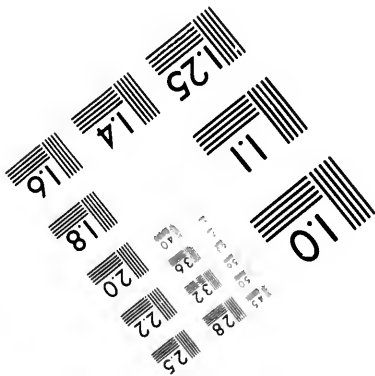
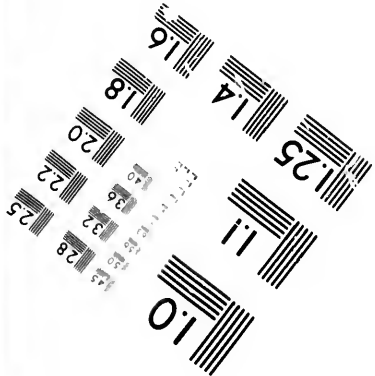
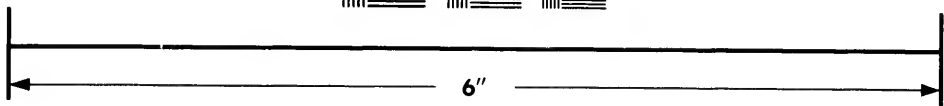
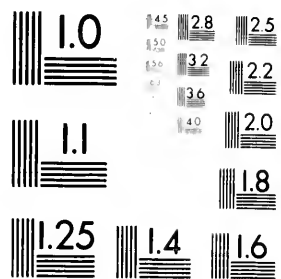


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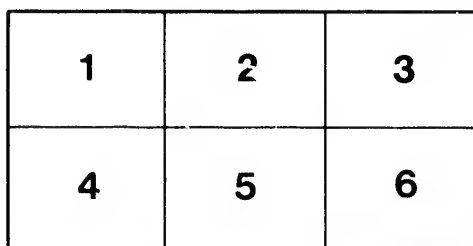
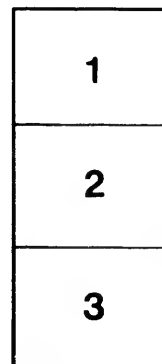
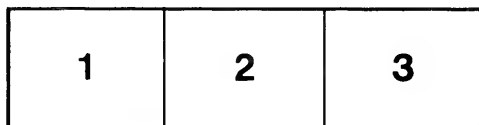
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THE MINING INDUSTRIES

OF

NOVA-SCOTIA.

BY

A. HEATHERINGTON.

"Reliable Statistics cannot fail to result beneficially to the country and Government."
—J. ROSS BROWN, U.S. SPECIAL COMMISSIONER. (*Report on the Mineral Resources of the United States.*)

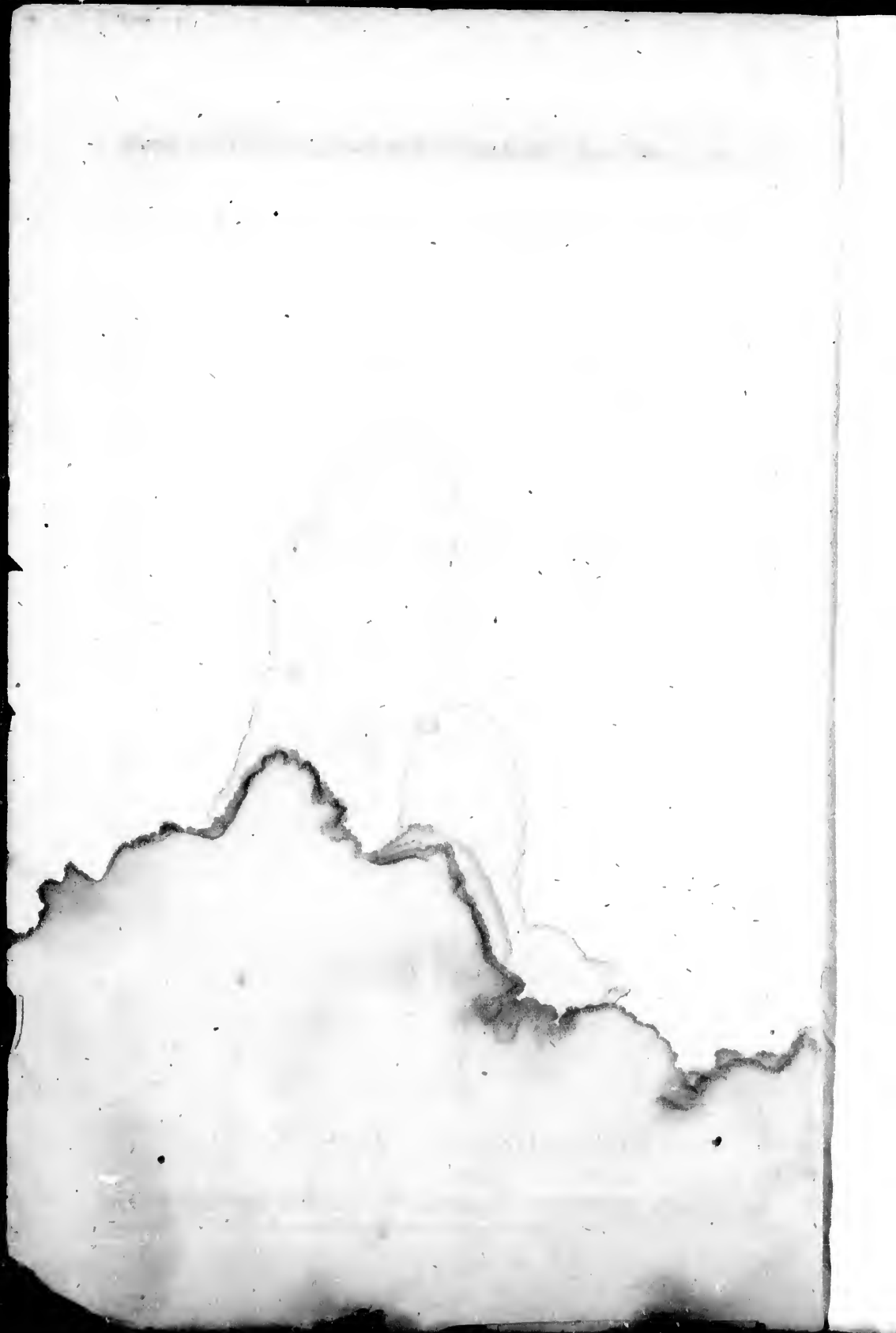
"Mineral Resources are but one factor, which must be joined with labour and intelligence to make the product wealth."—ROBERT W. RAYMOND, Ph.D., U.S. COMMISSIONER OF MINING STATISTICS. (*The Mines of the West.*)

"The history of modern gold discoveries presents itself to us under one uniform aspect; a long preliminary working, and then a sudden publication and recognition."
—J. CALVERT. (*Gold Rocks of Great Britain and Ireland.*)

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7

THE MINING INDUSTRIES

OF

NOVA-SCOTIA,

COMPRISING

A Review of the Gold Yield

FROM THE FIRST WORKING OF THE GOLD MINES IN 1860, TO THE CLOSE
OF THE YEAR 1873.

BY

A. HEATHERINGTON.

Compiled from Corrected Official Records.

Heatherington's Tables are approved by the Geological Survey of Canada, and cited by the United States Bureau of Statistics, all Consular Authorities, and the Industrial Press of both Hemispheres, as a Reference Standard, and the ONLY comprehensive Exhibit published, of Nova-Scotia's Gold Product.

NINTH YEAR. HUNDREDTH THOUSAND.

TRÜBNER & CO., 57 & 59, LUDGATE HILL, LONDON.

1874.

CLAYTON & CO., TEMPLE PRINTING WORKS,
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P R E F A C E.

WITH the growing intimacy which the Union of her several Provinces is creating between Canada and the Mother Country, an endeavour to make known resources which offer scope for the profitable investment of extraneous capital in any portion of the Dominion will hardly be considered obtrusive.

The fact of Canada being a near, healthy, law-abiding, accessible British Dependency, not overburdened with wealth or enterprise, is in itself no claim upon English sympathies, unless it can be shown that as large and lucrative a field for financial venture exists there as in the distant alien countries to which, in spite of prevailing epidemics, revolutions, earthquakes, and repudiation of debt, so many millions of English money annually flow.

The accompanying yearly Statistical Exhibit is intended to show that such a field really exists in Nova-Scotia, the nearest part of Canada to Great Britain, and that the comparative cheapness there of labour, freight, and the necessaries of life, ought to make intelligently conducted mining operations in that Province particularly remunerative. Her Coal and Iron deposits have begun to receive some attention in Europe, but the **Gold Fields**—to the extent and value of which MM. MARSH, SILLIMAN, HURT, MICHEL, DAWSON, SELWYN, W. WARINGTON SMYTH, J. A. PHILLIPS, with other distinguished geologists, and a yield of nearly one million pounds sterling, testify—are strangely neglected.

The author has laboured in a humble way, during some years, for the advancement of Canadian mining enterprise, by publishing a Gazette, annual statistics, and other matter, in its interest. Her Majesty the Queen graciously accepted a copy of his "Guide to the Gold Fields of Nova-Scotia," and his efforts have received commendation from Sir WM. E. LOGAN, ex-Director, and Mr. A. R. C. SELWYN, the present Director, of the Geological Survey of Canada, many eminent political economists in the United States, Canada, and Europe, and the Industrial Press generally. Although, now, as owner and the representative of owners of properties for which working capital is sought to be raised in Europe, the author's advocacy of the Gold Industry is less disinterested than in former years when writing only as statistician, the accuracy and impartiality of his statements may still be relied upon, and he hopes, therefore, that the present compilation will likewise be received with favour by all who desire to see the resources of THE DOMINION properly appreciated and developed.

June, 1874.

THE MINING INDUSTRIES OF NOVA-SCOTIA.

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SUPPLEMENT :

A Plea for the Nova-Scotia Gold Industry.

THE COAL INDUSTRY

OF

NOVA-SCOTIA.

GENERAL REVIEW.—The total quantity of Coal produced in the Province during the years 1827 to 1873 inclusive, amounted to 12,879,898 tons (of 2240 lbs.), a trifle in excess of the quantity exported by Great Britain in the year 1873 alone.

The sales for the decade ended December 31, 1873, as shown in Table I., were almost equal to the aggregate production of the previous thirty-seven years.

From an abstract of the Customs Returns of the Exports of Coal for five fiscal years ending June 30, 1873 (emitting the returns for 1872, which at present writing are not accessible), it will be seen that the United States, despite the abrogation of the Reciprocity Treaty, are still the best customers of the Nova-Scotian collieries, their consumption for the period shown in Table II. being 81·0 of the quantity exported; New Brunswick, Quebec, and Newfoundland taking 16·0; the foreign West Indies, 1·5; the French naval stations of St. Pierre and Miquelon, 1·0; the British West Indies, 0·3; South America, 0·1; and Great Britain, 0·1. Many of the collieries, in fact, owe their development entirely to United States enterprise.

The Coal industry of Nova-Scotia possesses a very able champion in Mr. R. G. HALIBURTON, who has endeavoured to instil some little energy into his fellow colliery-owners, and to induce them to seek new markets and more thoroughly exploit those already opened. An abstract of the quantity of Coal exported from Great Britain to America in the year 1872, which is added, by way of contrast, to the quinquennial summary of exports from Nova Scotia (Table II.), shows that there is room for exertion; but Mr. Haliburton's eloquence is lost, the spirit of enterprise being foreign to the soil. The colliery owners prefer to await the revival of the Reciprocity Treaty, in the hope that the Americans will come to their aid, and find for them outlets for their produce which, with due intelligence and perseverance, they might have found for themselves long ago.

In addition to the Mines Department Reports, the following modern publications have special reference to the progress of the provincial coal industry: *Acadian Geology* (J. W. DAWSON, M.A.); *Coal Fields of Caribou* (Do.); *Coal Fields of Nova-Scotia* (JOHN RUTHERFORD, M.E.); *Coal Fields and Coal Trade of Cape Breton* (RICHARD BROWN, F.G.S.); *Explorations in Pictou Coal Field* (R. G. HALIBURTON, M.A.); *Exploration in Cumberland County* (H. Y. HIND, F.G.S.); *Geological Survey of Nova-Scotia and Cape Breton* (D. HONEYMAN, F.G.S.); *Geological Survey of Spring Hill Coal Fields* (EDW. HARTLEY, F.G.S.); *Mineralogy of Nova-Scotia* (HENRY HOW, F.C.S.)

