

there is far more likelihood of more permanent lodes being found at deeper levels, and where such rich stone is found as in the Big River Mine, there is no doubt other mines will be opened in this district which will give equally as large returns. Indeed, very little is yet known of the auriferous character of the ground in the district, as, with the exception of the Big River, all the prospecting that has been carried on is near the surface, and unless a slip is found in the side of the ranges, or a lode found cropping out above the surface—it is by mere chance that one is found, as the country is covered with a good depth of peaty soil as well as a dense scrubby bush.

CRUSHING-PLANTS.

Notwithstanding that quartz-crushing has been carried on in the Reefton district for the last twenty-four years, there has scarcely been any improvement made in plants for the reduction and treatment of auriferous ores. The same old style of mill is seen working to-day as was erected when the field was first opened. A large amount of money has been paid in dividends from the quartz-mines in this district, which was only due to the very rich stone being found, for the method of extracting the gold from the ore has been the means of at least half of it being run to waste, portions of which is strewed on the river beaches and portions carried out to sea, and whatever is left lying about on the surface is practically beyond recovery.

Quartz-mining in the future must be carried on more systematically than it has been in the past. More attention will have to be given to the process of extracting the gold from the ore. The principle of every small claim having a small crushing-plant erected in connection with it will have to be abandoned wherever it is practicable to get a cheap means of transit to a large central plant, which will reduce the cost of crushing and insure a far better return of gold; besides, one staff of men can carry on the work, which, in some cases, requires four times the number of men by the present method. In some places, in the Reefton district, a large central plant could be erected to accommodate a number of mines. As for instance, the Wealth of Nations and Keep It Dark Companies have crushing-plants alongside each other, with two staffs of men, when one staff of equal number would do all the work required if a proper plant was erected under one building; but even this saving is only small in comparison to what it would be if a proper system was established so as to connect a number of mines to one large central plant.

A large plant could be erected in the vicinity of Crushington, which should crush and treat the ore in a far more intelligent manner than is now done at a much less cost, and extract a far higher percentage of the gold. For instance, the whole of the quartz from the mines at Crushington, including the No. 2 Keep It Dark, Hercules, Keep It Dark, Wealth of Nations, Energy, also from the Globe and Progress Mines at Devil's and Oriental Creeks, could be treated more economically at one large plant than by four separate plants as now used at the present time.

The great advantage of having a large central plant is that a good metallurgist could be employed as superintendent. The plant would be erected with all the most modern appliances for saving manual labour as well as for the extraction of the gold. The ore would be carefully assayed, and mine-owners would be always in possession of the results of the assay value, so that they could tell whether their ore was being properly treated or not. It is a well-established fact that different classes of ore require different methods of treatment in order to produce the best results, and this requires a man having a good metallurgical training to ascertain the best method to adopt.

At the present time there is no option as regards the class of treatment the ore has to go through in the Reefton district. The stone is hand-fed direct into the stamps, coarse gratings or screens are used, and the pulverised ore has to pass over quicksilver or blanket-tables, and, in most cases, over both; and if the gold has not been extracted, the amalgamator, or the man in charge of the battery, gets the blame for allowing the gold to run away, whereas he may have taken every precaution; and whatever blame there was rested with the mill-proprietors in not providing a proper means of treatment.

Taking the whole of the gold obtained from quartz in the Reefton district since the field was first opened, which represents a value of about £1,823,927, it may be safely asserted that gold to an equal value has been wasted—that is, lost in the process of extraction, or has been carried away in the streams.

There are at the present time sixteen crushing-plants in the Reefton district, comprising in the aggregate 255 heads of stamps, with a staff of men to each—men who may have been employed for years at this class of work, but, beyond the method used in the district for the recovery of gold by amalgamation, they may have little or no knowledge of any other process, or, possibly, may not even be able to make accurate assays of the ore under treatment to know what percentage of the gold in the ore was recovered.

Taking the whole of the quartz crushed in the Reefton district, and the yield of gold therefrom, it gives an average of 14dwt. 7gr. of gold per ton for the crushing-batteries. Comparing this with the returns given by the Minister of Mines for the Transvaal for the quarter ending 31st of March last, the average value of the quartz crushed at the Johannesburg mills, which are said to be of the most modern type, only gives an average of 8dwt. 15gr. of gold per ton, the gold at both these places being of equal value. The average value of the tailings treated at Johannesburg for the same period was 4dwt. 13gr. of gold per ton. The gold from the tailings, which is extracted by the cyanide process, is said to be only refined up to £3 per ounce.

In the North Island millmen are becoming more alive to the great importance of gold-saving, and are much further advanced in that respect than those in the Reefton district. Miners in that portion of the colony are now paying large dividends that formerly under the old methods adopted barely paid the cost of working. Careful assays are daily made of the ore under treatment at many of the plants, and the percentage of the bullion in the ore accurately ascertained.

None of the crushing-plants in the Reefton district are erected in such a manner that they can be economically worked. They are constructed at too low a level to permit of the ore passing