

Statement showing the number of tons of Quartz crushed, the yield of Gold, and the average yield per ton, in the Province of Nova Scotia, during the years 1862 to 1869 inclusive.

Year.	Quartz crushed.	Yield of gold.			Yield per ton.		
	tons.	oz.	dwt.	grs.	oz.	dwt.	grs.
1862	6,727	6,799	0	6	1	0	5
1863	17,001	13,973	14	17	0	16	12
1864*	15,316	14,526	18	5	0	19	0
1865	23,835	24,725	22	22	1	0	21
1866	30,963	24,125	13	18	0	15	14
1867	30,673	27,534	4	14	0	17	23
1868	31,242	20,518	10	14	0	13	3
1869	35,424	17,690	2	8	0	10	2
Totals ..	191,181	149,894	7	2	0	15	16

In Victoria, the yield of gold from 5,811,669 $\frac{3}{4}$ tons of quartz crushed during a period of ten years (1859 to 1868) has averaged 11 dwts. 12·37 grains.† In Nova Scotia, the yield from 191,181 tons of quartz has averaged 15 dwts. 16 grs. The excess of the average in Nova Scotia over that of Victoria amounts to more than 4 dwts. per ton. Notwithstanding this large average in favour of Nova Scotian quartz, yet the mining interests are depressed, while those of Victoria are buoyant. The cause of this apparent anomaly is readily explained. In Nova Scotia, we are passing through that stage of blundering incompetency which has already visited Australia and California, and from which those countries have emerged with wonderful strength and aptitude for the circumstances in which they are placed.

The economy displayed in the management of the mine, and in the manipulation of the quartz now common in Australia and California, is utterly unknown in Nova Scotia. It will appear almost incredible that the tailings alone in many mining districts contain, on an average, as much gold as the material crushed, with a profit at some of the mines at Ballarat. Numerous and reliable assays show that, in Nova Scotia, from 25 to 35 per cent. of the gold escapes in the tailings, and is lost.

The arsenical pyrites, which abound in some districts, is frequently rich in gold, but no attempts are made to separate it, or even to store the pyrites.

The following table shows the result of assays of pure arsenical pyrites from different lodes at Sherbrooke:—

	Yielding gold per ton.			Yielding silver per ton.		
	oz.	dwt.	gr.	oz.	dwt.	gr.
Pyrites and galena from Boulder Lot	4	1	16	8	19	10
" " " Coburg Co.	1	12	16	6	10	16
" Kingston and Sherbrooke Company	4	18	0	5	14	8
" Canada Company	45	0	0	0	0	0
" Wentworth Company (Ferguson Lode)	0	16	8	0	0	0
" Meridian Company (Sears Lode)	1	12	16	9	0	0
" average of concentrated tailings	2	10	0	0	0	0
Assay of pure pyrites from the Provincial Company, at Wine Harbour	11	8	16	0	0	0

* Nine months.

† "The Gold Fields of Victoria." By R. Brough Smyth, F.G.S.

‡ Mr. Kirkpatrick.

From careful assays of numerous parcels of tailings in Nova Scotia, as they came from the mill, and selected indiscriminately, the average quantity of gold contained was found to exceed 4 dwts. per ton. In many instances the assay gave a very much larger yield. These tailings lie around the mills in every direction, or are allowed to run into the nearest stream; in no instance known to me are they concentrated, even to save the pyrites, or are any really valuable appliances used to save the free gold they contain, which has escaped from the stamping boxes on the amalgamating tables.

At one mine, near Ballarat, 7,453 tons of quartz yielded no more than 2 dwt. 10½ grains per ton, yet the company paid in dividends £2,101 10s. The quartz was easily obtained, and at small cost, but the manipulation was very economically conducted.

At the Black Hill mine, Ballarat, the total quantity of quartz crushed, up to 1868, was 190,118 tons, yielding 22,801 oz. 15 dwts. 13 grains, the average yield being 2 dwts. 9·7 grains per ton.*

A year ago, attention having been called to the escaped gold in the tailings at one of the mills at Waverley, portions were re-crushed and passed over the amalgamating tables; and in the official returns for 1869 we find the following statements:—288 tons of waste from dump gave 32 oz. 5 dwts. 11 grains; 63 tons of waste from dump gave 13 oz. 12 dwt. 16 grains. From this experiment some idea may be formed of the amount of gold allowed to escape in the tailings from upwards of 190,000 tons of quartz, the quantity already crushed in Nova Scotia.†

VII.—MINING ECONOMIES AT WAVERLEY.

The mine which I shall select, as an illustration of gold-mining at Waverley, is the one where part of Tudor lode is worked. The following extracts from my official report in 1868, compared with what is now being done in 1870, will afford a fair example of the improvement of which Nova Scotia mining is susceptible:—The mill at this mine is driven by water; it has sixteen stamps; amalgamation takes place in the battery and on tables; no blankets are used, or concentrating apparatus of any kind to save the pyrites of free gold which have escaped amalgamation; the tailings flow into the stream and are lost. In the year 1865, 6,972 tons of quartz were crushed and treated in the manner described. The yield of gold amounted to 8,727 ounces, or 1 oz. 6 dwts. 12 grains per ton. The total cost of getting the gold, up to the close of 1866, averaged 12 dwts. (12 dollars) a ton. In 1867, the works were carried on with greater economy, and the lode, at a depth of 300 feet, averaged 15 inches in thickness, and yielded (not including the tailings) 8 dwts. a ton, and was worked with a small profit. When the average yield fell to 7 dwts. a ton, the works were stopped, on account of not paying expenses. This was the condition of the mine during my visit in the autumn of 1868.

The following are abstracts from my report on this district:—

"The skill which makes a difference of one penny-weight per ton frequently determines the fate of a valuable mining property. In the case of the fine water-power mill at Waverley, seven pennyweights to the ton is stated not to pay expenses; eight pennyweights would leave a small profit; and nine pennyweights, it is said, would secure a profit of forty dollars a day. Operations are now suspended, because the quartz is said to yield only 7 dwts. per ton, according to the present system of working. Subsequently, it will be shown that there is every probability that the quartz now contains upwards of 10 dwts. to the ton, although it yields only 7 dwts., and that by system and machinery, and consequent reduction of expenses, it might be made

* Mr. Brough Smyth.

† See also tables showing returns from Sherbrooke district for remarks on gold in the tailings.