TABLE I.

Abstract of the Quantity of Coal RAISED and SOLD in Nova-Scotia and Cape Breton Island, during the Decade ended 31st December, 1873, as taken from the Reports of Colliery Managers to the Mines Department.

Year.	RAISED.			SOLD.		
	Nova-Scotia Proper and Cape Breton Island.	Cumberland.	Pictou.	Total Nova-Scotia Proper.	Cape Breton.	Grand Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1864	562,102	20,612	226,533	247,145	339,972	587,117
1865	715,786	11,865	190,328	292,193	424,991	627,184
1866	664,998	16,988	181,658	197,746	360,774	558,520
1867	517,525	10,066	135,415	145,181	326,004	471,185
1868	462,188	10,104	144,852	154,956	298,669	453,625
1869	578,062	8,515	198,211	206,726	305,069	511,795
1870	625,769	7,884	226,526	234,410	333,867	568,277
1871	673,242	11,737	245,800	257,537	338,881	596,418
1872	889,950	14,153	388,417	402,670	383,344	786,014
1873	1,051,467	26,345	333,984	360,329	520,777	881,106
Total	6,732,089	137,369	2,271,424	2,408,793	3,632,348	6,041,141

TABLE II.

Abstract of Custom House Reports of the Quantities of Coal Exported from Nova-Scotia for the Fiscal Years ended June 30th, 1868, 1869, 1870, 1871, and 1873.

Market.	1868.	1869.	1870.	1871.	1873.	Total for 5 Years.	Coal Ex- ports from Gt. Britain to America. 1872.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United States	198,920	376,135	209,418	252,179	232,760	1,269,433	108,165
New Brunswick, Que- bec, and Newfound- land.	45,307	50,659	54,967	49,308	51,667	251,908	175,902
Foreign West Indies and Spain	4,311	2,407	12,585	4,620	2,935	26,858	301,323
St. Pierre and Miquelon	2,589	2,330	2,699	3,302	1,652	12,572	..
British West Indies	820	51	1,170	1,381	1,888	5,310	147,997
South America	147	186	129	65	1,345	1,863	941,313
Great Britain	666	200	160	270	500	1,796	..
Total	352,760	431,968	281,149	311,116	292,747	1,569,740	1,674,640

REVIEW FOR 1873.

GENERAL RESULTS.—The output of 1873 was 1,051,467 tons, or 170,517 tons in excess of that of 1872. The sales, as reported by the colliery managers to the Mines Department, amounted to 881,106 tons, or 95,192 tons above those of the preceding year. The output was derived from twenty-four seams, worked by as many different collieries, and the quantity sold was for the following destinations:—Quebec, 187,059; New Brunswick, 68,217; Newfoundland, 55,861; Prince Edward Island, 26,840; Nova-Scotia, 215,295; the United States, 264,760; West Indies, 54,213; Great Britain, 6976; South America, 1885 tons.

It will thus be seen that nearly 63 per cent. was required for consumption in the Dominion, 30 per cent. by the United States, and only a little over 6 per cent. by the West Indies and South America, where, as before remarked, proper exertions should be able to establish a very large market. One singular feature of the reported sales is that of nearly 7000 tons for Great Britain, an experiment, however, which could only be repeated with profit under very exceptional circumstances. Of the quantity sold, 186,744 tons were carried by 428 steamers, 633,100 tons by 3176 sailing vessels, and 60,962 tons by land.

PRICES.—Owing to the great demand, prices ruled from one dollar to one dollar and a half per ton higher than in 1872; the largest sum paid at the close of the season, when cargoes were scarce, being 3 dols. 50 c. per ton free on board.

EXPLORATIONS.—An unusual number of licences to search and work were applied for during the year, the departmental returns showing a total of 504 rights of search, and 59 licences to work issued in 1873, covering in all an area of 1565 square miles. The Inspector of Mines complains that few reports were made of the results of explorations as required by the terms of the licence, one very general cause assigned being, that the licensees fear advantage may be taken by holders of contiguous areas of the information given to the Department.

LEASES.—At the close of the year an area of 177 square miles was held by leases, 37 miles being under the sea. Work was reported upon 78 square miles.

ACCIDENTS.—The number of accidents in the Coal mines was lamentably great, as many as sixty deaths having been occasioned at one time by an explosion of gas on the 13th of May, in the Drummond Colliery, Pictou County.

PROSPECTS.—The Inspector of Mines estimates the output for 1874 at one and a quarter million tons, but as some of the collieries in Cape Breton, from which large returns were promised, have been closed until Congress shall have ratified the Reciprocity Treaty, the year's production will probably be somewhat under that limit.

DEPARTMENTAL REPORT.—The Mines Department Report for 1873 is free from the typographical errors and occasional inaccuracies of former years, and instead of consisting of separate reports by the Chief Commissioner and Inspector, there is but one report, written wholly by the Inspector, Mr. HENRY S. POOLE, F.G.S., ^ R.S.M., and confined to facts and useful suggestions. The Inspector strongly advocates the adoption of dynamite and drilling machines. In referring to the latter, he says: "For boring holes to prove the nature of underlying strata, the *Diamond Drill* stands unrivalled, since its operation is more expeditious, cheap, and satisfactory than any system yet invented;" and he further states that two such drills are

in use in New Brunswick, one owned by the Government, and the other by Mr. Blight, who is searching for the continuation of the celebrated seam of Albertite, near Hillsborough, which, at the close of the year, had already attained a depth of 1040 feet. The Inspector also directs attention to the "Enrouneur," invented by Mr. Denayrouze. The report concludes with good practical advice in regard to plans, boundaries, weighing of coal, precautions against accidents, and the establishment of an accident fund; forming, on the whole, one of the most creditable papers the Department has ever published.

THE IRON INDUSTRY.

Nearly every variety of Iron ore has been found in the Province, but the only smelting establishments opened are at Londonderry, Colchester County, and at Clement's Port, Annapolis County, the former now belonging to the Canada Steel Company, and the latter to the Annapolis Iron Works, from which the production was as follows:—

Works.	Men.	Ore Mined. Tons.	Ore Smelted. Tons.	Pig Metal. Tons.
Londonderry . .	26	2947	2091	1046
Clement's Port. .	16	338	630	180
Total . .	42	3185	2721	1226

Explorations were carried on near Springville, Pictou County, and extensive limonite deposits found; also at the Indian Reserve, Whyecomagh, at Five Islands, and near Cheverie.

These localities are favourably situated for smelting works, being in the neighbourhood of rivers, beds of limestone, and large forests.

The Iron industry of the Province is chiefly indebted to its establishment and maintenance to Mr. Joux Livassez, C.E.

LEAD.

Galena is the only Lead ore known to occur in the Province. Attention has been directed to localities in Colchester, Cumberland, and Lunenburg Counties, and Cape Breton, but as yet with no definite results. The late Mr. Samuel Bawden gave a favourable opinion of the Gay's River deposit, where prospecting was revived for a short period during the year.

COPPER.

Ores of Copper have been found in many localities in Nova-Scotia proper and Cape Breton, which are fully designated in Professor How's *Mineralogy of Nova-Scotia*. In 1873 search was again made in the vicinity of Polson's Lake, but without striking the lode. Mr. HENRY POOLE, F.G.S., father of the Inspector of Mines, and for many years Manager for the General Mining Association, when on a special survey of the Western Gold Fields in 1862, for the Provincial Government, drew attention to several localities where he thought that prospecting for copper might be successfully conducted, but the prevailing apathy of the provincials has so far prevented any one taking advantage of the circumstance.

TIN.

It is not improbable that before long Tin mining will be added to the paying industries of the Province; tinstone having been found by the late Mr. Barnes at Tangier, by Mr. Ross at County Harbour, by Mr. Campbell at Shelburne, and by the writer in Lunenburg County.

QUARRIES.

Large deposits of granite, slate, freestone, marble, and gypsum exist throughout the Province, but they are only worked on a very limited scale, and chiefly by Americans. The value of the gypsum, freestone, and grindstones exported in 1873 was respectively £24,000, £7000, and £5000.

* An apparatus for sustaining life in vitiated atmospheres.

THE GOLD YIELD OF NOVA-SCOTIA.

1860-73.

R E V I E W.

1860-73.

FIRST DISCOVERY OF GOLD.—The existence of gold in the Province appears to have been known to its earliest settlers, judging from the ancient names of "Cap d'or," "Bras d'or," Jeddore (evidently a corruption of "jeu d'or," or "jet d'or"), and Gold River, in all of which localities the metal has since been found. In Dr. How's *Mineralogy of Nova Scotia* it is stated that gold was found one hundred years ago, and gold washing was practised in the river Avon, at Windsor, about the beginning of the present century. The same authority also writes that the late Canon GRAY, D.D., Rector of Trinity Church, St. John's, New Brunswick, who died in 1868, aged 70, told him that as a boy he had taken gold out of rocks on his father's property, near Halifax, and had it smelted by a jeweller in that town; and that Mr. B. G. GRAY, barrister-at-law, and son of the deceased clergyman, possesses old documents which show that particular importance was attached to certain parts of the family estate, presumably from the known existence of gold. Its occurrence also in Sherbrooke, Isaac's Harbour, and Lawrencetown is stated to have been familiar to the oldest residents. The first recorded instance of scientific discernment aiding discovery, and suggesting the existence of gold-bearing quartz of economic importance, is that of a captain of the Royal Welsh Fusiliers, who, in the spring of 1840, pointed out the auriferous character of the rocks at Gold River, near Chester, but, being on the eve of departure with his regiment, was unable to prosecute a search in person; and it was only after a lapse of twenty-one years that explorations were made and the correctness of his observation proved. The probable occurrence of gold is also mentioned in Sir CHARLES LYELL'S *Notes on the Geology of North America* (1842), and in the first edition of Dr. J. W. DAWSON'S *Acadian Geology* (1855); but really practical results were first derived from the following discoveries:—M.M. John Campbell and R. G. Fraser washed gold from the beach near Halifax in 1857; and in August, 1858, Mr. E. A. Mitchell, of Halifax, obtained a specimen of auriferous quartz, which was seen by Mr. W. D. Sutherland, Solicitor, and subsequently sent to Dr. How, at King's College, Windsor. In 1858, Captain Champagne L'Estrange found gold at Mooseland, Tangier; and in May, 1860, Mr. John Gerrish Pulsifer made the discovery which actually laid the foundation of the gold-mining industry of the Province. With the exception of Mr. Campbell, who was temporarily employed by the Government, these discoverers have received no reward.

GEOLOGICAL AGE.—In general aspect, and in the succession of the beds, Mr. SELWYN considers that the whole series in Nova-Scotia closely resembles the Cambrian and Lingula-flag series of North Wales, in confirmation of which view he refers to having detected in the grey sandy and flaggy pyritous slates at the Ovens Bluffs, in Lunenburg County, specimens of the genus *Eophyton*, regarded by Mr. BILLINGS, the paleontologist of the Geological Survey of Canada, as characteristic of the Primordial Silurian epoch. Mr. SELWYN is also of the opinion that "all the deposits of auriferous quartz in Canada have been formed since the deposition and consolidation of the rocks with which they are now associated."

MINERALOGICAL CHARACTER.—The gold-bearing quartz of Nova-Scotia is mostly undistinguishable in colour, structure, general appearance, or associated minerals—which are chiefly galena, blende, arsenical, copper, and magnetic pyrites—from the quartz of other gold regions, except, perhaps, that it is richer in visible gold. One species of dark-grey, laminated, exceptionally rich quartz, occurring only in veins of six inches and under, does appear to be peculiar to the province, as it has not yet been matched from any other country. The Director of the Geological Survey of Canada states that "it is now generally admitted auriferous quartz veins present no features which would serve to distinguish them from any other class of ore lode, either in their origin or in their mode of occurrence;" and on these grounds he has long held the opinion, that there is no *a priori* reason why such veins should not contain gold in sufficient quantity to be profitably extracted at any depth to which ordinary mining operations can be carried.

