

water-level to decking, and built of good sound heart of kauri and totara. The whole of the formation of this tramway has been completed, and upwards of three miles laid with heart of kauri sleepers and 40 lb. iron rails. All the culverts have been made with glazed earthenware pipes, which will be more durable than wooden culverts; and all the swamps which the line traverses have been drained by good substantial drains. The locomotive has been put together, and is now busily engaged ballasting the line and hauling building-stone to the mill. Twelve of the iron side-tipping trucks are on the ground, and we have received advice that fifty more, which should be sufficient for our requirements, are now on their way out from England.

*Union Mine* (Area, 250 acres).—This mine is adjacent to the Waihi Company's ground, and is held by the Union-Waihi Gold-mining Company, an English company. A large amount of development work has been done during the year. No. 1 shaft is now 270 ft. in depth, and the depths of workings below surface are 177 ft. on Amaranth and 120 ft. on the Union reef. The Amaranth reef at No. 1, or adit level is 112 ft. below collar of shaft; and the Union reef at No. 4 level is 120 ft. below the collar of the shaft. The Amaranth reef varies from 14 ft. to 28 ft. in width, running nearly north-east and south-west, and is free milling, with large amount of silica. The Union reef varies from 4 ft. to 9 ft. in width, running north-east and south-west, and is of free-milling ore, rather soft and clayey; and the Winner reef undeveloped in No. 9 drive. Other works are as follow: Cross-cut driven to Amaranth reef, 486 ft.; cross-cut through country, 620 ft.; driving on Amaranth reef (adit-level), 787 ft.; cross-cutting, Amaranth reef, 107 ft.; winzes sunk on Amaranth reef, 420 ft.; other drives, winzes, and cross-cuts, 861 ft.: total, 3,281 ft. The whole of the above is development work, as the company does not at present possess any mill.

The No. 1 shaft has now (15th April) been sunk to a sufficient depth to allow of another level being driven to the Union reef 80 ft. below the lowest workings. A cross-cut will also be driven at this level to the Amaranth reef, which will intersect it at a depth of 160 ft. below the adit-level. The distance to drive will be, approximately, 300 ft. to the Union reef and 450 ft. to the Amaranth reef. Thirty men were employed.

*Waihi-Silverton Mine* (Area, 174 acres).—This mine has been continuously worked during the year. The shaft has been sunk to a total depth of 180 ft., which will give another 80 ft. of backs where the reef is opened up. The average width of the reef is about 10 ft. The total quantity of quartz crushed amounted to 7,922 tons, which yielded 6,605 oz. of bullion, of the value of £15,289. Sixty-one men were employed. The forty-stamp mill is in fairly good working-order. The mill has been provided with exhaust fans for the removal of the dust caused by the dry-crushing. These fans have the effect of carrying off the dust, and when further improvements are made it will be possible to alleviate the evil.

The *Gladstone Mine*, which is now owned by an English company, had a staff of men employed for several months past in sinking a shaft and clearing out the old levels formerly driven in the mine.

*Favona and Brilliant Mine* (Area, 200 acres).—The land is situated to the eastward of the Waihi and north of the Silverton. The chief work carried on during the year has been in sinking the main shaft. The size of the shaft is 14 ft. by 6 ft. in the clear, timbered with 9 ft. by 9 ft. framed sets, heart of kauri, and divided into three compartments, two for winding and one for pumps. Thirty men were employed. The management have supplied the following description of the mine and machinery:—

At a depth of 70 ft. from surface a cross-cut was put in for a distance of 100 ft. in a westerly direction. This work intersected a large ore-body, fully 60 ft. through. The course of this reef is north and south, and underlying about 20° west. Various assays were taken from this reef, varying from 4s. to £1 12s. per ton; and the last 120 ft. sunk in the shaft has been in quartz from which assays have been taken with similar results to the reef cut in 70 ft. level, and the general character of this ore-body resembles the Silverton very much. Hitherto the water has been lifted from this shaft by a 7 ft. by 4 ft. Tangye's pump, but as depth was obtained the inflow was so great that it quite overpowered the pump. It was therefore decided to cease operations in the shaft until the plunger and draw-lift could be put in. Previous to work stopping in shaft a chamber 8 ft. wide by 10 ft. high and 15 ft. long was cut out at 200 ft., or 10 ft. from bottom of shaft. It is the company's intention to drive two cross-cuts from this level, one to go east-south-east and the other west-north-west. It is also the directors' intention to put down another shaft about 30 chains north of the present shaft. This work will not be started until the Martha reef can be correctly located in the ground. Some loose quartz which has assayed up to £6 per ton has been got about 60 chains east of the present workings.

The pumping machinery consists of a plunger and bucket-lift, 12 in. diameter, with a differential stroke of 6 ft. and 4 ft. respectively. The motive-power is obtained from a compound condensing horizontal tandem engine with cylinders 16 in. and 26 in. diameter, with a stroke of 36 in. Keyed on the crank-shaft is a spur-pinion 3 in. to 4 in. diameter, geared into a spur-wheel 10 ft. diameter, 5 tons in weight, and prepared to receive a crank-pin for the 6 ft. or 4 ft. stroke, as may be required. The fly-wheel of the engine has a gross weight of 10 tons. The engine is also fitted with a crank-shaft governor connected to an automatic cut-off valve. This cut-off valve has a range of from 0 to three-fourths of the stroke of the engine. The boiler for supplying steam is of the multitubular horizontal type, 16 ft. in length, with a diameter of 6 ft. The tubes are sixty-six in number, running longitudinally, and with an outside diameter of 3½ in. Twelve of these tubes are of greater strength, and are chased, and secured with lock-nuts so as to form stays. Above the tubes there are also six longitudinal bolt stays 2 in. diameter; below the tubes are two gusset stays. The thickness of shell is ¾ in., and the boiler is designed to carry a working-pressure of 150 lb. to the square inch. This mine is now owned by the Waihi Consolidated Gold-mining Company (Limited).