

In several cases, although no discovery of commercial importance has been made by the subsidized prospector, the Department's knowledge of particular localities has become more complete and the results obtained have been recorded for future reference. In other cases, where assistance has been granted to small companies carrying out systematic prospecting under capable management, the work undertaken has disclosed some promising results, and further work may enhance the value of the discovery made. In one instance the oxidized low-grade outcrop of a reef, containing a fair percentage of manganese oxides, was intersected lower down the hill by a subsidized crosscut 600 ft. long. The reef here was 24 ft. wide, but the payable portion was confined to a 6 in. seam showing distinct silver sulphide veins. This discovery is important, as the thickening of the pay-streak either laterally or at greater depth would turn a promising development into one of commercial value.

Altogether during the year thirty-five parties employing 115 persons were assisted. The work carried out was inspected from time to time by the Inspectors of Mines, who have supplied details for the table giving particulars of the assistance granted and the results achieved.

In addition to the grants of money given to prospectors and to mining companies the Department has this year attempted to render assistance to the mining industry by employing Professor Waters, of Otago University, to investigate the treatment of concentrates at the Reefton mines, with the object of evolving a process by which gold may be extracted locally, thus preventing the necessity of shipping the concentrates to Australia. Professor Waters's report, which is a very valuable one, unfortunately cannot be printed here in full owing to the shortage of paper and the necessity for reducing the size of this publication as much as possible. The following brief summary of his conclusions is, however, of great interest:—

Table showing Results of suggested Local Treatment compared with Shipping.

Mine.	Concentrates per Ton.						Local Advantages per Ton.
	Gross Value.	Realization Charges.		Net Returns.			
		Shipping.	Local.	Shipping.	Local.		
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Blackwater	12 1 11	9 0 5	6 16 0	3 1 6	5 5 11	2 4 5	
New Big River	19 15 1	11 7 9	9 13 0	7 17 4	10 2 1	2 4 9	
Progress	14 4 3	8 11 3	4 17 0	5 13 0	9 7 3	3 14 3	
Wealth of Nations	9 17 7	8 6 11	4 2 0	1 10 8	5 15 7	4 4 11	
New Keep-it-Dark	9 7 0	8 6 5	4 0 0	1 1 5	5 7 10	4 6 5	
Murray Creek	16 9 10	9 10 0	6 13 0	6 19 10	9 16 10	2 17 0	

The conclusions arrived at from the investigations made are:—

- (1.) That local treatment is feasible and advisable from an economic point of view.
- (2.) That roasting followed by treatment with alkaline cyanide solutions by percolation, followed probably by grinding and amalgamation, is the most suitable treatment under present conditions.
- (3.) That the roasting must be carried out mechanically.
- (4.) That an extraction of 80 per cent. of the gold contents is certain, and this may be expected to amount to 85 per cent., which will show better results than those given in the table above.
- (5.) That under present conditions the most suitable place for a plant is at the Progress Mill, and operated by the Progress Mines Company.
- (6.) That the saving of arsenic should be left in abeyance in the meantime, but should be considered later when general mining conditions improve and the process develops.
- (7.) That the Mines Department should arrange to continue investigative work with a view to (a) improving the gold-extraction, and (b) the utilization of the residues after treatment, in which direction economic results of great value are likely to be obtained.