TOTAL YIELD.—The value of the gold production from the autumn of 1860 to the close of the year 1873, at £4 sterling per ounce, amounts approximately to **One Million Pounds sterling**, of which £910,893 7s. are distinctly traceable and officially accepted. Of this sum £396,950 3s. 6d. was derived from vein stuff, and £13,943 3s. 6d. from alluvial washings, of which latter the greater part was obtained at the Ovens. Since the 1st of January, 1863, leaseholders and millowners are compelled to make returns, under oath, of the quantity of material raised and crushed, the

gold obtained, and the number of days' labour expended; thus no other mining country enforces better checks, or has greater facilities for obtaining exact returns. The largest declared aggregate yield in one year was £109,258 for 1867; the largest annual yield of any separate district £57,617 for Waverley, in 1865; the largest annual yield of any single mine (not including a large amount known to have been stolen) £34,910, from the *Tudor*, at Waverley, in 1865; and the largest bar of gold ever cast was 1200 ozs.—£1800—in June of the same year, from the same mine, then the property of Mr. Leopold Bärkner. The largest aggregate amount obtained from separate mines owned by one syndicate is £250,000—the *Wellington* and *Palmerston* at Sherbrooke, the *Ophir* at Renfrew, and the *American* at Waverley, contributing respectively £80,000, £36,000, £72,000, and £62,000, the whole of the worked claims not exceeding 1800 feet in length. The largest amount produced from a mine owned by one person is £72,000 from the *Tudor*, at Waverley, consisting of 750 feet on a vein 12 inches in width, the greatest depth being 55 fathoms, and the mean depth 40 fathoms. The largest return in proportion to the workings is £80,000, from the *Wellington* Mine, the greater part of which was obtained from a 13-inch vein, opened 180 feet in length to 520 feet in depth. The largest yield from a given space is £252,000 obtained at Sherbrooke, within an area of 40 acres.

PRICES.—Promoters of public companies have received about £1,000,000 sterling in purchase-money. The largest price ever paid was £4500 for two so-called *free* claims, of only 150 feet each, at Waverley. The largest nominal capital of any mining corporation, proportioned to their holding, was that of the Tipperary and New York Company, who, owning 300 feet in one and 150 feet in another district, organized for the amount of £50,000.

TAXES.—The Provincial Government has received over £50,000 for rents and royalty.

COST OF LABOUR.—The cost of 2,321,020 days' labour, taking wages at 5s. a day—until the year 1868 good miners were paid 4s., and deck hands or labourers 3s. to 3s. 6d. only—may be stated at £580,255.

COST OF MILLS.—The cost of 55 mills (37 steam and 18 water-driven) the greatest number at any time existing, may be given as £110,000, or, on average, £2000 each; the housing being chiefly of wood, and the machinery of the simplest and least expensive kind.

GENERAL EXPENSES.—This item, including stores, hauling, superintendence, repairs to machinery, &c., should be covered by an average of \$2 per ton, which, on 294,000 tons, would amount to £117,600.

PROSPECTIVE YIELD.—The production of the several proclaimed districts from the quartz mines alone, continuing developments on lodes now actually worked, within present lateral bounds, to a depth of 1000 feet, according to the average of declared yield, would exceed £25,000,000.

QUARTZ MINES.—It will be observed from accompanying Tables that quartz is the chief source of gold in this Province, and that the proportion per ton varies considerably in each district. There are not only patches in every district, but there are entire districts where the quartz is exceptionally rich; but to counterbalance this the veins are narrow and more expensive to beneficiate. Seven dollars per ton is at present the lowest cost of raising and reducing 2000 lbs. of quartz from a lode one foot in width running in slate. The attention of quartz miners here has been too much confined to narrow lodes; but when it comes to be understood that it is relatively cheaper to operate on large quantities of low-grade ore than on picked lots of rich ore, wide veins yielding five to ten pennyweights, which (as in Australia) might be profitably worked on an extensive scale at a cost of only two to three pennyweights, will cease to be disregarded. Small veins, however, will not be wholly abandoned, so long as it is known that in Grass Valley, California, fourteen million dollars' worth of gold have been produced from a lode which only averages a foot in width.

ALLUVIAL MINES.—With the exception of beach washings at the Ovens, which were prosecuted during the years 1861 and 1862, alluvial mining has been almost wholly neglected. Professor B. Silliman and Mr. Campbell incline to the opinion that the auriferous *débris* of this Province have been swept beneath the ocean; but MM. J. W. Dawson, J. A. Phillips, T. Sterry Hunt, the late Auguste Michel, and A. R. C. Selwyn, who in the succession named have examined and reported on this region, consider that systematic search for alluvial gold might well repay the prospector. At Tangier Harbour a nugget weighing 27 ozs. was found in 1862; and at Middle River, Cape Breton, and Gay's River pieces of gold weighing from 10 grains to 17 dwts. have been washed. At Nine-Mile River, Stewiacke, Indian Path, and Gold River, the alluvions are deep and impregnated with fine gold. From the last-mentioned district Dr. How obtained very remarkable results, which are cited in his *Mineralogy of Nova Scotia*, and in Dr. Dawson's *Acadian Geology*, and were, to a great extent, practically sustained by Mr. Michel's subsequent experiments on the ground. Recent trials on an extended scale at Gay's River have given satisfactory returns.

AVERAGE PER TON.—The twelve years' mean from the crushing of 262,493 tons (of 2240 lbs.) of quartz was 16 dwts. 18 grs.—£3 7s.—against which Victoria, Australia, reports a mean of 14 dwts. 5-19 grs.—£2 4s. 10½d.—from the crushing and treating of nearly ten and one-half

millions of tons of quartz, and an average of 3 dwts. 16.02 grs.—11s. 8d.—per ton from after treatment of 1,593,591 tons of tailings. The highest yearly average for the whole Province was 1 oz. 3 dwts. 6 grs. in 1865, and the lowest 13 dwts. 23 grs. in 1871. The highest yearly average of one district was 4 ozs. 13 dwts. 15 grs. for Montagu, in 1870, and the lowest 2 dwts. 21 grs. for the Unclassified Districts in 1872. The highest district average for the whole period is 2 ozs. 15 dwts. 17 grs. for Montagu, from the crushing of 5381 tons (of 2210 lbs.) of quartz; the lowest 6 dwts. 12 grs. from 5210 tons crushed in the Unclassified Districts. As concentration is only practised in one mill, and that but recently, the above averages do not represent the full gold contents of the quartz crushed by a large per centage.

AVERAGE EARNINGS PER MAN.—The mean yearly average for all districts amounts to £119 4s. 4d. The highest yearly average for the Province is £158 5s. for 1873; the lowest £38 4s. for 1862. (The average for Victoria, Australia, in 1873, was £93 16s. 2.62d.) The highest district average for the whole period is £177 5s. for Sherbrooke; the lowest, £47 8s. 4d. for the Unclassified Districts. The highest district average for one year was £363 3s. 8d., at Wine Harbour, in 1872; the lowest £9 16s. 8d., for the Unclassified Districts, in 1867.

NUMBER OF MINERS.—The total number of days' labour declared for twelve years is 2,321,020, equal to the number expended in *forty-six days* in Victoria in the year 1873. The greatest number of miners employed in any one year by the whole Province was 887 in 1863, and by one district 317—in Waverley—in 1866. The daily provincial mean for the whole period is 620; the highest district mean 143 for Waverley, and the lowest 15, for Caribou.

QUARTZ RAISED.—The aggregate returns give a mean of 265½ lbs. for each day's labour, but allowing one-third of the hands to have been employed elsewhere than in the mine, it would appear that it has required on average six men to raise each ton of 2210 lbs.

QUARTZ CRUSHED.—The total quantity crushed amounts in round numbers to 262,500 tons British, or no more than has been treated in five years *in cue mine* of comparatively small extent in Australia.

MILLS.—At the close of the year 1873 there were 53 mills standing, but not a dozen in constant operation. They average nearly ten stamps apiece, and their aggregate capacity is about 600 tons per 24 hours, or, if the quartz were previously comminuted in a Blake's crusher, 250,000 to 300,000 tons a year.

CONCLUSION.—The foregoing facts, based upon the sworn results of the past twelve years, show that gold mining in Nova-Scotia is *no chimera*, and that, if it were conducted upon the common-sense principles which are deemed essential to success in mercantile pursuits—namely, the possession of sufficient capital and experience, or, at least, business capacity, by those engaged in it—a more remunerative investment could hardly be suggested. A Leading Article in the *Mining Journal* thus refers to the subject:

"THE NOVA-SCOTIA GOLD REGION.

"Interesting as Mr. SELWYN'S 'Notes and Observations' may be to geologists, their practical value consists in the evidence which they present that Nova-Scotia is a gold region to which European capitalists who foster mining venture may profitably turn their attention. The age and horizon of the gold-bearing rocks, the character of the matrix, and the genus of the fossils are all important to men of science, but 'Dives' asks, 'Is the gold there?' 'Does it pay to extract?' 'Is there enough ore to warrant erecting the best machinery and securing the best management?'

"All those points are affirmatively answered by Mr. SELWYN'S admirable report; for, although he hedges his remarks with the advice that 'no one should invest in such enterprises to an amount beyond what he can afford to lose without serious embarrassment,' the facts personally and officially testified to by him demonstrate that the auriferous quartz veins in Nova-Scotia are abundant, likely to extend to a great depth, and, with skill and economy, ought to be mined at considerable profit.

"By avoiding the mistakes of previously organized undertakings, there appears, then, to be better guarantees of success at gold mining in this our near colony than in the distant foreign countries where, within the past two years, nearly as many millions of British capital have been irrecoverably lost in wild speculations.

"Let us hope that a change is about to take place, and that Englishmen who uphold legitimate mining enterprise will cease to neglect the now well-proved advantages of a British dependency for chimerical allurements abroad.

"The formation of a company for consolidating the principal gold claims in Nova-Scotia, and developing them under British auspices, with British energy and method, besides evincing patriotic spirit, appears to be actually a necessity. Such a project, under respectable administration, would, we opine, not only receive substantial encouragement from the investing public, but, if conducted on the basis of Mr. SELWYN'S views, assuredly become both a paying and lasting institution."

1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73.
ANNUAL SUMMARY.

Year.	YIELD OF GOLD.				MINERS.				QUARTZ.				MILLS.				Year.
	Sources.		Averaging.		Per 100 lbs. of Quartz.		Annually per Miner.		Per 1000 lbs. of Quartz.		Per 1000 lbs. of Quartz.		At the End of the Year.				
	From Quartz.	Native.	Per 25 lbs. of Quartz.	Oz. dwt. gr.	Grs.	Per 100 lbs. of Quartz.	Annually per Miner.	No. Miners.	Tons of Quartz.	Per 1000 lbs. of Quartz.	Total Tons.	No. Mills.	Total Tons.	No. Mills.			
1862	7,275 0 0	0	0	311 0 0	23,726	58 4 0	156,000	300	65,710 0	87 1	67,710 0	21 6	18	12	39	0	1862
1863	14,091 14 17	0	0	1 3 2	19,755	63 17 2	233,921	87	15,041 43	124 3	15,041 17	51 2	45	19	43	0	1863
1864	23,321 18 13	0	0	18 12 17	32,323	98 17 5	315,736	684	24,177 0	197 6	34,463 16	58 7	57	11	53	0	1864
1865	23,494 43 2	0	0	49 1 19	31,773	119 10 5	311,706	679	31,599 7	300 0	32,463 16	58 7	57	11	53	0	1865
1866	27,314 11 11	0	0	84 18 15	29,822	135 11 8	218,894	762	33,531 6	304 5	31,283 39	100 6	56	8	21	63	1866
1867	20,541 6 10	0	0	22 19 16	13,261	106 3 3	241,462	771	33,910 17	241 1	35,201 15	103 4	38	11	34	67	1867
1868	17,866 0 19	0	0	17 18 11	12,679	105 11 1	210,658	676	35,454 7	233 0	35,417 5	112 6	37	18	35	87	1868
1869	19,866 5 5	0	0	17 16 15	15,328	142 15 0	173,680	523	32,693 16	279 6	32,825 12	68 8	35	19	33	52	1869
1870	19,227 7 4	0	0	9 2 7	11,979	147 4 4	162,994	523	30,211 10	370 7	30,704 6	98 1	31	19	33	51	1870
1871	13,694 17 6	0	0	73 11 6	18,282	145 5 10	112,476	360	16,245 0	288 8	17,063 10	54 8	31	19	33	55	1871
1872	11,852 7 19	0	0	352 17 23	18,741	158 5 0	93,470	350	14,817 0	317 7	14,724 0	47 2	34	19	33	57	1872
1873	221,723 6 18	220,237 10 21	1,485 15 21	0 16 18	17,463	119 1 1	2,221,020	620	295,734 6	236 5	295,992 6	78 5	34	19	53	27	1873
Total.																	

