

sill of the shaft; (3) No. 1 level, 100 ft. below the level of the sill of the shaft; (4) No. 2 level, 190 ft. below the level of the sill of the shaft. Development work has been carried out during the year as follows: Extending the Hopper level, extending Magazine cross-cut (No. 1 level), cross-cutting at No. 1 level to the east and west, sinking a winze from No. 1 level on a shoot of ore, sinking the shaft, and extending the eastern cross-cut or adit level from the eastern side of the hill.

**Waitekauri Licensed Holding:** The work done in this section during the year consists of the extension of the Queen level on the line of reef, cross-cutting to the westward to prospect the ground, putting up a rise, and sinking a winze on a rich shoot of ore. The Queen level is a drive in the side of the Waitekauri Hill.

**Mine Machinery.**—At the Golden Cross section we have the following machinery at work: No. 1 shaft—One Hirnant air-compressor, worked by steam, 12 in. cylinder, with 2 ft. stroke, nominal horse-power=15: this compressor is used for working the Tangye pumps, and for ventilation purposes. One Tangye winding-engine, double drum, 25 nominal horse-power; one horizontal high-pressure engine, 18 in. cylinder, 3 ft. stroke, and 30 nominal horse-power, for working the pumps. The pumps are of the Cornish type, and consist of one 14 in. forcing set, 175 ft. of column, discharging at the adit level, 130 ft. below the surface. The sinking is carried on by a 6 in. Tangye pump, which lifts the water from the bottom of the shaft to the cistern of the forcing set. There are also two 4 in. Tangye pumps at this shaft, which can be used as auxiliaries to the other pumps, if required. The engines at this shaft are worked from one multitubular boiler, of 30 nominal horse-power, and one Babcock and Wilcox boiler, with Scott's patent furnace, of 30 nominal horse-power. No. 2 shaft: One Fowler winding-engine, double drum, of 25 nominal horse-power; one horizontal tandem compound non-condensing engine, with 13 in. high-pressure cylinder and 20 in. low-pressure cylinder, 3 ft. 6 in. stroke, 35 nominal horse-power. The pumps are of the Cornish type, and consist of one 14 in. draw-lift, with 115 ft. of column, discharging at the adit level, 80 ft. below surface. There is also at the shaft one 4 in. Tangye pump, which can be used as an auxiliary, if required. The engines are worked from one Babcock and Wilcox boiler, similar to the one at No. 1 shaft. Low-level tunnel: At this tunnel there is one Hirnant air-compressor, 10 in. air-cylinder, with 18 in. stroke, belt driven from 5 ft. 10 in. Pelton wheel. This is used for working two rock-drills in the tunnel. These drills are of the Slugger make. Tram-roads: There are four miles and a half of tram-road connecting the mine with the forty-stamp mill. Milling machinery (dry-crushing): One forty-stamp mill, of 1,000 lb. weight each stamper, and a crushing-capacity of 1·60 tons per stamp-head per twenty-four hours; the full forty head of stamps were employed daily; the number of days during the year on which this mill worked was 342. One ten-stamp mill, of 600 lb. weight each stamper, and a crushing-capacity of 0·70 ton per stamp-head per twenty-four hours; the full ten head of stamps were employed daily; the number of days during the year on which this mill worked was 300. One No. 5 Krupp mill; but this is not in use. There are also two stone-breakers, one a Wheeler, with 12 in. jaw, and one from Price, of Thames, with 9 in. jaw; eleven kilns of 250 tons capacity each, and two of 200 tons capacity each; nineteen wooden cyanide-vats of 30 tons capacity each; ten steel cyanide-vats of the same capacity; and three wooden cyanide-vats of 25 tons capacity each; five sumps (four of wood and one of iron), three wooden mixing-tanks, and five zinc filter precipitating-boxes. The power for the milling plant is water, with an auxiliary steam-power. Water-power: Two 6 ft. 8 in. Pelton wheels to work the forty-stamp mill; head of water 195 ft.; length of wrought-iron pipe, 2,000 ft. 28 in. diameter: one 6 ft. Pelton wheel to work the ten-stamp mill; head of water, 162 ft.; length of wrought-iron pipe, 835 ft., of 10 in. diameter: one 4 ft. Pelton, for working the vacuum pump of the cyanide-vats: and one 3 ft. Pelton wheel for working the dynamo for electric light: also one water-wheel, 36 ft. in diameter, 9 ft. wide, high breast driven, for working lathes, &c., in the machine-shop. Auxiliary steam-power: One tandem compound condensing engine by Yates and Thom, of 40 nominal horse-power, worked from two Babcock and Wilcox boilers, of 30 nominal horse-power each, for the forty-stamp mill; and one high-pressure horizontal engine (double cylinder), of 14 nominal horse-power, worked from one multitubular boiler of 14 nominal horse-power, for the ten-stamp mill. Water-races: One for forty-stamp mill, 3¼ miles long, of ten sluice-heads capacity; one for ten-stamp mill, 123 chains long, of five sluice-heads capacity; one for low-level tunnel, 63 chains long, of five sluice-heads capacity.

The total quantity of quartz crushed for the twelve months was 23,383 tons, yielding 51,202 oz. of bullion; value, £55,258 8s. 8d., extracted by the cyanide process. Cost of mining per ton, 11s. 1d.; cost of milling and treatment per ton, 18s. 11½d. Average number of men employed during the year 368, all wages-men.

**Alpha Mine** (Area, 97 acres; owners, Alpha Gold-mining Company, No Liability).—This mine is being well opened up preparatory to the commencement of crushing operations. A site was cleared about 8 chains from the low level, and the battery is now fast approaching completion. It is to consist of twenty stamps, to be driven by steam-power, and wet-crushing and cyanide process is to be adopted. The mill is to be fitted with up-to-date stamps, rock-breaker, berdans, and complete cyanide plant. The mine is opened on the main reef at five different levels. No. 5 level is 100 ft. over the low level, No. 4 level 100 ft. over No. 5. From No. 4, which is 274 ft. on reef, there is a rise through to the surface, a distance of 98 ft. Communication will shortly be effected with the low level, and on the commencement of crushing operations sufficient ground will be available to keep the stamps at work. Seventeen men were employed.

**Waitekauri United Mine** (Area, 109 acres).—This mine is owned by a company of the same name. Development work to a considerable extent has been carried on. The reef, which is from 3 ft. to 4 ft. in width, has been driven on in three levels 80 ft. apart. The quartz is of low value (15s. per ton), and consequently no machinery has been erected. Thirty-seven men were employed.