although no mercury was being used, the gold was coloured white, resuming its yellow colour on heating. I did not receive a sample of the gold, but this colouration may be due to the presence of bismuth.

Many assays and tests by cyanide have been made on the tailings and concentrates about the district, and on the cements which extend along the coast. The results of a few of these may prove of some interest. Small samples of concentrates have also been tested by roasting and amalgamation, also some by chlorination, and very good extractions have been obtained. The tests were, however, small, and would no doubt be of some practical value if performed on a large scale.

TABLE SHOWING ASSAYS AND QUANTITY OF TAILINGS.

Tailings.	Fire-assay per Ton. Gold.	Quantity in Tons.
	Dwt. gr.	
Globe	4 14	About 30,000 tons.
Progress	6 1	Lately started to save their tailings; about 1,500 tons.
Welcome	9 3	About 6,000 tons.
Scotia	13 1	„ 400 „
Drake	2 6	„ 2,000 „
Cumberland, lying at Drake Battery ...	5 10	„ 1,500 „
„ lying at Cumberland Battery ...	12 10	„ 3,000 „

	Gold. Oz. dwt. gr.
Cumberland, blanketings	2 8 0 per ton.
„ berdan tailings	1 9 3 „
Progress, blanketings	2 9 8 „
„ buddlings	0 13 1 „
Globe, blanketings	1 13 5 „
Burke's Creek, tailings	0 7 20 „
Alpine, tailings	0 7 4 „
Brown's Terrace, cement	0 3 0 „
Charleston, cement	0 1 23 „

CYANIDE TESTS.

Material.	Method.	Time.	Consumption of Cyanide.	Extraction.
Progress, tailings	Percolation	30 hours	0·19 per cent.	75 per cent.
Alpine, „	„	30 „	0·2 „	70 „
Welcome, „	„	50 „	0·25 „	68 „
„ „	Agitation	20 „	0·17 „	88 „
Scotia, „	Percolation	48 „	0·18 „	85 „
Rich sample of cement	Agitation	20 „	0·13 „	97 „

In making tests with cyanide by percolation, the solutions were percolated alternately upward and downward, which I consider is better than the downward percolation only, and where the ore is slimy the slow upward percolation carries the slimes towards the surface, and allows the downward percolation to proceed without choking the filter-bed with slimes. In some of my experiments when working by agitation free oxygen gas was added, which in some cases gives much better and quicker extractions, without a further consumption of cyanide. Tests made on the decomposition of cyanide show that pure oxygen gas has little or no effect on the solutions, for, after passing a constant current of the gas for some time through solutions of different strengths, the strengths of the solutions remained unaltered; but, on passing a current of pure washed carbon dioxide or carbonic acid, CO_2, through the same solutions a rapid decomposition takes place, forming carbonate of potash. This shows that the decomposition of cyanide of potassium is partly due to the absorption of atmospheric carbonic acid by the solutions.

The cyanide plant erected last year for the purpose of treating the Boatman's tailings has so far turned out a failure. The first trial made showed a very poor extraction with a high consumption of cyanide, the time given to each tank being too short—*i.e.*, twenty-four hours. Two other trials have since been made, and very fair extractions obtained; but, owing to the mode of working, and the time given to each tank, the gold obtained does very little more than pay the expenses of working and cyanide. There is no doubt that on this field a large percentage of the gold is lost in the floured or sickened mercury, besides what escapes as free gold, especially from batteries where amalgamation is performed in the stamper-boxes. From most of the tailings a prospect of floured mercury may be obtained by concentration, and, as cyanide acts very slowly on mercury, longer percolation is no doubt required in some cases in order to extract the gold.