

1908.

NEW ZEALAND.

FEATURES OF SPECIAL INTEREST AND ELECTRICAL
INSTALLATIONS AT MINES IN NEW SOUTH WALES
AND VICTORIA

(REPORT ON), BY THE INSPECTING ENGINEER OF MINES, NEW ZEALAND.

Presented to both Houses of the General Assembly by Command of His Excellency.

Mr. FRANK REED, Inspecting Engineer, to the UNDER-SECRETARY FOR MINES.

SIR,—

Mines Department, Wellington, 18th August, 1908.

During my recent visit to Australia in connection with the electrical installations there in use, I visited and inspected several mines and observed many features of special interest, including the conditions under which mining operations are conducted in the deepest coal, alluvial, and quartz mines in the British Empire, all of which are situated in Australia. For the information of the Hon. the Minister and yourself I herewith submit a report on the most important mining operations I witnessed, which, in view of the early reopening of deep alluvial mining at Ross, Westland, and deep quartz-mining at Waihi, the Thames, and Karangahake, may be of interest.

BENDIGO GOLDFIELD.

On this goldfield quartz-mining is profitably and safely carried out at the greatest depths yet reached by this branch of mining—viz., 4,492 ft.

The “saddle” reefs of Bendigo are described in most works on mining geology, I will therefore but briefly refer to them.

On the apex of the anticlines of the extensively folded sandstones and slates of Ordovician age these auriferous quartz “saddles” have been deposited by the hydrothermal solutions which have ascended from the underlying granite to the bedding-planes of the folded strata along which, as lines of least resistance, the solutions have been forced at enormous pressure, depositing the mineralised quartz in greatest thickness or width at those points where the resistance was least, and where the strata was fractured—viz., at the apex of the anticline and the trough of the syncline, but in the latter to a very much less extent than the former. From the apex of the anticline or “saddle” the vein-matter or “reef” gradually tapers off to insignificant proportions as the legs of the “saddle” are descended. In some mines several of these “saddles” occur one above the other, under the axis of the same anticlinal fold. In only one instance, and that a doubtful one, have the Ordovician rocks been penetrated by mining operations to the underlying granite, notwithstanding the great depths attained; but it is reasonable to suppose that the auriferous veins will continue to descend, as true fissures in the latter rocks, although it is probable that they will be impoverished of their values. The strike of the lines of reef is identical with that of the folded rocks at the apex of which they occur. The strike of eleven of the most important main lines of reef at Bendigo is north-north-east and south-south-west, and these reefs maintain their course and relative position, parallel to and in proximity with each other, to a remarkable degree. The gold therefrom is of high value, generally exceeding £4 per ounce, and, being free from refractory metals, is easily recovered by battery amalgamation alone, the tailings being regarded as not worth further treatment. The total gold-production from Bendigo exceeds £75,000,000 sterling, being slightly in excess of the total gold-production of this Dominion; but it is to be regretted that, in common with other Australian goldfields, an annual decline in the gold-production is recorded by Victoria.

The Victoria Reef (Mr. Rickard, Manager) and the New Chum Railway Mines, the deepest auriferous quartz-mines in the world, I descended to their greatest depths, and the following description of the mining operations therein may be of interest.

The main three-compartment shaft of the Victoria Reef Mine is constructed only 10 ft. by 7 ft. in the clear, and, in common with nearly all the deep Bendigo shafts, is too small to admit