REMARKS.—To the above total yield should be added 6000 ozs. as the accepted product of the years 1860 and 1861, of which 4000 ozs. are from quartz crushed, and 2000 ozs. from alluvial and beach washings, representing an aggregate value of \$910,893 75. If the amount of gold stolen and surreptitiously mined—approximately 10 per cent. of the whole—be also taken into account, the value of the total yield may be assumed at One Million Pounds Sterling.

Although the industry appears to have reached its height of prosperity in 1867, as regards the total yield, the year 1873 is actually foremost in economic results, as shown by the gold and quartz obtained per man; there being a difference of £2 10s. 8d. in the annual quantity of the former, and 13·2 lbs. in the daily quantity of the latter, in favour of 1873.

The gradual falling off in the number of men employed is simply due to the reaction which always follows a period of excitement. In 1867 many rich streaks were met with, and there was in consequence great speculation in

shares, which changed hands at several times their value. In the following years, when the *bores* had been worked out, calls had to be made, which some holders of shares resisted, and thus the mines were either closed or had to be worked on a greatly reduced scale.

Gold mining in Nova-Scotia is not adapted to individual enterprise, because few persons can afford the heavy outlay needed to thoroughly open and equip a mine; at the same time, when worked by companies, there should be harmony among its members, and a good balance, to provide for contingencies and dead work, in the treasury.

The number of gold miners in the whole Province is not more than is employed on a single claim in other countries, and if the Nova-Scotia mines were only worked vigorously by a large force, the interval between the rich streaks would not appear so long, and investors, who sustain mining as an industry, and not for stock-jobbing purposes, would turn over their money rapidly and never have the time to become—as they are now—victims of unwise depression.

1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73.
SHERBROOKE DISTRICT.

Year.	YIELD OF GOLD.										MINERS.										QUARTZ.										MILLS.			Year.
	Sources.					Average.					Per 22.40 lbs. of Quartz.	Oz. dwt. gr.	Oz. dwt. gr.	Oz. dwt. gr.	No. of Miners.	Daily av. for 312 working days.	Total Colonial Weight.	Per Man Daily.	Raised.	Crushed.		Steam.	Water.	Total.	At the End of the Year.									
	From Quartz.		Native.		Per 100 lbs. of Quartz.		Annually per Miner.		Value at £1 sig. per oz.											Tons. cwt.						Tons. cwt.		Tons. cwt.		Total Colonial Weight.		Total Colonial Weight.		
1862	0	2,023	0	0	0	2	12	15	59	300	12	5	10	22,164	72	8.1	0	76	6	861	0	2	7	0	1862									
1863	3,364	5,276	14	12	1	1	6	22	767	182	3	10	31,260	100	3,434	2	221	4	3,434	2	11	1	4	1	0	1863								
1864	3,419	3,469	14	20	10	0	0	1	8	11	39	13	32,630	105	2,673	0	168	8	2,673	0	8	5	5	12	0	1864								
1865	3,424	5,424	1	21	1	0	0	1	10	13	32	718	185	14	4	23,010	74	2,511	14	2,511	14	8	0	4	8	0	1865							
1866	9,463	9,463	13	0	7	3	15	40	599	323	9	19	22,490	72	2,853	11	238	8	2,853	12	9	1	4	0	12	0	1866							
1867	7,070	7,070	5	0	6	15	23	17	173	184	4	4	33,298	113	7,001	13	422	9	7,378	1	23	6	5	0	20	0	1867							
1868	5,346	5,346	11	16	0	10	19	15	174	164	9	0	41,960	133	10,009	10	240	0	9,880	4	31	6	9	1	10	13	0	1868						
1869	7,134	7,134	4	0	0	11	9	15	524	187	9	4	48,890	137	11,498	5	467	6	11,498	11	36	8	9	2	11	17	0	1869						
1870	6,579	6,579	19	7	0	10	15	11	375	161	9	3	50,856	163	13,882	19	516	0	13,882	16	41	6	9	2	11	13	0	1870						
1871	4,188	4,188	9	21	0	17	21	19	173	136	13	6	38,246	122	5,213	0	271	3	5,213	0	16	8	0	3	12	12	0	1871						
1872	5,026	5,026	0	4	0	0	15	16	783	199	7	6	31,460	101	7,187	0	456	9	7,187	0	23	0	3	12	7	0	1872							
1873	63,010	63,010	7	18	38	0	0	0	17	21	19	166	177	5	0	438,698	117	79,125	8	360	7	78,833	5	21	0	7	0	1873						
Total.	63,010	63,010	7	18	38	0	0	0	17	21	19	166	177	5	0	438,698	117	79,125	8	360	7	78,833	5	21	0	7	0	Total.						

The village of Sherbrooke is situated near the head of the St. Mary's River on the east side, and by rail and post-road 180 miles eastward of Halifax. The developed mines are confined to the village of Goldenville, on the north-west side of the river, opposite to Sherbrooke proper. The first discovery of gold was made, in August, 1861, by Miss Margaret Macintosh (now Mrs. Elliot) while gathering blue berries, and through this accident sprang up a thriving settlement where before there had been only desolate barrens.

The larger yield per ton during the years 1862 and 1863 is explained by the fact that, at that period, very little quartz was crushed which did not show visible gold. Nearly all the declared yield has been

obtained from within an area of less than 40 acres, owned amongst eight companies.

The mills at Sherbrooke have not adopted any modern process, and are not provided with blanket strakes or concentrators, so that the average yield does not represent the gold contents of the quartz by perhaps one-third. The mines, however, have been opened up more systematically than in many of the other districts, the credit of which belongs in a great measure to having more experienced agents in charge. The Wellington engine-shaft, the deepest in the province, exceeds 500 feet in depth. The lode at the bottom is stated to be a foot wide, and the last crushing yielded 18 dwts. per ton.

1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73.
WAVERLEY DISTRICT.

Year.	YIELD OF GOLD.				AVERAGE.				MINERS.				QUARTZ.				MILLS.							
	Total.		Sources.		Per 100 lbs. of Quartz.	Per 2540 lbs. of Quartz.	Native.	From Quartz.	Oz. dwt. gr.	Gr. s. d.	Per Miner.	Value at £1 stig. per oz.	Avg. number.	Daily av. for Year of days working.	Total Colonial Weight.	Per Man Daily.	Total Colonial Weight.	Crushed.	Steam.	Water.	Total.	Year.		
	Oz. dwt. gr.	lbs. st.	Oz. dwt. gr.	lbs. st.																			Per 100 lbs. of Quartz.	Per 2540 lbs. of Quartz.
1862	1,507	0	0	1,507	0	0	0	0	9	6	46,800	156	40	3	6	46,800	156	3,741	0	130	9	210	0	1862
1863	2,380	6	3	2,380	6	3	0	7	21	8	43,537	59	18	4	6	43,537	59	6,754	19	231	5	216	0	1863
1864	6,410	4	22	6,410	4	22	0	15	13	16	622	90	13	2	88,244	287	6,754	19	231	5	216	0	1864	
1865	14,404	4	9	14,404	4	9	0	1	5	27	615	205	17	10	87,200	280	12,518	7	286	8	40	1	1865	
1866	8,612	17	11	8,612	17	11	0	0	11	12	12,310	169	0	0	38,900	317	16,750	0	339	1	6	17	1866	
1867	3,942	5	2	3,942	5	2	0	0	8	10	9,002	105	19	0	46,436	149	16,697	0	460	7	4	1	1867	
1868	2,387	8	22	2,387	8	22	0	0	8	9	8,962	89	11	10	36,972	118	6,277	0	339	6	3	1	1868	
1869	1,591	14	10	1,591	14	10	0	0	9	2	9,755	118	5	4	16,796	54	2,989	5	350	0	20	4	1869	
1870	811	3	21	811	3	21	0	0	6	22	5,433	74	14	8	13,346	43	2,019	0	382	9	8	4	1870	
1871	1,372	18	12	1,372	18	12	0	0	13	7	14,253	162	19	9	15,742	46	7,569	10	171	2	5	3	1871	
1872	1,869	0	0	1,869	0	0	0	0	13	7	14,253	162	19	9	15,742	46	7,569	10	171	2	5	3	1872	
1873	1,969	0	0	1,969	0	0	0	0	11	5	12,032	93	1	8	13,520	43	5,013	0	237	7	6	4	1873	
Total.	45,532	0	16	45,532	0	16	0	0	12	22	13,838	195	16	2	537,004	143	78,156	10	272	4	21	0	Total.	

RENFREW DISTRICT.

Year.	YIELD OF GOLD.				AVERAGE.				MINERS.				QUARTZ.				MILLS.						
	Total.		Sources.		Per 100 lbs. of Quartz.	Per 2540 lbs. of Quartz.	Native.	From Quartz.	Oz. dwt. gr.	Gr. s. d.	Per Miner.	Value at £1 stig. per oz.	Avg. number.	Daily av. for Year of days working.	Total Colonial Weight.	Per Man Daily.	Total Colonial Weight.	Crushed.	Steam.	Water.	Total.	Year.	
	Oz. dwt. gr.	lbs. st.	Oz. dwt. gr.	lbs. st.																			Per 100 lbs. of Quartz.
1862	308	0	0	308	0	0	0	2	8	43	229	35	4	0	10,920	35	171	0	31	3	0	5	1862
1863	785	7	7	785	7	7	0	1	10	13	32	789	46	8	0	21,216	68	574	17	52	2	1	1863
1864	1,172	6	5	1,172	6	5	0	1	1	9	24,802	119	14	6	12,220	46	1,120	0	135	3	2	5	1864
1865	1,008	10	18	1,008	10	18	0	1	4	9	26,109	87	0	8	14,430	46	1,365	0	135	3	2	5	1865
1866	6,423	15	11	6,423	15	11	0	1	3	3	27,681	211	3	8	38,142	192	2,463	6	286	5	6	12	1866
1867	7,901	19	2	7,901	19	2	0	1	13	12	26,207	169	18	0	31,368	137	7,849	5	297	0	2	10	1867
1868	3,573	14	2	3,573	14	2	0	0	19	13	16,213	111	19	8	31,606	117	6,013	3	311	5	6	12	1868
1869	3,477	18	11	3,477	18	11	0	0	8	2	8,671	139	16	2	11,310	36	3,693	5	531	3	3	6	1869
1870	1,171	18	11	1,171	18	11	0	0	10	17	11,405	131	4	0	10,972	38	1,451	15	204	6	3	5	1870
1871	1,179	17	16	1,179	17	16	0	0	10	11	9,971	71	3	8	5,668	18	727	0	256	5	2	4	1871
1872	323	3	8	323	3	8	0	0	5	6	5,631	35	15	4	2,028	6	325	0	320	0	3	5	1872
1873	59	16	18	59	16	18	0	0	5	6	5,631	35	15	4	2,028	6	325	0	320	0	3	5	1873
Total.	26,800	4	16	26,800	4	16	0	0	16	11	17,775	127	9	10	262,118	70	35,280	18	268	9	2	7	Total.

1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73.
WINE HARBOUR DISTRICT.

