Northern Inspection District

The history of the northern goldfields for the year has been one of progress, and developments have occurred on the Waihi and Karangahake goldfields which augur well for the continued prosperity of the quartz-mining industry. The features of the year have been the steadily increasing bullion-producing powers of the Waihi and Talisman Mines, the result of improved ore-values obtained from the development of the deepest levels, together with more complete extraction, by recent improvements in the milling, treatment, and bullion-saving plants on these goldfields.

On the Thames Goldfield, formerly the most productive in the Dominion, there has been a decline in the gold-production owing to the practical exhaustion of the rich run of gold at the Waiotahi Mine, and of the upper auriferous zone throughout the field generally. It is satisfactory to note, however, that a commencement has been made in (Government subsidised) deep-sinking operations by the May Queen Company from the Queen of Beauty pumping-shaft, which it is proposed to deepen to the 1,000 ft. level for the purpose of unwatering and developing the lower levels, which have hitherto been inaccessible. Owing to the central position of this shaft, the whole of the rich area which has in the past produced bullion to the value of between £7,000,000 and £8,000,000 sterling will be accessible at the 1,000 ft. level by means of crosscuts of inconsiderable length from the Queen of Beauty shaft.

Waihi Gold-mining Company (Limited): In the foregoing statistics the prosperity of the famous Waihi Mine is shown; upon comparison with the returns for the previous year an increase, both in production and dividends paid, will be noted. The underground developments continue to be very satisfactory, and the ore-reserves in sight have increased, and are now estimated by the company to be 1,299,979 short tons. The most important developments have appeared in the No. 8 (850 ft.) and No. 9 (1,000 ft.) levels, the latter being the deepest operations in the mine and on the goldfield. To describe the underground operations without accompanying plans and sections would be unsatisfactory, owing to the immense ramification of workings upon the complex vein system here exploited, but some impression of the magnitude of operations carried out may be gained from the following particulars regarding the length of drifting along, and average width of the veins being mined at the No. 8 (850 ft.) level, the deepest level of actual mining operations at the end of 1907:—

Name of Quartz Vein.	Length Driven on Level. Ft.	Average Width of Quartz Vein. Ft.
Royal	1,425	15
Empire	1,038	29
New Reef	50	Not known.
Martha	2,644	110
Welcome	226	110
Total	5,383	264

Regarding this extensive width of quartz veins, it may be stated that the bulk is considered by the management to be payable. During the early part of the present year — 1908 — further developments of importance have been carried out. At the No. 8 level the Edward vein has been intersected, and has been found to have improved in ore-values and increased in width. In the southern drive at this level crosscuts have proved the reef at different points to be from 75 ft. to 92 ft. wide, and to be worth from £10 5s. 10d. to £3 3s. per ton. At the No. 9 level (1,000 ft.) a crosscut from the No. 5 shaft has intersected the Royal reef, 16 ft. wide, 9 ft. of which averaged over £1 7s. per ton. At the reduction-works there are installations of 330 stamps, the total average number running during the year being 316·5, with an average daily duty of 3·794 tons per stamp. In addition, there are twelve tube mills, eight of which are now driven by 3 units (of 200-horse power each) of Crossley gas-engines (a 1,000-horse-power plant of this type having been installed), which have already effected an economy of 50 per cent. in coal-consumption. The tube mills are of the Davidson 22 ft. type, run at a speed of 27·5 revolutions per minute, and have proved most efficient in the reduction of the pyritic chalcedonic quartz of average hardness from this mine. Each mill is loaded with 5·5 tons of flints, the quantity consumed being 18 cwt. per mill per week. Barry's patent Honeycomb liners are used, and have proved most satisfactory, the life per set being from twelve to fifteen months, and the cost per ton milled being under one-sixth of that of the imported silex-boxes formerly in use. A paper on the subject of these liners has been courteously contributed by Mr. H. P. Barry, M.Inst.M.M., and this appears in Appendix E, attached to this report. The daily tonnage of sands passing through the tube mills is about 77 tons per mill. After grinding in three tube mills, 70·87 per cent. of the slimes has been found to pass through a screen of 150 mesh. The cost of running the tube mills per ton of sand passed through them is 1s. 2d., and on the total mill tonnage 9·1d. per ton of ore crushed. The chief benefits derived from the use of tube mills at Waihi are—(1) Increased extraction, amounting to about one-sixth per ton on the whole of the ore crushed; (2) increased tonnage of fully 36 per cent.; (3) a saving of 75 per cent. on the cost of screens; (4) amalgamation improved by from 5 to 7 per cent.; (5) the slime, owing to the contained fine sand, is more easily treated. The reduction of milling-cost due to the use of the tube mills is fully 6d. per ton on the total tonnage; this, together with one-sixth improved extraction, represents a total increased saving of 2s. per ton. After the tube-mill treatment the slimes are treated by agitation, and finally by vacuum filtering. During the past year thirty-two tall agitator circulating tanks of B. and M. type have been installed, together with the necessary air-compressors,