Northern Inspection District.

Waihi Goldfield.—Waihi Gold-mining Company (Limited): An annual gold-production of £896,743, of which about one-half has been returned in dividends, constitutes the 1908 record from this mine, the prosperity of which is shown in the foregoing statement.

The most important developments during 1908 include the intersection by the south crosscut from No. 5 shaft, No. 9 level (1,000 ft.), of the Royal vein, in width 16 ft.: this vein was driven upon for 546 ft. At the same level the Empire vein was also intersected and driven into for 15 ft. without disclosing the north wall; further developments on this level will be awaited with interest.

On the No. 8 (850 ft.) level the following is a list of the veins opened, together with the length driven upon them:—

Name of Vein.	Feet driven.	Name of Vein.	Feet driven.
Royal	2,111	Edward	736
Rex	428	Martha	1,464
Empire	1,510	Regina	596
Alexandra	459		
Unnamed	104	Total	7,408

The aggregate thickness of these veins is about 264 ft., of which the bulk is payable. The complex vein-system here exposed is characterized by immense ore-bodies of varying width, branching generally from the Martha or parent vein, and carrying strong shoots of sulphide ore which appear to have been formed subsequently in fractures or fissures in the original quartz bodies by solutions which have deposited sulphides of higher grade than the original quartz filling.

At the reduction-works the total average number of stamps running during the year, exclusive of Sundays and holidays, was 315·187 out of an installation of 330. The total average duty per stamp per day was 4·167 tons of 2,000 lb., being an increase of 0·373 tons per stamp per day when compared with the previous year. Ten tube mills were employed, together with thirty-two tall agitator-tanks; and foundations for an additional ten tanks are being prepared. A new steel head gear has been erected at No. 4 shaft. At No. 6 shaft there has been installed what is probably the finest hoisting plant in Australasia, consisting of a pair of high-pressure direct-acting horizontal non-condensing engines, having cylinders 30 in. in diameter, with 6 ft. stroke, working at a steam-pressure of 70 lb. per square inch, the indicated horse-power developed being 1,100; partial expansion of the steam is obtained by automatic trip gear operated by governors; Cornish equilibrium double-beat valves are employed; a Langs lay plough-steel rope 1·25 in. in diameter is wound on coupled drums of 12·5 ft. diameter. The maximum load hitherto hoisted per hour in automatic tipping-skips by this engine is 129 tons (of 2,240 lb.) from a depth of 850 ft. The plant is similar to those most recently installed at the great British collieries, and may be regarded as quite the latest in winding machinery. As an auxiliary to the powerful single-acting Cornish pump employed at this mine, it is proposed to install an electrically driven three-throw ram pump of 13 in. diameter and 1,500-gallons-per-minute capacity; the electric power will be generated by two units of (Crossley) producer-gas engines, each of 400-horse power, this type of engine having given satisfaction at the company's treatment plant, where it has been installed nearly two years.

Waihi Grand Junction Gold-mining Company (Limited): During 1908 there has been an increase in the value of the gold-production by this company, but a decline of 3s. 8d. in the average value per ton of quartz treated. The future of this company is dependent on the result of the development with depth of the Waihi vein-system. That the Martha vein in the Waihi Mine increases in width in an easterly direction with depth as it approaches the Grand Junction boundary is illustrated by the published plans of the Waihi Company. It is shown that at the level of the collar of the Waihi Company's No. 1 shaft (being zero from which that company's levels are measured) the Martha vein in great width is 17 chains distant from the Junction boundary; but at 854 ft. lower level the distance between the strong Martha vein and the boundary had been reduced to about 5 chains. The datum of the levels of the two properties do not correspond, that of the Junction being 60 ft. lower. During the early part of 1909 the Empire vein was intersected by a crosscut from the No. 5 (944 ft.) level, which proved the vein to exceed 60 ft. in width; this discovery has considerably improved the prospects of this company.

During 1908 the principal developments at this mine have been carried out at No. 4 (794 ft.), where 788 ft. has been driven upon the Martha vein, exposing an average width of about 8 ft., and upon the No. 4 vein, where 624 ft. of driving has proved the vein to average about 6·5 ft.

The main No. 1 winding-shaft, recently equipped with a handsome steel head gear, is down 976 ft. The extensive and modern electrical installation and treatment plant at this mine have already in former reports been referred to.

Karangahake Goldfield.—Talisman Consolidated (Limited): A considerable increase both in tonnage treated, bullion recovered, and dividends declared has to be recorded, notwithstanding that since August, 1908, by the stoppage of the pumps on the adjoining New Zealand Crown Mines, work below the No. 12* level at the Talisman Mine was suspended owing to the influx of water until the end of May, 1909. To overcome the water difficulty it has been decided to increase the pumping-power by placing electrically driven Cornish pumps in the Woodstock shaft, which it is then proposed to deepen, and from thence develop the northern section of the mine. It is also proposed to install during the ensuing year the Waihi system of treatment—viz., tube mills, air agitating-tanks, and vacuum filters. The efficiency of this treatment is indorsed by its adoption upon many of the most important goldfields in the world. Probably in no other mining country are the metallurgical plants for the recovery of electrum from cyanide-solutions more advanced than in this Dominion, and this is undoubtedly due to the research work constantly being advanced at Waihi by Messrs. H. P. Barry and F. C. Brown and their respective staffs.

Operations at the New Zealand Crown Mines, adjoining the Talisman, have also been retarded by the influx of water, to overcome which it is proposed to install electrically driven duplex pumps

* No. 12 level at the Talisman Mine is 25 ft. above sea-level, and about 1,675 ft. below the apex of the vein.