Year.	YIELD OF GOLD.				MINERS.				QUARTZ.				MILLS.				Year.					
	Total.		Sources.		Per 100 lbs. of Quartz.	Average.	Daily av. for working days.	Raised.		Crushed.		Steam.	Water.	Total.	MINES.							
	Oz. d. gr.	gr.	From Quartz.	Native.				Tons. Colonial Weight.	Per Man Daily.	Tons. ext.	Tons. ext.					No.		No.	No.	No.	No.	
1862	1,688	0 0	1,688	0 0	2	2 23	46-063	164 13 6	12,792	41	880	0	137-5	380-7	31,571	2	84	4	1	5	3	1862
1863	3,718	2 19	3,718	2 19	1	1 20	24-485	121 0 0	38,688	124	3,614	10	188-4	3,614	10	11-7	3	1	4	0	10	1863
1864	4,683	3 7	4,683	3 7	6	6 12	29-400	218 19 10	22,984	74	4,136	11	339-9	4,136	9	13-2	3	1	4	0	10	1864
1865	2,200	8 14	2,200	8 14	0	0 12	13-777	163 10 8	16,688	53	3,832	18	462-1	3,832	18	12-3	3	1	4	6	9	1865
1866	1,842	8 14	1,842	8 14	0	0 12	12-912	133 7 0	8,814	28	1,881	15	427-0	1,881	15	6-9	3	1	4	9	1866	
1867	1,848	6 3	1,848	6 3	0	0 11	12-159	78 17 0	33,390	43	1,581	13	288-5	1,670	2	5-3	1	1	3	8	1867	
1868	1,248	6 3	1,248	6 3	0	0 5	6-333	43 17 8	23,406	74	3,423	11	269-7	2,498	11	9-4	3	1	4	3	1868	
1869	1,719	8 19	1,719	8 19	0	0 5	9-315	142 12 9	8,932	26	2,513	14	626-3	2,513	12	7-5	4	1	5	3	1869	
1870	914	13 14	914	13 14	0	0 11	13-611	170 18 6	11,233	36	2,937	10	526-6	2,937	10	9-4	1	1	5	3	1870	
1871	1,538	6 16	1,538	6 16	1	1 4	26-739	363 3 8	8,840	28	2,329	0	527-0	2,369	0	7-4	1	1	5	3	1871	
1872	2,572	10 18	2,572	10 18	1	1 4	21-173	195 14 8	12,688	41	2,179	0	343-4	2,267	0	7-5	1	1	5	3	1872	
1873	2,000	0 3	2,000	0 3	0	0 19	18	15	12,688	41	2,179	0	343-4	2,267	0	7-5	1	1	5	3	1873	
Total.	22,491	6 11	22,491	6 11	0	0 15	17-097	141 19 10	197,678	53	33,696	7	330-7	31,571	2	84	4	1	5	3	Total.	

MONTAGU DISTRICT.

1863	366	14 16	366	14 16	2	2 13	62-913	11 16 8	38,688	124	139	18	7-2	139	18	0-4	0	0	0	0	0	1863
1864	1,032	10 14	1,032	10 14	2	2 12	35-146	14 3 0	11,492	37	345	5	91-9	345	5	1-8	1	0	1	0	0	1864
1865	802	12 23	802	12 23	1	1 12	31-170	102 5 6	12,636	19	613	9	139-3	613	9	1-9	1	0	1	0	1	1865
1866	495	15 10	495	15 10	2	2 0	42-874	69 12 0	7,822	25	231	10	165-9	231	10	0-2	1	0	1	1	1	1866
1867	436	15 16	436	15 16	0	0 2	40-086	98 16 6	7,284	24	408	10	110-6	408	10	0-8	1	0	1	0	1	1867
1868	581	14 22	581	14 22	1	1 17	33-784	112 8 4	8,944	29	545	7	122-0	545	7	1-8	2	0	2	0	2	1868
1869	805	13 14	805	13 14	1	1 11	34-106	216 10 10	15,106	48	996	8	132-0	996	8	2-9	2	0	2	0	2	1869
1870	3,831	9 5	3,831	9 5	4	4 13	316 10 10	15,106	48	996	8	132-0	996	8	2-9	2	0	2	0	2	0	1870
1871	3,152	8 15	3,152	8 15	4	4 3	89-141	246 16 11	15,938	51	912	15	114-6	848	15	2-2	3	0	2	3	2	1871
1872	1,736	0 6	1,736	0 6	2	2 18	63-022	214 13 8	13,832	44	718	0	103-8	683	0	2-2	3	0	3	3	2	1872
1873	1,440	3 9	1,440	3 9	2	2 3	50-904	163 16 2	10,972	35	679	0	123-8	679	0	2-2	3	0	3	2	2	1873
Total.	14,863	18 6	14,863	18 6	2	2 15	59-683	124 13 2	146,390	45	6,201	12	83-4	5,477	2	1-8	3	0	3	0	3	Total.

..... 0 10 11 11 11 12 9 10 202,418 70 33,289 18 268 9 23,197 7 9 7 2 3 5 1 Total.

1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73.
OLDHAM DISTRICT.

Year.	YIELD OF GOLD.										MINERS.			QUARTZ.			MILLS.			Year.								
	Sources.		Average.				Per 2340 lbs. of Quartz.	Oz. dwt. gr.	Oz. dwt. gr.	Native.	Oz. dwt. gr.	No. of Miners.	Average Number.	Working days.	Total Weight.	Per Man Daily.	Crushed.	Total Colonial Weight.	Daily.		Steam.	Water.	Total.					
	From Quartz.	From Other.	Oz. dwt. gr.	Per 100 lbs. of Quartz.	Per Miner.	Value at £4 sig. per oz.																		Crushed.	Total Weight.	Per Man Daily.	Tons. cwt.	No.
1862	31	0	0	0	0	0	0	0	0	0	0	4	1,896	11	1,831	10	1,831	10	1,831	10	1	3	8	0	1862			
1863	31	0	0	0	0	0	0	0	0	0	4	1,896	11	1,831	10	1,831	10	1,831	10	1,831	10	1	3	8	0	1863		
1864	1,750	5	12	1,755	5	12	5	12	5	12	5	8	37,634	16	37,634	16	37,634	16	37,634	16	37,634	16	4	2	6	25	1864	
1865	1,126	11	20	1,129	11	20	18	20	18	20	18	8	18,258	30	18,258	30	18,258	30	18,258	30	18,258	30	4	2	6	7	1865	
1866	956	12	20	956	12	20	105	20	105	20	6	11,362	37	11,362	37	11,362	37	11,362	37	11,362	37	5	2	1	5	1866		
1867	1,100	8	14	1,100	8	14	8	14	8	14	8	30	433	89	2	0	15,418	49	869	15	112	8	3	1	4	6	1867	
1868	719	0	4	719	0	4	0	4	0	4	0	15	21	17	0	0	8,608	26	976	13	244	0	3	1	4	8	1868	
1869	1,394	16	0	1,394	16	0	0	16	0	0	0	18	0	19	263	69	6	15,376	56	1,840	10	269	4	3	2	5	13	1869
1870	2,051	15	3	2,051	15	3	8	3	8	3	8	6	50,251	63	50,251	63	50,251	63	50,251	63	50,251	63	2	2	3	10	1870	
1871	1,718	12	12	1,718	12	12	18	12	18	12	18	11	13,494	44	13,494	44	13,494	44	13,494	44	13,494	44	1	2	3	12	1871	
1872	1,014	11	10	1,014	11	10	14	10	14	10	6	8,380	27	8,380	27	8,380	27	8,380	27	8,380	27	3	2	3	4	1872		
1873	988	2	17	988	2	17	18	17	18	17	2	0	6,991	22	6,991	22	6,991	22	6,991	22	6,991	22	1	2	3	4	1873	
Total.	14,104	15	13	14,104	15	13	0	5	21	612	93	11	6	188,162	50	16,038	5	170	4	15,641	0	4	2	3	6	Total.		

TANGIER DISTRICT.

1862	865	0	0	865	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1862	
1863	494	8	21	494	8	21	0	22	18	103	27	13	6	39,000	125	707	0	36	3	707	0	2	3	3	0	1863	
1864	607	7	13	548	2	20	0	18	16	20	46	5	6	37,440	120	655	10	35	0	655	10	1	3	6	0	1864	
1865	296	5	21	268	6	21	1	19	5	20	578	61	2	6	16,380	52	678	5	82	5	687	17	2	2	3	6	1865
1866	691	14	7	633	11	7	0	7	14	8	133	19	15	0	9,074	29	394	17	208	2	791	17	2	2	4	10	1866
1867	373	8	10	329	13	9	0	19	10	30	998	125	16	0	6,864	22	783	18	288	2	754	8	2	2	4	4	1867
1868	1,373	8	10	1,373	8	10	0	8	10	30	466	78	4	8	11,030	31	1,123	5	134	0	1,123	5	2	1	3	4	1868
1869	1,811	9	10	1,811	9	10	0	18	11	19	934	77	4	0	39,828	94	3,313	0	238	8	2,732	10	3	1	4	37	1869
1870	2,093	0	7	2,093	0	7	0	16	11	17	170	55	11	8	27,326	88	2,962	6	216	8	2,924	0	9	4	6	1870	
1871	829	8	15	829	8	15	0	11	0	12	373	123	5	8	10,426	33	992	0	178	8	1,622	0	5	2	4	6	1871
1872	726	11	16	726	11	16	0	5	16	297	101	17	6	8,892	28	1,693	0	247	2	1,693	0	3	1	4	5	1872	
Total.	11,175	18	17	10,967	11	17	208	7	0	18	000	61	16	10	225,321	60	14,782	4	131	1	11,621	15	4	1	4	5	Total.

1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73.

STORMONT DISTRICT.

Year.	YIELD OF GOLD.				MILLERS.	QUARTZ.			At the end of the Year.		
	Sources.		Average.	MINERS.		Raised.	Crushed.	Steam.		Water.	Total.
	From Quartz.	Native.	Per 100 lbs. of Quartz.								
	Oz. dwt. gr.	Oz. dwt. gr.	Oz. dwt. gr.	Gr. lbs. d.	No. Aggregate	Tons. cwt.	Tons. cwt.	Tons. cwt.	No. No. No.		
1862	397 0 0	0 0 0	43-113	58 1 4	21	221 0	221 0	0-7	1 0 3		
1863	157 13 9	1587 13 12	23-363	127 0 4	15,606	526 11	526 11	1-7	1 0 0		
1864	1510 4 21	1510 1 21	36-923	72 18 6	23,841	817 4	65-9	2-0	2 1 3		
1865	1,696 6 2	1,696 6 2	39-124	83 10 2	23,530	1,040 11	80-3	3-3	1 3 5		
1866	1,254 17 9	1,254 17 9	13-367	139 15 0	11,206	2,048 17	365-7	7-2	1 3 2		
1867	1,254 16 15	1,254 16 15	38-834	137 4 6	12,428	768 0	123 6	2-5	1 3 2		
1868	673 2 17	655 2 17	26-368	57 11 0	14,560	1,172 0	596 3	1-9	1 0 1		
1869	227 0 13	227 0 13	9-233	46 7 4	6,110	175 0	247 4	0 0	1 1 1		
1870	578 5 15	578 5 15	9-088	110 3 0	6,552	1,427 10	433 8	4-9	1 1 1		
1871	519 7 21	519 7 21	6-929	124 17 4	3,260	2,716 0	533 8	1-7	1 3 3		
1872	472 0 11	472 0 11	8-814	136 12 0	4,355	316 0	543 0	0 0	1 3 3		
1873	37 18 5	37 18 5	5-626	36 17 2	682	327 0	786 0	0-6	1 2 3		
Total.	10,260 13 21	10,242 13 21	22 680	90 11 0	141,180	12,177 15	172-5	10,831 3	2 9 3		

UNLACKE DISTRICT.

