the process prove a success the mine will at once be fully manned. Five men are at present employed.

Great Western Mine.—A small crushing plant has been erected in this company's mine, which was formerly known as No. 2 New Find, Waiorongomai. It varies from 2 ft. to 12 ft. in thickness. Thirty-four men were employed.

Loyalty Mine.—Fifty tons of quartz is ready for crushing. Two men are employed.

Great Result Mine.—A trial crushing of quartz from this mine will be sent to the Montezuma battery when the tramway is in repair.

Montezuma Mine (Area, 70 acres).—Driving has been carried on in the No. 2 level of the Waterfall reef, some 2 ft. 6 in. wide. The drive is in a distance of 250 ft. The stone is of poor quality. Operations are also being carried on in the Waitara and Plutus sections of the mine.

In the month of January last I visited Te Aroha, where the thermo-hyperphoric reduction plant was approaching completion, under the superintendence of the Rev. Joseph Campbell. The building, in which there are three floors, is 100 ft. by 80 ft. In the upper floor a 9-horse-power boiler, heated by Waikato coal, will generate the steam to work the Dowson gas, for which purpose a gasometer, 12 ft. in diameter, a generator, and purifier, have been erected. This gas will be used for driving a 75-horse-power gas-engine. The plant for the thermo-hyperphoric treatment (which has not yet arrived) will consist of three generators, to be worked on the intermittent system. These will be on the second floor. The producer gas, which is first made, is used for heating the furnace, and the water gas for the thermo-hyperphoric treatment. A stone-breaker will reduce the ore to $\frac{1}{2}$ in. mesh, and it will then pass on to an Askam Brothers' Tiger-mill, capable of pulverising it to any degree of fineness required, the present intention being to reduce it to the size of grains of wheat. The ore will then be elevated to large hoppers, erected over the furnace, from which three small hoppers are to be fed. These will immediately discharge into the furnace, which is to be heated up to 2,000° Fahr. by the producer gas, and will consist of a bed of eight retorts, with a capacity of 40 tons per day. Whilst in the retorts the ore will be subjected to the action of the water gas, which it is claimed has the effect of eliminating all the base materials, or reducing them to such a condition that it does not interfere with amalgamation. The ore is then conveyed to a Merrill's Tension mill of 40 tons a day capacity, with a mesh of about 40 to the inch. This mill, in which mercury is to be used, both grinds and amalgamates, and it is anticipated that a saving of 80 per cent. of the gold will thus be effected. From the mill the ore is conveyed by launders to three "Gold King Amalgamators," which it is expected will save the greater portion of the residue, or in all about 95 per cent. Work is at present being carried on in the Montezuma and five other properties, in which the lodes are being systematically opened up. A self-acting wire tram is on the ground, and will be erected as soon as the most suitable place has been determined. The cost of treatment of the ore, from the time it is delivered at the mill, is estimated by Mr. Campbell at not more than 8s. per ton, and, as it is anticipated that 95 per cent. of the bullion will be saved by the thermo-hyperphoric process, it should prove a cheap method of treatment for the large bodies of low-grade ores at Te Aroha, Waiorongomai, and other places, and be the means of affording employment to a large number of miners.

Tauranga District.

This district comprises the northern part of the County of Tauranga. Mining operations have not yet been conducted to a very great extent. The lands occupied are in some instances freehold. The following list, however, shows the claims held under goldfields titles:—