

1887.

NEW ZEALAND.

## SHOTOVER AND SKIPPER'S DISTRICT

(PROGRESS REPORT ON), BY PROFESSOR BLACK.

*Laid on the Table by the Hon. Mr. Larnach, with Leave of the House.*

Professor BLACK to the Hon. the MINISTER of MINES.

SIR,—

The University Laboratory, Dunedin, 2nd March, 1887.

I have the honour to forward progress report of my visit to the Shotover and Skipper's district.

I visited this goldfield from the 15th to the 25th February, and, with Goodlet, conducted assaying-classes at the Phoenix Extended Mine, the Maori Point forge, and at Skipper's Point. I had previously, about the middle of January, conducted assaying-classes and assayed many samples of quartz at the Invincible Mine, and at Glenorchy, at the head of Lake Wakatipu.

Leaving Goodlet to conduct the assaying at the Phoenix Mine, I proceeded, with Mr. James Evans, the underground manager of the Phoenix, to view the Mount Aurum reefs, and to inspect that mountain with a view to form an opinion as to its gold-bearing character and as to the best means of opening it up. The rock throughout the whole district, from the Rees River, at the Invincible, eastward through Mount Aurum and Skipper's, across the Shotover, and on to the Arrow River at Macetown, is all of the same general character—a soft, wet, wavy, flexible, kindly micaceous schist, extremely favourable to the percolation of water, and therefore favourable to the formation of quartz reefs and to the introduction into them of gold and metallic ores. Mount Aurum itself rises with a steep grade from the right bank (looking down-stream) of the left-hand branch of the Shotover to the height of about 7,300ft. above sea-level. We ascended from the south-east side up one of the branches of Skipper's Creek, and crossed over ten well-defined quartz lodes in our ascent. Six of these traverse the mountain in a north-easterly course, with an underlie or dip to the north-west, towards the left branch of the Shotover. The lodes range in width from 2ft. to 10ft. or 12ft., are generally well defined, of a rusty red colour at the outcrop, due to oxidized pyrites, and contain a good deal of pyrites, with gold in many cases visible at a glance after wetting the stone. I selected one or two samples from each of the lodes for assay—some from the foot-wall, some from the hanging-wall, and some from the middle part of the lodes. I assayed these with about fifteen samples of stone, taken chiefly by myself, from reefs in the Skipper's and Rees district at altitudes of from 2,000ft. to 6,500ft. above sea-level, and got results of from 6dwt. to 8oz. of gold per ton, averaging, in the whole field, a little over an ounce to the ton of quartz. The iron-pyrites in the quartz, when assayed by itself, yielded from 2oz. to 12oz. per ton, and, from the improved processes now in use, very little of this gold will escape.

I found gold in every piece of quartz tested in this district, and, on the whole, a better result the lower the level at which the stone was taken. This is a strong indication that, where gold is got in the outcrop of a reef high up on the mountains in this district, it will probably yield a better result when followed down to the level of the present creeks. This is borne out by the rich character of the stone now for some time being taken out of the famous Phoenix Mine, and also by the high assays—from 2oz. to 6oz.—invariably got from the stone in the Maori Point reefs, at an altitude, the former 2,500ft., the latter, say, 1,800ft., above sea-level.

If this be true of Mount Aurum, to which I have paid particular attention, it means that, to work the numerous reefs that traverse that mountain to the best advantage, it must be pierced by a tunnel at a low level—say 2,500ft. to 3,000ft. above sea-level. This, if driven from the left-hand branch of the Shotover in a southerly direction, would cut the reefs that underlie or dip to the north-west at a level, some of them, from 1,000ft. to 3,500ft. below their outcrop. This, of course, would give an enormous quantity of stone in the backs, which would easily, and without much expense, be sent out of the tunnel to the batteries that would be erected on the Shotover.

From the nature of the country—lofty, sharp, mountain-ridges, cut into by deep narrow gorges—it would be a great mistake to tackle it in small areas, where there would not be room for large operations, nor outlets for the gold-bearing stone at any considerable depth. To get a tunnel at a low enough level to cut these reefs at the depths necessary to develop them properly, a large area of country must be made available.