Year.	YIELD OF GOLD.				MILLERS.	QUARTZ.			At the end of the Year.		
	Sources.		Average.	MINERS.		Raised.	Crushed.	Steam.		Water.	Total.
	From Quartz.	Native.	Per 100 lbs. of Quartz.								
	Oz. dwt. gr.	Oz. dwt. gr.	Oz. dwt. gr.	Gr. lbs. d.	No. Aggregate	Tons. cwt.	Tons. cwt.	Tons. cwt.	No. No. No.		
1866	72 16 0	72 16 0	61-521	68 10 8	4,296	168 10	168-7	0-7	1 0 1		
1867	1,622 13 20	1,622 13 20	19-701	141 18 0	14,274	2,158 15	302-4	6-3	1 0 3		
1868	1,867 3 15	1,867 3 15	20-112	145 5 0	27,508	4,262 15	801-3	12-4	5 0 5		
1869	1,867 3 15	1,867 3 15	14-120	105 16 4	22,023	3,338 5	301-9	10-1	5 3 1		
1870	1,666 11 5	1,666 11 5	7-579	113 16 4	6,211	1,916 10	116-9	2-9	5 1 6		
1871	360 17 3	360 17 3	6-623	103 14 4	4,542	837 15	385-9	5-7	3 1 4		
1872	211 10 0	211 10 0	15-923	154 11 2	1,950	399 0	409 2	1-2	3 1 4		
1873	129 8 18	129 8 18	15-659	132 3 8	1,222	164 0	268 4	0-6	3 1 4		
Total.	8,108 7 12	8,108 7 12	15-822	127 13 8	79,248	13,145 10	331-7	12,299 3	5 4 3		

0	16	9	17	566	127	2	10	23,026	15	3,016	0	261-1	3,206	10	2-5	1	1	2	Total.
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1862-73.—GOLD YIELD OF NOVA-SCOTIA.—1862-73. DISTRICTS COLLECTIVELY.

District.	YIELD OF GOLD.										MINERS.				QUARTZ.				MILLS.			District.				
	Total.		Sources.		Average.		Native.		From Quartz.		No. Aggregators.		Working days.		Raised.		Crushed.		Steam.		Water.		Total.			
	Oz. dwt. gr.	lbs.	Oz. dwt. gr.	lbs.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Value at £4 s. d.	Value at £4 s. d.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.		Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.	Per 100 lbs. of Quartz.
Sherbrooke	62,075	7	62,075	7	19,662	17	16	0	0	0	488,698	117	2,4125	0	299	7	78,853	5	21	1	3	12	153	7	Sherbrooke.	
Waverley	45,332	0	45,332	0	13	13	838	107	16	0	292,193	176	33,289	18	548	9	36,197	7	4	1	3	47	5	3	Waverley.	
Rentrev	26,809	4	26,809	4	16	14	17,775	127	9	10	197,678	53	32,690	7	330	7	31,371	2	8	4	3	62	3	3	Rentrev.	
Wine Harbour.	22,491	6	22,491	6	15	17	59,683	124	13	2	148,890	45	6,201	12	83	4	3,977	2	1	3	3	26	2	3	Wine Harbour.	
Montagu	14,863	18	14,863	18	1	0	5	21,642	93	11	188,462	50	16,038	5	170	4	15,641	0	4	2	3	26	6	0	Montagu.	
Oldham	11,175	18	11,175	18	1	1	4	22,690	90	14	225,321	60	11,782	4	131	1	14,621	15	4	3	1	3	5	3	Oldham.	
Fangier	10,260	13	10,260	13	1	1	4	22,690	90	14	111,480	38	12,177	13	172	5	10,834	3	2	1	2	3	28	1	Fangier.	
Stormont	8,108	7	8,108	7	0	14	18	13,822	127	13	79,218	33	13,145	10	331	7	12,299	3	5	4	3	1	4	31	Stormont.	
Uniacke	5,019	13	5,019	13	0	6	12	6,092	47	8	50,48	21	7,080	17	178	2	5,824	19	1	5	4	9	42	1	Uniacke.	
Unclassified.	5,340	19	5,340	19	0	16	9	17,596	127	2	55,635	13	3,496	0	261	1	3,206	10	2	5	1	1	1	1	Unclassified.	
Caribou	2,217	23	2,217	23	0	16	18	17,953	119	4	2,321,026	620	297,734	6	265	5	293,992	6	78	5	34	19	53	527	27	Total.

REMARKS.—The above yield does not include the gold obtained in 1860 and 1861, nor what has been stolen and surreptitiously mined, which, being uncertain quantities, are of no value for the purposes of average. The amount of 6000 czs.—of which 4000 ozs. from quartz crushed and 2000 from alluvial and beach washings—has been officially accepted as the production previous to 1862, and apportioned, in ounces, as follows:—From Quartz—SHERBROOKE, 1100; WAVERLEY, 1050; RENTREV, 200; WINE HARBOUR, 750; OLDHAM, 100; FANGIER, 300; STORMONT, 300; OVENS, 150; LAWRENCE TOWN, 50; from *Alluvial*—FANGIER, 250; OVENS, 1700; LAWRENCE TOWN, 50. The two last localities are included under the head of UNCLASSIFIED districts, which embraces many scattered places where gold mines have been opened but never wrought with any persistency.

The most important results, as shown by above Table, have been obtained in the Sherbrooke district, owing less to any exceptional richness of its quartz than to a more regular method of working. It will be seen, too, that while in Montagu, Oldham, and Stormont, the average per ton of quartz is higher than at Sherbrooke, the extraction has been less profitable, a larger expenditure of labour being required to raise a ton of quartz in those districts. The returns from the "Unclassified" districts afford no basis for calculations, but taking the average wages as not below £80 annually per man, seven districts appear to have given a good margin in excess of wages towards plant and dividends, two to have produced slightly in excess of, and only one not to have earned, labour cost.

REMARKS ON DISTRICTS.

Sherbrooke.—The remarks on this district are given at the foot of the Table on page 13.

Waverley.—This district is 11 or 14 miles north-west of Halifax City, according to the route taken. It can be approached from Rocky Lake Railway Station, or from Dartmouth, opposite Halifax. It is divided into two sections—East and West Waverley—gold having been discovered in the latter in August, 1861, by Alexander Taylor, and in the former in September, 1861, by James Skerry. The district is celebrated for the so-called "Barrel" lode, a corrugated, almost horizontal, layer of quartz, which at one time was very productive and is easily mined. In June, 1865, Waverley supplied the largest bar of gold ever cast in the province; it weighed 1200 ozs. and was from the Tudor Mine, then owned by Mr. LEONOLD BÜRKNER, which produced in all that year 8727 ozs. 11 dwts. (£34,910 4s.) The principal mines are now owned by MM. McClure, De Wolf, and Bürkner. Being of easy access from Halifax, and the drive from Dartmouth a very pleasant one, Waverley is, perhaps, better known abroad, as it is oftener visited by strangers, than any other district in Nova-Scotia. The deepest shaft is only 55 fathoms.

Renfrew.—Three separate discoveries of gold were made in this district, the first by John M'Phee, in July, 1861; the second by William Thompson, in September of the same year; and the third by Andrew Parker in April, 1862. The district owes its celebrity to the Ophir Mine which returned £72,000 from a very limited area. Excellent returns were also obtained from the New Haven and Renfrew Mines. The district is 37 miles north of Halifax, 30 of which can be performed by rail.

Wine Harbour.—In the latter part of July, 1860, Joseph Smith, a resident of this locality, found gold in the sands near the Barasois, on the south-west side of Indian Harbour, and in the same month of the following year discovered gold-bearing quartz on the north-east coast of Wine Harbour, which led to the immediate survey of the district 100 miles eastward of Halifax, and principally noted for the large belts of slate and quartz that have been mined in it. The mines which have most largely contributed to the total yield are the Orient, Phoenix, Caledonia, and Eldorado.

Montagu.—This district was discovered accidentally, in the autumn of 1862, by William Robertson stumbling over a boulder of gold-quartz while looking for a mare he had lost. It is remarkable for the quantity of arsenical pyrites which the lodes carry as well as the uniformly high average yield of gold. The lodes at present worked are narrow. The principal mines are the Union and Albion, the latter having been conducted now for some years with marked success by Messrs. Lawson Brothers. It is eight miles distant from Halifax.

Oldham. where the first discoveries of gold were made by Edward Horne and Samuel Isner in the spring of 1861, is situated at a distance of 33 miles from Halifax, and is remarkable for its high average yield. The mines which have contributed largely to its reputation are the Napier, Britannia, Donaldson, and Stirling. The latter, though now idle, has been favourably reported upon by Messrs. Shelford and Robinson, mining engineers, of London.

Tangier.—Tangier consists of two divisions—Mooseland, or Old Tangier, where Captain CHAMPAGNE L'ESTRANGE, R.A., in September, 1858, and JOHN GERRISH PULSIFER, in May, 1860, discovered gold, is 62 miles to the east of Halifax: and Tangier Harbour, where the first gold discovery was made by PETER MASON, in October, 1860, is 12 miles nearer the metropolis. The returns from the two districts have been treated as one. The district was critically examined by Professor Silliman, and is remarkable for having produced a nugget weighing 27 ozs.—the largest piece of native gold as yet found in the province. The Strawberry Hill, Burlington, and Beneficiary companies' mines have furnished the greater part of the gold.

Stormont, or, as it is more generally called, Isaac's Harbour, is 197 miles east of Halifax; and gold was first discovered there on the 14th of September, 1861, by Joseph Hynes, another man having purposely dropped a piece of gold-bearing quartz from Wine Harbour in Hynes's path, to stimulate a search. The district has always been considered one of great promise, and some assays made by Professor DAVID FORBES, F.G.S., on *débris* collected at Hurricane Island, as well as the results of former years, point to the fact that alluvial as well as quartz mining might be revived with advantage.

Uniacke.—This district, forming part of the estate of the family after which it is named, was discovered on the 18th of June, 1865, by Daniel Mackintosh, John Sims, and Charles Sims. It is 30 miles north-west of Halifax. The returns from this district have been such as to prove that work has been prematurely abandoned. In January, 1868, 13 tons from one of the mines here produced 231 ounces.

Caribou is 70 miles north-east of Halifax. It was originally called "Jennings' Musquodoboit," after a farmer named Jennings, who, with Peter Paul, a Micmac Indian, first found gold in it. The district owes much of its vitality to the perseverance of Mr. DAMAS TORQUAY, who figures in Victorian mining annals as one of four pioneers rewarded for the discovery of Campbell's diggings. A wooden tramway, $3\frac{1}{2}$ miles in length, traverses the district, and the properties known as the Victoria (late Hyde) and Pioneer (late Bushing) Mines. Caribou is still in its infancy, but when worked on the same scale will not be inferior in productiveness to Sherbrooke. An interesting analysis, by Dr. T. L. PUTSON, F.C.S., of some ore from the Lake lode on the Pioneer property, appeared in the *Mining Journal* of August 26, 1871.

Unclassified Districts.—This heading comprises the "proclaimed" districts—Ovens and Lawrencetown—and certain unproclaimed districts only occasionally worked. The Ovens district, which now includes Indian Path, has yielded about 2000 ozs., and Lawrencetown 500 ozs. Ecum Secum, Fifteen-Mile Stream, Wagamatook, Gay's River, and Harrigan's Cove to the eastward, and Gold River and Yarmouth to the westward of Halifax, are among the unproclaimed districts in which gold has been obtained; but, with the exception of Gay's River, where they are operating on cement, no continuous mining has been practised for some years.

LIST OF WORKS ON THE SUBJECT OF GOLD MINING, OR TREATMENT OF GOLD ORES,

PROCURABLE OF OR THROUGH MESSRS. TRUBNER & Co., 57 & 59, LUDGATE HILL,
LONDON, E.C.

AUTHOR.	PUBLICATION.
CAMPBELL, JOHN	Gold Fields of Nova-Scotia. Official Report on the Eastern Districts.
DAWSON, J. W., M.A.	Acadian Geology.
DESBIRNAY, M. B., M.P.P.	History of Lunenburg County.
HENWOOD, W. J., F.R.S., F.G.S.	Transactions of the Geological Society of Cornwall. Articles on Gold in Various Countries.
HEATHERINGTON, A.	The Gold Yield of Nova-Scotia.
HIND, H. Y., M.A.	Official Reports on Waverley, Sherbrooke, Oldham Uniacke, and Renfrew Districts.
HONEYMAN, D., F.G.S.	Geology of Nova-Scotia.
HOW, HENRY, LL.D.	Mineralogy of Nova-Scotia. (Official.)
HUNT, T. STERRY, F.R.S.	On the Gold Region of Nova-Scotia. (Official.)
KÜSTEL, F., M.E.	Concentration of Ores.
MARSH, O. C., Professor	Gold in Nova-Scotia.
MICHEL, AUGUSTE, M.E.	On the Gold Region of Nova-Scotia.
POOLE, HENRY, F.G.S.	Gold Fields of Nova-Scotia. Official Report on the Western Districts.
PHILLIPS, J. A., M.E.	The Mining and Metallurgy of Gold and Silver. Gold Discoveries since 1851.
PHILLIPS, J. S., M.E.	The Explorers', Miners', and Metallurgists' Companion.
PIHPSON, T. L., Ph. D., F.C.S.	The Gold Ores of Nova-Scotia.
RAYMOND, R. W., Ph.D., M.E., and U.S. Commissioner of Mining Statistics	The Mines of the West. Mineral Resources of the Pacific States.
SELWYN, A. R. C., F.G.S., Director of the Geological Survey of Canada, &c., &c.	Notes and Observations on the Gold Fields of Quebec and Nova-Scotia. (Official.)
SILLIMAN, B. J., Professor	Gold Deposits in Nova-Scotia.
SMYTH, R. BROUGH, Secretary for Mines, Victoria.	The Gold Fields of Victoria.
WURTZ, HENRY, Ph.D.	On a Theory of Gold Genesis.

