

OPITONUI.

Kauri Freehold Gold Estates (Limited).—During the year ended the 31st December, 1901, this company's work has been mainly development, opening up the lower levels of the Rangatira and Maiden Mines, and up to August no stoping was done, except leading stopes over the levels for the purpose of testing the blocks and having them ready for stoping. Since August, crushing has been carried on with from one to two shifts only per day at the battery, pending the opening-up of the low levels in the Maiden section of the mine. In this section the main shaft has been sunk to Nos. 3 and 4 levels, 120 ft. and 225 ft. respectively below No. 2 level. The total depth of the shaft from surface is 387 ft., including the sump 17 ft. below No. 4 level. Chambers have been cut at Nos. 3 and 4 levels in readiness to commence driving on the reef. At the No. 4 level a large compound duplex Dow pump has been fixed, with steam-cylinders 14 in. and 24 in. diameter, and water-plungers 10·5 in. diameter, stroke 18 in. These are capable of raising 900 gallons of water a minute when working at eighty strokes per plunger per minute. The pump is supplied with a Worthington condenser. During the year No. 2 level has been full of water, a dam having been fixed in the crosscut from the shaft to keep the water in the mine while the sinking was in progress. It is expected work will be resumed in this level at the end of January. In the No. 1 level the principal work for the year has been driving and stoping on the Geraldine reef. This has proved rather poor, but appears to be improving in depth, there being a marked improvement going downwards from the No. 2 adit level to the No. 1 level. In the Rangatira section the No. 3 level has been opened during the year, showing a greater length and width of gold-bearing stone than in any of the upper levels. Stoping has been carried on with fair results in the blocks over the Nos. 2 and 3 levels. A Dow pump, exactly the same as that already described at the Maiden, has been obtained for this section, but it is not yet in position, being intended to fix it at No. 4 level. A large Babcock and Wilcox boiler of 159 indicated horse-power has been erected on the surface, and a new smoke-stack 100 ft. high put up. In Lanigan's and Hilda sections very little work has been done for the year, a few men being kept working in the extension of No. 1 level and in stoping above the No. 1 level, also above the Hilda No. 2 adit. At the battery considerable additions have been made, rendering the treatment very complete. The slimes separated in the spitzkasten from the battery-pulp, and those overflowing from the receiving-vats in the cyanide plant, are elevated into a pair of settling-tanks, where the slime is precipitated with the help of lime. From these settlers the sludge is run out into a pair of agitating-tanks provided with paddles, which keep the slime in a constant state of agitation. From these it passes into a mentejus, from which it is forced by compressed air into a pair of fifty-chamber Dehore filter-presses, each capable of handling about 4 tons of dry slime at a charge. At first the slimes were treated with cyanide-solution in the agitators, the filter-presses then serving simply to separate the gold-solution; but latterly it was found best to use no cyanide in the agitation, but simply to separate the surplus water from the slimes in the filter-presses, and then treat the cakes in presses themselves with cyanide-solution followed by washing. The exhausted cakes of slimes dropped out of the presses are removed by sluicing. In order to increase the output of the stamps, 20-mesh woven-wire screens are now used, and the coarsest sand resulting is separated from the tailings in spitzluten and elevated to a Huntington mill, where it is reground to pass through a 30-mesh screen. When the coarse screens are on the battery and the Huntington mill is working, the output of the stamps rises to slightly over 4 tons per stamp per day. During the year 9,015 tons of ore was crushed and treated at the company's mill for 6,269 oz. 9 dwt. of bullion, valued at £11,719 12s. 4d. 180 men were employed.

KUAOTUNU.

Kuaotunu Syndicate Mine (formerly the Mariposa and Kapai-Vermont).—Operations in this mine were resumed in the month of March, 1901, after a stoppage of over twelve months. During this time an amalgamation of the Mariposa and Kapai-Vermont properties had been arranged and sufficient capital raised to enable work to be proceeded with. Through the long stoppage the water had risen up to the top of the shaft and filled all the workings and surrounding country below the main level, which involved a considerable amount of expense and trouble to unwater the mine. However, after three months' hard pumping and baling with tanks, this was successfully overcome, and the No. 5 (the lowest) level freed of water, and is now drained off to its normal quantity, the pump and appliances being quite capable of coping with it. As soon as the face of the No. 5 level was clear of water, operations to extend the south drive on the lode were started, and have since been driven on 713 ft. The lode for the first 300 ft. was small and low grade, since which it has opened out, and varies in size from 3 ft. to 8 ft. thick, carrying more or less gold. So far the chute of gold-bearing ore is about 350 ft. in length, and the prospects in the end of the south face are still fairly good. The manager is of opinion still better ore will be found further south. The No. 3 winze has also been sunk from No. 4 level a further distance of 53 ft., making it a total depth of 120 ft., where it connects with No. 5 level, and by this means gives good ventilation to all the workings below No. 4 level. An intermediate level has also been driven south on the lode from No. 3 winze a distance of 53 ft., midway between Nos. 4 and 5 levels. There has only been a limited amount of ore crushed. The principal object has been to get the mine well opened up to test the value of the lode at the No. 5 level, this being the deepest workings in this district. 650 tons of ore was treated for 381 oz. 15 dwt. of bullion, valued at £857 12s. 5d.; and twenty-eight men were employed.

Waitaia Mine.—Work in this mine has been carried on during the year with very satisfactory results. The company, in the month of October, obtained a lease of the Irene Company's crushing plant on very favourable terms. This has enabled them to have more regular crushings than previously, and, as the reefs have been opened up to a considerable extent at the different levels, there should be very little difficulty in obtaining sufficient ore to keep the mill going for