

APPENDIX.

REPORT ON GOLD FIELDS, ETC., VISITED, AND WORKS IN PROGRESS ON GOLD FIELDS.

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SIR,—

Mines Department, Wellington, 20th May, 1884.

I have the honour to forward you annual report on the gold fields that I have visited during the year, and on the various works, either subsidized or wholly constructed by Government, that are in progress for the development of the mines throughout the colony.

NORTH ISLAND.

TE AROHA.—This field may be said to be only opening, for, although claims have been held and worked for nearly two years, there was no quartz crushed from any of them until November last, when the completion of the tramway (which was constructed by the County Council, with subsidies from the Mines Department, at a cost of about £18,000, including rolling-stock, of which sum the Government contributed £9,000, and the use of 156 tons of 40lb. iron rails) enabled the quartz to be brought from the principal mines to the crushing battery at Waiorongomai Township, which was erected by Messrs. Firth and Clark, of Auckland, as a crushing plant for the field. The returns from some of the mines on this gold field are very encouraging, especially the New-Find and Colonist Mines, which have averaged about 1½oz. of gold per ton since they have been opened; and, when the thickness of the quartz lodes in these mines is taken into consideration—viz., from 4ft. to 6ft., and in some places 8ft.—it must be extremely gratifying to all those who have invested capital in them, and likewise to those who have an interest in the welfare of the district. Not only are they getting this percentage of gold out of the quartz from the crushing battery, but the tailings are giving an equal percentage after being treated in the berdans. When I visited this gold field in December last quartz from five of the principal mines at that time was tested at the battery—viz., the New-Find, Colonist, Premier, Werahiko, and Waitoki. Out of these the Waitoki was the only mine that did not prove payable for working, the quartz from that mine only averaging 5dwts. per ton; but since then the Premier and Werahiko have not turned out so well as was at first anticipated. Mines like the New-Find and Colonist, which have a large body of stone, will pay with a much smaller percentage of gold than they are averaging at present. There were other mines, which had not then had an opportunity of being tested, that showed gold pretty freely. There are thirty registered companies on this field, besides private-claim holdings. The registered capital of these companies represents in the aggregate £637,000, of which about £20,317 have been called up; and, from the present appearance of these companies' mines, there will only be a small percentage of them compared with those on other quartz fields that will not pay for working. Some of the lodes are very small, but the quartz is rich. The character of the gold is extremely fine, and averages about £2 16s. per ounce: it is diffused in bands through the stone, the same as though the gold had been ground to the finest flour, and peppered into the quartz when they were in a plastic state. The crushing battery and gold-saving appliances that Messrs. Firth and Clark have erected is one of the most complete plants there is in the colony: they have spared no expense to render it effective; but the fine character of the gold, and the way in which it is diffused through the stone, requires special manipulation to extract it. Therefore, although every credit is due to those gentlemen, who have erected a plant which is reputed to have cost about £20,000, and has been the means of proving this field, there is something still wanting to extract more of the gold before it leaves the tables to run into the tailing-pits, there to undergo a second process; and until this is done the crushing machinery cannot be said to be anything like perfect. More attention has been devoted to this subject in America than in the colonies; but this is no doubt owing to it being an older field, where more experience has been gained in extracting and separating the various minerals that are mixed with the gold and quartz. In addition to the present crushing plant, which consists of 41 head of stamps and 12 berdans, Messrs. Firth and Clark are erecting a large tailing-plant of 64 berdans, 3ft. 6in. in diameter, 35 of which are at present in position. These are covered over by a large building 80ft. long and 40ft. wide, having 14ft. walls, and a double roof covered with corrugated iron, and the floor of this building is about 22ft. below the level of the end of the tables of the crushing battery. Alongside the berdans there is a series of pits to serve as receptacles for tailings from the crushing battery, and these pits are connected with boxes or shoots from the different battery tables, so that any company using five or ten heads of stamps, their tailings flow directly into the pits alongside the berdans that are treating them. After the berdans have done their work, and reduced the tailings into a pulp, the sludge flows from them into a common channel, at the end of which there is a table covered with electro-plate, 8ft. by 4ft., where everything must travel over before it gets finally away, and to each side of this electro-plate there is a wire connected from an electric battery, to pass a current of electricity through the plate, so as to keep the quicksilver lively and active. The whole of this plant is to be driven with a Pelton hurdy-gurdy water-wheel, 4ft. in diameter. These wheels are now coming into use at the Thames, and will be described when mentioning the different machinery on that field. It is placed in a pit outside the building, the bottom of which is 16ft. under the level of the floor, and the same water that is used for driving the crushing plant is brought down on a flume into a vertical pipe 2ft. 6in. in diameter and 37ft. long,