OPINIONS OF EMINENT DISINTERESTED AUTHORITIES.

The Tables contained in the foregoing pages show the declared yield of the past twelve years, obtained chiefly by unskilled labour, and without any of those intelligent modern appliances by which, in California and Australia, the output of ore and the extraction of the gold are facilitated and increased.

As a rule, business men prefer an unembellished statement of results, extending over several years, from which they may draw their own conclusions as to the scope and profit offered to capital in a new enterprise; but there are also mine adventurers in a great measure influenced by the opinion of disinterested geological experts.

Having, then, already submitted an abstract of twelve years' sworn returns to satisfy investors who, in figures, see facts, we now beg to place before those who, to past results, prefer the views of eminent scientists, the publicly made statements of a few disinterested authorities that have made gold deposits a special study, and whose experience, therefore, has enabled them to critically compare Nova-Scotia with other gold regions which they had previously examined:

"The great extent of metamorphic strata in Nova-Scotia, so similar to the gold-bearing rocks in other countries, and the fact that gold has been found at many widely separate points, would seem to indicate that a new and important source of mineral wealth will soon be added to this already favoured province."—(*The Gold of Nova-Scotia*, 1861. By Professor O. C. MARSH, of Yale College.)

"There is no reason to fear that there will be any failure in depth in gold product or strength. The formation of the country is on too grand a scale geologically to admit of a doubt on this point, so vital to mining success."—(*Gold Deposits in Nova-Scotia*, 1864. By Professor B. STILLMAN.)

"It may well excite surprise that so little mining has yet been done in Nova-Scotia, where gold is known to be spread over an area of not less than 6000 square miles, and where, notwithstanding the want of skill of the early adventurers, and the lack of capital, such remarkable results have been obtained. The lodes of this region, which are very regular in structure, have been shown to preserve their richness to depths of 200 and 300 feet, and from their geological relations there is every reason to believe they will continue unchanged to the greatest attainable depths. To this it may be added that the price of labour is moderate; fuel both wood and coal, cheap and abundant; the region healthful and easily accessible from abroad. When all these things are taken into consideration, it would appear that no other gold mining region offers such inducements to the introduction of capital and skilled labour, and that these alone are required to make Nova Scotia one of the great gold-producing regions of the world."—(*The Gold Region of Nova-Scotia. Official Report of the Geological Survey of Canada*, 1868. By Dr. T. STERRY HUNT, F.R.S.)

"I am of the opinion that an unnecessary discouragement has had as much to do with the failure of certain gold-mining enterprises in Nova-Scotia as the want of scientific knowledge and the neglect of proper preparations, and that many of the mines now abandoned as unprofitable will be again taken up with advantage."—(*Ibid.* Mr. AUGUSTE MICHEL, quoted by Dr. HUNT.)

"All that I have seen tends to confirm the high opinion which I have elsewhere expressed of the extent and value of the auriferous veins of Nova-Scotia, and my belief that a much larger amount of capital than at present might be profitably expended in their exploration, both in the larger extension of the workings in many of the areas now known to be productive, and in the opening up of new districts."—(*Notes on New Points in Acadian Geology*, 1869. By Dr. J. W. DAWSON, F.R.S.)

"It is manifest from the characteristics of the localities in which the precious metal has already been discovered, and the great extent of the gold-bearing portions of the Province, that ere long Nova-Scotia will take an important position among gold-producing countries.

"The thickness of its auriferous veins is perhaps less than those of California and some other countries; but they are, generally speaking, richer in visible gold than the average of those I have seen in any other part of the world. It must also be taken into consideration that Nova-Scotia possesses many decided advantages over both California and Australia. Each of these countries is situated at a great distance from Europe, and can only be reached after a long and

expensive passage, and, as a natural consequence, wages were for a long time exceedingly high, and provisions proportionately dear. Nova-Scotia, on the contrary, is within an easy distance both from Europe and the United States of America, and possesses a considerable settled population of intelligent, industrious, and sober people, eminently adapted, after a little experience, to become steady and efficient miners. The whole of the gold-bearing portion of the Province also lies within a convenient distance from the coast, which abounds with magnificent harbours, affording ample security to shipping, whilst wood in large quantities is to be everywhere procured for all descriptions of mining uses, and an abundant supply of water is generally to be met with for the purposes of washing and amalgamation."—(*Gold Mining and the Gold Discoveries made since 1851*. By J. ARTHUR PHILLIPS, M.E.)

"There appears to be no reason for believing that gold mining will not become one of the most profitable and lasting industries of Nova-Scotia."—(*The Mining and Metallurgy of Gold and Silver*, 1867. By J. ARTHUR PHILLIPS, M.E.)

"The reason why two-thirds of the crushing power in Nova-Scotia is standing idle seems at first sight somewhat inexplicable. It is evidently not the poverty of the quartz; neither is it, as I can vouch for personal observation, owing to any deficiency in the quantity which the veins, if properly worked, are calculated to produce, and we are, therefore, forced to conclude that it arises from the unskilful, wasteful, and improvident manner in which the business has ordinarily been conducted, creating general apathy, and utterly destroying the confidence of investors. Many instances could be given of yields far less per ton than the quantity now lost at every mill in Nova-Scotia having sufficed, under careful management, to give a fair profit to the adventurers. These results are due to the practical and intelligent application of the lessons taught by experience, and if this experience is utilized, and as intelligently applied in Nova-Scotia as it has been in Australia, there is no reason why equally satisfactory results should not be achieved."—(*Notes and Observations on the Gold Fields of Quebec and Nova-Scotia*, 1871. By ALFRED R. C. SELWYN, F.G.S., Director of the Geological Survey of Canada, &c., &c., &c.)

"I am of opinion that a moderate amount of English capital and enterprise would soon make this colony one of the most successful gold regions on the globe."—(*On the Gold Ore of Nova-Scotia*, 1871. By T. L. PHINSON, Ph.D., F.C.S.)

At a meeting, also, of the Society of Arts, held on the 25th of May, 1870, Mr. WARINGTON W. SMYTH, F.R.S., in the chair, a paper on *Gold Mining and its Prospects in Nova-Scotia*, by Professor H. Y. HIND, M.A., was read, and during the discussion which afterwards ensued, the following opinions were expressed:—

Mr. ROBINSON, M.E. (firm of Messrs. Shelford and Robinson, mining engineers), said: "He held a decided opinion, which he had often expressed, both in public and private, that Nova-Scotia would be found to be one of the most important gold fields in the world when its resources were properly developed; so far there had only been tinkering, or surface work."

Mr. ARTHUR SOPWITH, M.E., added: "Not a single mine in Nova-Scotia had been started with anything like what would be considered in England sufficient capital."

The CHAIRMAN remarked: "As an old dabbler in gold mines in various parts of the world, he could not help feeling much interested with regard to a colony so near the seaboard, and which appeared to offer so many inducements to capitalists who embark in mining enterprise. It appeared quite clear that there was throughout a great part of this region a sufficiently large portion of gold extending throughout these quartzose deposits, whether beds or veins, to pay well for mining enterprise. Was it not possible, then, instead of 600 or 800 men, to employ 6000 or 8000, or even more, in raising gold, to the advantage of all concerned? Undoubtedly it ought to be so, for there was no doubt here there was a gold field such as was seldom to be met with. There ought to be machinery and appliances brought to bear upon these mines such as would ensure a very handsome return to capital invested in undertakings intended to last over a long series of years. This was a point of almost imperial importance, for it appeared that up to the present time the resources of the country had been developed to a pitifully small extent; and no doubt this was because the undertaking had been conducted by persons unprovided with money, or with that intelligent guidance which it might be presumed they would have had if the matter had been taken in hand by persons better provided with money, without a good supply of which nothing could be successfully carried on. In spite of previous causes of failure, it was evident that many of them would disappear the moment that large capitalists were prepared to go into the matter, because if large companies were formed in England they would of course employ agents familiar with the machinery and appliances requisite for successful mining, who would open workings upon a very different scale from anything that had yet been attempted."

HEATHERINGTON'S
IMPROVED AMALGAMATOR AND ORE SEPARATOR.

This Invention, for which Letters Patent have been obtained for Great Britain, the United States, and Australia, combines greater economy of space, better security for the contents, and a larger amalgamable surface than is presented by any other apparatus yet introduced. The inventor is open to treat for the sale of an interest in the Patent Rights. Communications on this subject, or in reference to investments in Nova-Scotia, may be addressed to him at the

CANADIAN MINES BUREAU,
23, PRINCE STREET, HALIFAX, NOVA-SCOTIA,
AND
30, MOORGATE STREET, E.C., LONDON, ENGLAND,

(The ONLY OFFICES in EUROPE and AMERICA exclusively devoted to the
advancement of CANADIAN MINING INTERESTS.)

OR, TO

B. G. GRAY, ESQ.,
BARRISTER-AT-LAW, NOTARY, ETC.,
HESSLEIN BUILDING, HOLLIS STREET,
HALIFAX, NOVA-SCOTIA.

A PLEA FOR THE GOLD INDUSTRY

OF

NOVA SCOTIA.*

By A. HEATHERINGTON.

1.—YIELD OF NOVA-SCOTIAN GOLD MINES.

Although little known in Europe, the gold mines of Nova Scotia have been continuously worked on a small scale since the autumn of 1860, and from that period to the close of the year 1873 have yielded bullion of the approximate value of *nine hundred and eleven thousand pounds*, in the following proportions:—

District.	Value, at £4 sterling per oz. £ s. d.	Quartz Crushed. Tons of 2000 lbs.	No. of Miners as for 1 Day.	Average per 2240 lbs. oz. dwt. gr.	Maximum per 2240 lb. oz. dwt. gr.	Aver. per Man per Annum. £ s. d.
Sherbrooke ...	252,011 11 0	78,853½	438,698	0 17 21	22 8 0	179 5 0
Waverley	182,128 2 8	78,966	537,004	0 12 22	22 8 0	105 16 2
Renfrew	107,236 18 8	36,197½	262,418	0 16 14	10 10 23	127 9 10
Wine Harbour	89,965 5 10	31,571	197,678	0 15 23	97 8 19	141 19 10
Montagu	59,455 13 0	5,977	148,590	2 15 17	38 3 7	124 13 2
Oldham	56,419 2 2	15,641	188,162	1 0 5	116 3 8	93 11 0
Tangier	44,703 14 10	14,621½	225,524	0 16 19	84 0 0	61 16 10
Isaac's Harbr.	41,042 15 6	10,831½	141,180	1 1 4	9 11 6	90 14 0
Uniacke	32,433 10 0	12,299½	79,248	0 14 18	20 3 5	127 13 8
Unclassified ..	12,078 15 4	5,825	79,482	0 6 12	27 5 2	47 8 4
Caribou	9,387 18 0	3,206½	23,036	0 16 9	25 15 5	127 2 10
Total	£886,893 7 0	293,992½	2,321,020	0 16 18	116 3 8	119 4 4

SUMMARY.

Product from	Value.	Average per Day for 12 Years of 312 Working Days.	Highest.	Highest.	Highest.
Sept., 1860, to Dec., 1861, estimated & officially accepted	24,000 0 0				
Product from Jan., 1862, to Dec., 1873, declared under oath, & royalty paid upon ...	886,893 7 0	78½	320	2 15 17 (Montagu)	179 5 6 (Sherbrooke)
Total ...	£910,893 7 0				

2.—WHY SO LITTLE KNOWN IN EUROPE.

