

"The tailings from A and B were next treated by amalgamation in a mortar, when further extractions of 24.1 per cent. and 24.9 per cent. respectively were obtained. These results may be restated as follows:—

	Extraction of Cyanide. Per Cent.	By Amalgama- tion after Cyanide. Per Cent.	Total Extraction. Per Cent.
A .. .. .	72.3	24.1	96.4
B .. .. .	66.4	24.9	91.3

"In considering the above methods of treatment, it will be seen that chlorination can be at once eliminated as useless. Plate amalgamation must also share the same fate.

"Of the remaining processes, the last—cyanide treatment, followed by amalgamation—gives excellent results. The gold left undissolved by the cyanide is fairly coarse, and should therefore be readily saved by simply running the tailings from the cyanide-vats over amalgamated plates. The consumption of cyanide is somewhat heavy, but this might be decreased by reducing the period of treatment; and even if the loss of cyanide should be as great as shown, the ore would still yield a very handsome profit.

"If it should be thought undesirable to go to the expense of erecting a cyanide plant, the alternative method of concentrating and shipping the concentrates to Dapto, New South Wales, could be employed. This would require but little outlay, and should pay very well indeed.

"The sample forwarded is said to be fairly representative of the reefs in the locality; but, if there be any doubt on this point, further samples should be sent for assay."

In connection with the actual working of quartz-mines in the Southern District, there has been a somewhat increased activity shown in the Macrae's and surrounding localities. This may be largely accounted for by the fact that in this portion of the Otago goldfields scheelite is associated with the quartz; and as scheelite, which carries a good percentage of tungstic acid, is largely in demand, and commands good prices, it is found advantageous to work quartz-reefs even where the gold-value is not high. None of the mines in the district are on a large scale.

Between Milton and Waipori there is a reef-formation known as the Canada Reefs, upon which operations have been conducted in a more or less intermittent and desultory fashion for some years. Of late renewed interest has been evinced and ten men have been employed at the Last Chance Claim, where there is a reef of some 7 ft. in width running east and west, with a southerly dip. The quartz, so far as won, is friable and oxidized, and yields an average value of nearly £2 per ton by amalgamation only, the sands being saved for cyanide treatment in the future. Prospecting operations are also being undertaken at other claims in the vicinity. The line of strike is practically parallel to the reef-system referred to in my last report, which runs from above the head of Lake Wakatipu to near Oamaru. The reefs running through the Lammerlaw Ranges are also on a similar course, while those worked at Waipori and near Skipper's Point strike approximately at right angles.

At Barewood, work has been continuous throughout the year, and the stone worked, although not so rich as that won some two or three years ago, can now be more effectively treated in consequence of the battery-power having been increased and concentrating and cyanide plant erected.

A new mine is being opened out on Mount Ross Station, Matarae, prospecting operations having evidently been of an encouraging nature.

Work on the Old Man Range has been conducted on a small scale at White's Reef by Mr. R. T. Symes, and at the Excelsior Mine by Messrs. Gray and Holden. Their operations have not been so profitable as in past years.

Mining operations on the quartz reefs of the Carrick Range have not been characterized by much activity, Messrs. Lawrence Bros. being the only people who treated any ore during the year, and this was only a small lot of 50 tons. As some indication of the possible results which may be obtained from the quartz reefs in this district, the report of Dr. Maclaurin (Government Analyst), already quoted, may be studied to advantage.

At Macetown, the operations at the Premier Mine have been of anything but a satisfactory nature from a shareholder's point of view, owing to the payable ore having run out. During the latter portion of the year prospecting-work disclosed a block of stone which gave some encouragement to the owners, but as this was worked upon it was found to be of very limited extent, and at my visit early in the present year was practically exhausted. The company have since decided to close the mine and dispose of the plant. Two small parties of men have been engaged during the year in mining in Caledonian Gully, their operations being the working of stone near the surface, from which good returns have been obtained, the average value of the ore being approximately £3 17s. per ton.

Mr. Farrell, who holds the rights to several claims in the locality, is endeavouring to float a company in London.

In the locality of Skipper's there is a degree of renewed activity, the property formerly known as the old Phoenix Mine, at Bullendale, and lately owned by the Achilles Gold-mining Company (Limited), having been reopened by the Mount Aurum Gold-mining Company. The new proprietors have opened out the mine on the British-American Reef at a much higher level than that worked by the Achilles Company. This being some distance from the battery, and in a different valley from where the latter is situated, the ore is transported from the tunnel-mouth and across a saddle to the battery by means of an aerial tramway. The rise from the tunnel to the crossing of the saddle is 270 ft. vertical, and the fall from there to the battery is 790 ft., the total distance being approximately 3,000 ft. Ample fall is thus obtained to allow of the tramway being worked by gravitation. The erection of this haulage plant and other necessary works for the more effective working of the property were completed towards the end of the year. It may now be reasonably expected that this property will resume its position among the gold-producing and dividend-paying mines of the colony.