

Constitution Hill.

Antonio Zala's Claim.—This indefatigable miner has been working here all alone for some years, and has done a considerable amount of work ; but whether he has found any lodes payable for working is a question which cannot be answered, as there is no machinery to test the stone. Before leaving the West Coast in June last it was stated that he had succeeded in purchasing a small crushing-battery from Mr. G. Perotti, of Greymouth, and if the information supplied me is correct he will no doubt soon have it erected on the ground, and will be able to ascertain the value of his discovery at an early date.

OTAGO DISTRICT.

This is a district in which a very large quantity of gold has been obtained from the auriferous drifts, but up to the present time very little has been got from quartz-workings.

The principal quartz reefs of the district are those situated at New Bendigo, Skipper's, and Macetown, as these are the only localities from which any considerable quantity of gold has been obtained from quartz-workings. Taking into consideration the quantity of gold that has been obtained from alluvial drifts, one would necessarily think that some very rich reefs exist in the localities from which the gold of the alluvial drifts was originally derived. The inability to do so, however, is accounted for in another way. The country-rock in Otago is of a very old quartzose-schist formation, much older than the formation in Auckland or Reefton districts. The rock is of a finely-laminated schistose structure, interlaced with quartz veins. Indeed, some of this quartzose-schist in the Achilles Mine at Skipper's shows gold through it, which strongly indicates that the gold found in the valleys and river-beds has come from a denudation of this quartzose-schist formation, and the gold is therefore not so much due to the occurrence of quartz lodes.

There are numerous quartz reefs in different parts of Otago, but, with a few exceptions, very rich stone has never been obtained. The Cromwell Mine at Bendigo is one of these exceptions, for some very rich stone was got here in an extremely well-defined lode running across the country-rock. This lode was found payable for working to a depth of about 400ft. Some rich stone was also obtained, especially in the early days, on the outcrop of the lodes at Macetown and at Skipper's, but there was never any specimen stone found such as has been got in the North Island districts.

The gold in the Otago District was more distributed through the quartz, and the lodes therefore, were not of so payable a nature. In recent years great expectations were formed when the Nenthorn reefs were discovered ; but, as far as the workings have yet shown, these are not of any very large extent. These lodes are more suitable for working in claims by individual miners rather than for large companies, as a large capital is not required for the erection of extensive reduction plants for crushing the ore, the reefs in general being very small.

Dunback.—Some licensed holdings have recently been taken up near Dunback for the purpose of working the quartz reefs in this locality. There has been a good deal of prospecting done here in the shape of trenching on the reefs, and several of them have been cut through, varying from 2ft. to 7ft. in thickness, and, in some instances, show fair prospects of gold. Four tons of stone was recently sent from these reefs to be tested at the Thames School of Mines, and gave the following results. The ore was crushed dry, and gave the following assay-value :—

							Oz.	dwt.	gr.	
Bullion	...	...	...	...	...	...	0	5	1	per ton
Gold ...	...	...	...	...	...	...	0	4	10	"
Silver	...	...	...	...	...	...	0	0	15	"

Value, £1 Os. 3d. per ton.

The 4 tons was subjected to hot pan-amalgamation in charges which recovered 19dwt. of gold bullion, 0.7921 in gold, and 0.1976 fine in silver, valued at £3 4s. per oz., representing a saving of—

Gold	...	...	...	...	...	...	74.5	per cent.
Silver	...	...	...	...	...	...	73.8	"
Value	...	...	...	...	...	...	74.0	"

A number of cyanide experiments were made with the ore, and it was found that an 0.4 per cent. solution of potassium-cyanide extracted 99 per cent. of gold and 97 per cent. of silver. The gold in the ore was extremely fine, and well adapted for extraction by the cyanide process. It contained a small proportion of pyrites, and experiments were made to determine the value of the concentrates. A parcel of 100lb. was subjected to careful hand concentration, and yielded 0.2 per cent. of concentrates, which showed that this contained 49oz. 15gr. of gold per ton, and 5oz. 3dwt. 5gr. of silver, having a value of £196 2s. 6d. per ton ; but, notwithstanding this high value, these pyrites would not pay to concentrate, as it would take 500 tons of ore to yield 1 ton of concentrates.

Although this test shows the quartz to be of too low a grade to pay for treatment by any method yet known, it also shows that there is gold in the lode, and possibly by driving on it for some distance a shot of gold-bearing stone may be found. There is no auriferous lode in the colony that contains payable ore for any great distance in a continuous length. In some instances the quartz cuts out altogether, and mullock takes its place between the defined walls which formerly enclosed the lode. In other instances a mere fracture or slatey vein through the lode would sever the shot of gold from very low-grade ore.

As this district is a new one, so far as the discovery of quartz in it is concerned, it is well worthy of being further prospected in order to determine whether it contains payable ore in other parts of the lode.