The mines are so little known in Europe—firstly, because the local Government takes no pains to spread information regarding the mineral resources of the Province; secondly, because many of the mines are owned by citizens of the United States; thirdly, because the bullion is chiefly sent to the United States, and therefore rarely figures in the English Customs or Board of Trade Returns.

3.—PROVED CAPACITY.

The above product of nearly £1,000,000 sterling has been obtained from 13 or more different localities, or so-called districts, of which the most easterly and most westerly are 300 miles apart. The capacity of the mines, therefore, does not depend upon one local discovery, nor upon the average of a few selected assays; but upon the crushing of about 300,000 tons of quartz, raised in various parts of the country, and from several distinct lodes.

* Readers interested in this subject and disposed to support it financially, or by their influence, are invited to communicate with the Author, at the CANADIAN MINES BUREAU, 30, Moorgate Street, London, E.C.

4.—UNGROUND PREJUDICE.

A very strong, but most unfair, prejudice exists in England against these mines, which is the more inexplicable as there have been only six companies formed in England for working them, and the failure of five thereof was attributable to mismanagement or want of foresight; for capital, experience, honesty, perseverance, and method are as essential to the success of gold-mining as any other business. The assertion frequently made, that the veins are too narrow to be followed with profit, is unfounded on fact, as nearly all the gold has been obtained from lodes of one foot and under in width, and some small holdings have returned three or fourfold the capital invested in them. There are many lodes, from 6 to 20 feet wide, which could be profitably mined on an extensive scale, but are neglected by explorers, as they do not contain visible gold like the rich narrow ones. In Grass Valley, California, lodes 12 inches wide are being worked with profit at a depth of 1600 feet. The yield is about 30 pennyweights or an ounce and a half per ton, but wages are from three to six times higher there than in Nova Scotia.

5.—MEAN RESULTS COMPARED WITH OTHER COUNTRIES.

Notwithstanding the desultory manner in which gold mining has been conducted in Nova Scotia, the average per ton and per man is in excess of the same averages in California and Australia. The mean per ton of 2240 lbs. for Victoria, from 1866 to 1873, is under 11 pennyweights; in Nova Scotia, from 1862 to 1873 inclusive, it is 16 pennyweights and 18 grains. The average proportion per man in Victoria, for the years 1866 to 1873 inclusive, was 36s. 6d. a week; in Nova Scotia, for 1862 to 1873 inclusive, 45s. 5d. per week.

6.—SUCCESSFUL MINES.

Each district could point to prizes obtained by judicious selection and good management; but the most noted mines in the Province—all owned by foreigners—are the *Wellington* and the *Palmerston*, at Sherbrooke; the *Ophir*, at Kenfrew; the *Albion*, at Montagu; and the *Bürkner*, at Waverley; which collectively have yielded 75,000 ozs., or £300,000, the *Wellington* alone having produced over £80,000, the greater part thereof from one lode about 13 inches wide, worked on a length of 180 feet to 520 feet in depth.

7.—RESULTS FROM QUARTZ MIGHT BE INCREASED.

The average so far obtained from the quartz veins does not prove their full capacity, as the processes used for extracting the gold are very imperfect, and there is no regular after treatment of the tailings, the yield from which, in other countries, often covers all the cost of raising and beneficiating the quartz.

8.—EXISTENCE OF ALLUVIAL DEPOSITS.

With the exception of about 3500 ounces (£14,000), the whole of the gold yield of Nova Scotia is from crushed quartz, and no systematic search has yet been attempted for the discovery of alluvial gold, which must necessarily exist in vast quantities in the vicinity of quartz veins that have been for centuries exposed to disintegrating influences, and the richness of which is proved by their large yield where mined *in situ*.

9.—SECURITY OF TITLES.

The titles to mining property in Nova Scotia requiring to be confirmed by the Commissioner of Mines on behalf of the British Crown, offer better security to investors than titles issued by an unstable Government, or one that does not insist upon the registration of every transfer in order to give it full validity.

10.—SECURITY OF LIFE AND PROPERTY.

Although some of the districts are situated nearly 200 miles distant from Halifax, and are approached through lands sparsely settled, or forest and barrens, the whole of the declared gold product has reached the metropolis safely without armed escorts, and the assistance of the police has, hitherto, never been required to quell disturbances or protect life or property.

11.—PRESENT EXTENT OF HOLDINGS.

In the early days of gold mining in the province, each holding was limited to 1000 square feet, 20 feet on the supposed course of, and 50 feet across the lode; since then the size of a claim, or area, has been gradually increased to 37,500 square feet—150 feet on the course of, and 250 feet across the lodes—or about 6-7ths of an acre; and a holding may now consist of any number of such areas, provided the covenants of the titles under which they have been granted are duly observed.

12.—TERM AND CONDITIONS OF LEASES.

The leases are nominally granted for 21 years, but are virtually interminable, as they may be surrendered at any time, and exchanged for new leases, on the payment of an advanced rent of two dollars per acre. They are forfeitable:

- (a.) Upon failure to make quarterly returns under oath of the number of days' work performed, the quantity of quartz raised and crushed, and the yield of gold obtained.
- (b.) Upon failure to pay 2 per cent. royalty at the rate of £4 1jd., or 19·50 dols., per ounce on the gross yield of gold, except from areas specially exempted on account of the owners having erected the first mill in the district.
- (c.) Upon failure to employ the prescribed number of days' labour.

13.—ADVANTAGE OF COMPULSORY RETURNS.

The system of returns under oath, and the checks for ensuring their correctness, are nowhere so thorough as in Nova Scotia. It is obvious that where a tax is paid on the gross product, no persistent exaggeration of the gold yield can be maintained, at the same time any understating of the number of days' labour—which represents the principal cost of production—would equally result to the prejudice of the lessee. Foreign investors, therefore, who might wish to confirm their resident manager's report upon these heads, have only to address the Mines Department for a certified copy of his statutory returns.

14.—A HEALTHY CLIMATE.

The climate is notably healthy, and has never been a drawback to continuous underground mining operations where the shafts have been properly housed over; and the early part of winter, when the snow is not too deep, is a favourable season, on account of the dryness of the soil, for surface explorations.

15.—ACCESSIBILITY TO BE CONSIDERED.

With ordinary weather, steamers complete the outward passage from Liverpool to Halifax in ten days, and return in eight days; the round voyage, therefore, may be said to average three weeks, and costs (with return ticket) about £30.

16.—CHEAPNESS OF CARRIAGE.

There is no part of the Province at a greater distance than 30 miles from the sea-coast, there are no high mountains to traverse, and the post roads are in fair condition; the cost of carriage, therefore, is considerably less than in other mining regions of the American Continent.

17.—MODERATE PRICE OF LABOUR.

The facilities of approach and transport render provisions cheap and abundant; wages, consequently, will never attain the high rates prevailing in less accessible or unhealthy countries, and the supply of miners will always be equal to the demand.

18.—PURITY OF NOVA-SCOTIAN GOLD.

The fineness of Nova-Scotian gold has been recognized for some time, and the little which has found its way to England has been sold for £4 to £4 2s. per oz.

19.—EVIDENCES OF PERMANENCY.

In addition to the substantial yield of nearly £1,000,000 sterling, the permanent productiveness of the Nova Scotian Quartz Mines is vouched for by eminent disinterested authorities, such as MM. B. SILLIMAN, J. A. PHILLIPS, T. STERRY HUNT, J. W. DAWSON, AUGUSTE MICHEL, O. C. MARSH, and A. R. C. SELWYN, the last named for nearly sixteen years Director of the Geological Survey of Victoria, Australia, and now holding the same high position in the Dominion of Canada. In California, gold quartz mines are still being worked at a depth of 1600 to 1800 feet with as satisfactory results as near the surface. In Australia the greatest depth reached is 1100 feet, the vein maintaining a good width and yield; and the authorities above cited affirm that there is no essential difference between the quartz of Nova Scotia and of the older gold-producing countries; consequently, as it occurs under similar geological conditions as in Victoria, its continuity in depth ceases to be a mere conjecture, and they all agree in the opinion that combined capital and skill are alone required to establish the gold quartz mines of Nova Scotia on an enduring basis.

20.—WHY CAPITAL IS SOUGHT IN ENGLAND.

Nova Scotia is rich only in her natural resources, and not in accumulated capital; her merchants, therefore, who have acquired a little wealth by the older industries—fishing, lumbering, and ship-building—are disinclined to lock up their spare means in a business so new to them as mining, while they can get 7 per cent. per annum on mortgage of real estate, and by very simple

evasion of the usury law—viz., by deducting a premium from the nominal amount advanced—interest from 1 to 5 per cent. a month for short loans on personal security. It is but natural, then, that, knowing of the vast sums which have been provided in England for mining experiments in alien lands, her assistance, to a reasonable extent, should be looked for by the pioneer miners of this her nearest and most ancient colony.

21.—PRESENT CONDITION OF GOLD MINING.

An undue discouragement has prevailed in Nova Scotia, and elsewhere, from persons engaged in this industry ignoring the fact that the occurrence of gold, and of nearly all metals, in quartz veins is intermittent, both vertically and longitudinally, and thus, after passing through a rich streak, they lacked courage to pursue their researches, and closed the mine, when a little perseverance in the right direction would have taught them the regular variability of metaliferous deposits, and have well rewarded their labours. Not a single company has yet been established in the province with a view to permanency, or with such a working capital as would permit the adoption of those appliances and intelligent aids which have contributed to the success of the Australian, Brazilian, and Californian quartz mines.

22.—FUTURE PROSPECTS.

An instructive lesson of what might be accomplished when gold mining in this province shall be prosecuted as a stable industry, and not as a purely speculative enterprise, may be learned from the past history of Sherbrooke, the district most systematically developed. In August, 1861, that locality was a desolate barren; but, through the discovery of pieces of gold quartz by a young woman—Margaret Macintosh—while gathering blue berries on the spot now known as the Boulder Claim, a rush was made there the following October, which has resulted in the establishment of a thriving village and the production of over one quarter of a million pounds' worth of gold. In the aggregate, there have not been more than 30 areas—of 150 feet each on the lode—exploited, and those only to a mean depth of 25 fathoms. The explored ground, however, represents a tract of about 60 areas (say 60 acres), or a parallelogram 1250 feet from north to south, by 1800 feet from east to west. Those areas were owned among twenty-one companies, each with its separate executive, and possessing among them twelve crushing mills, aggregating 132 stamps, when one mill of 15 stamps would have answered their purpose, had the quartz—of which, on an average, only 21 tons a day were reduced—been previously comminuted by a Blake's crusher. The total sum actually paid for the claims was £168,000. Let us now see what would have been the financial results had the whole district been owned by one proprietary, and acquired at a reasonable price.

1. To Purchase money	£60,000
2. A 20-stamp mill	3,000
3. Wages, 438,698 days, at 5s.	109,675
(The tenure of leases depending in a measure upon the number of days' labour performed, this item is in excess of actual requirement. The rate of wages is also higher than the real average, as boys were only paid 2s. and labourers 3s. to 3s. 6d. a day, though returned as miners.)	
4. General expenses, including stores, superintendence, implements, &c., at 8s. per ton on 78,860 tons	30,545
(Probably 2s. to 3s. in excess of what the cost need be.)	
5. Royalty, 3 per cent. on £200,000; 2 per cent. on £52,000	7,040
6. Contingencies, approximately 10 per cent. on items 3 and 4; together, £140,220	14,740
Total disbursements	£225,000

This total of £225,000—based on a most liberal allowance for wages, general expenses, and contingencies—still leaves a balance of £37,000 in favour of the mines on the sworn yield of £252,000, or a net return of 13·6 per cent. per annum, for the 12 years during which they have been worked. Here, then, without taking into account the increased and cheaper output of ore and the increased yield of gold which would have been consequent on the adoption of modern improvements at the mine and in the mill, but adhering to declared totals, there remains a margin which would have provided a fair price for the property, and have paid back the capital originally invested with good interest. How many of the foreign mining ventures, which are estimated to have absorbed seven millions of British capital, can show an equally satisfactory record?

*Canadian Mines Bureau, 30, Moorgate Street, London; and
Halifax, Nova Scotia.*

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