

SECOND ANNUAL REPORT
OF THE
MINISTER OF MINES

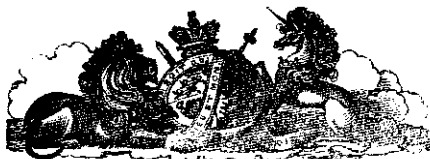
FOR THE
YEAR ENDING 31ST DECEMBER,

1875,

BEING AN ACCOUNT OF
MINING OPERATIONS FOR GOLD, COAL, ETC.,
IN THE PROVINCE OF
BRITISH COLUMBIA.

HON. A. C. ELLIOTT,
Minister of Mines.

MR. CHARLES GOOD,
Deputy Minister of Mines.



VICTORIA:
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REPORT OF THE MINISTER OF MINES

FOR THE YEAR 1875.

To His Excellency JOSEPH W. TRUTCH, Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR EXCELLENCY:—

I have the honour herewith, to present to Your Excellency the Second Report of the Mining industries of the Province.

All of which is respectfully submitted.

I have the honour to be,

Your Excellency's obedient Servant,

A. C. ELLIOTT,

Provincial Secretary & Minister of Mines.

17th February, 1876.

REPORT.

In reviewing the Mining operations conducted in British Columbia during the year 1875, it will be found that no new Mining localities have been discovered. The work done has been in fields already known; and although much new ground has been broken, improved mines satisfactorily tested, and fresh deposits struck in localities already known, yet no really new Mining Districts have been added to those already discovered.

The prosperity of mining undertakings has not, however, been less on that account than in previous years; the yield of gold in Cariboo and Cassiar, as may be gathered from the returns and papers accompanying this Report, have been steadily on the increase. The Cassiar field has been largely proved and developed, and much new and promising ground taken up.

In the coal fields of the Province, mining operations have been steadily carried on during the year. In existing, *i. e.*, working mines, the Vancouver Coal Co. have introduced a diamond drill, which is now in operation, and of which a description is appended under its proper head.

GOLD MINING.

CASSIAR.

The number of miners employed at Cassiar during 1875, appears from the returns to have been a little over 800, not therefore so large as reported in the previous year, but the returns of gold have been more satisfactory; the concurrent testimony of those likely to be best informed, giving a return of little short of a million of dollars.

The Creeks chiefly worked were Dease, McDame's, and Thibert's, but fresh discoveries were made on branches of the Deloire, chief among which was Sayyea Creek.

From the late Mr. Sullivan's reports, which are annexed, it will be observed that Sayyea Creek, discovered by Mr. John Sayyea, is an affluent of the North-Western branch of the Deloire River, about 170 miles from its confluence with Dease River. A party of three men took out about 78 ounces in 115 days, making an average of ten dollars per day per man. The gold is coarse and of excellent quality. This Creek is reputed to be as large as Williams Creek, but much longer, and will doubtless provide many miners with employment next year.

Both Thibert's and McDame's Creek have been worked with great success; and a promising lead of quartz containing gold, silver, and copper, was discovered on the latter. On Francis or Deloire River a lode of argentiferous galena was discovered and located, several hundred pounds of ore having been shipped for assay.

There can be no doubt of the importance and value of the District of Cassiar as a mining field, which will, probably, occupy a foremost place in our mining annals for many years to come.

A map of this District, from the Mouth of Stickeen to Dease Creek, containing much valuable information is added to this Report. The map was kindly furnished the Department by G. B. Wright, Esq., whose report on the mines is also attached.

The late Mr. Sullivan, Gold Commissioner, writing of these creeks, says :—

“ LAKETON, CASSIAR,
“ 22nd June, 1875.

“ SIR,—I have the honour to forward, herewith, the following report, relating to state and prospects of Cassiar District for the summer of 1875.

“ Mining operations in this section have been retarded and almost suspended to the present date, owing to the late season and tardy appearance of a summer sun which at length has appeared and is making up for lost time by an extra glow, causing the creeks, streams, and water courses to be flooded to an alarming extent. The damage on Dease Creek so far, has been immense, the melted snow coming down that course in torrents, tore away nearly all the wing-dams, the timbers of which lie floating on Dease Lake: a much to be regretted loss of hardy miners' enterprise and industry. The damage, I am of opinion, \$50,000 would not repair.

“ On other creeks the injuries caused by the spring or (more properly) the summer “freshet,” has not been so irreparable; the wing-dams and works not being so thickly placed in juxtaposition as on Dease Creek, and consequently allowing the waters a more commodious passage.

“ Miners who arrived here in the early part of the spring and who worked their claims before the “freshet” came did very well, as they were then able to take advantage of a low stage of water, and notwithstanding the difficulties attending work in that season, such as cutting ice and removing snow, I am informed by them that in most instances it is the economic season to work creek claims in this portion of District. However many did not work during that time fearing an early thaw and a consequent loss of labour in making preparations for such work. The lesson, I think, will not be thrown away, and miners will probably attend to the working of their creek claims early in the spring for the future, more especially on McDame's, where the water subsides into a very small stream during the season.

“ New “strikes” or discoveries of gold are not, so far, of frequent occurrence here this season, but one is worthy of note, viz :—a discovery of gold by a Mr. Kelly and party, who prospected on some creeks, tributaries of McDame's Creek, and situated about 16 miles North-west of the Discovery Co., on that creek. The creeks are named respectively Trout Creek and Quartz Creek. Quartz Creek is a tributary of Trout Creek, emptying into it about three miles above the confluence of the latter creek with McDame's, which at that place assumes the appearance of a chain of small lakes. Mr. McLaughlan and party of two others, for one day's washing, took out \$50, which amount was extracted by the primitive method of prospecting without sluice boxes, etc., etc. Some have great faith in these creeks, while others doubt their richness. There are

sixteen men at present prospecting these creeks. The gold obtained is of a rough, not water-worn, appearance, and quartz veins may be traced in various places in that vicinity.

"I obtained two pieces of quartz from there, given to me by Mr. Hilton, who discovered a large, well-defined ledge. It seems to contain largely of copper and lead and probably a little silver. I shall forward the specimen to your office with the hope that the opinion of an expert in minerals may be had regarding it, as all such information would be highly desirable in this remote district.

"I visited McDame's Creek last week to transact business, etc., in the Gold Commissioner's Court, and found the state of things there generally in a satisfactory condition, miners satisfied with their prospects and labouring industriously in getting out timbers, etc., for the working of their claims after the flood ceases.

"The hills and benches in that portion, and, in fact, in all my district, are attracting the attention of miners, and some claims of that description are paying very fairly. I may state that I am impressed with a very favourable opinion of the prospects of mineral wealth in McDame's Creek and its vicinity.

"A party of prospectors consisting of Mr. Neil McArthur, M. J. Smith, *alias* "Black Jack," and two others, men whose reputations as prospectors and pioneers are well and favourably known, have left McDame's Creek with the intention of proceeding some seventy miles in a northerly direction to prospect on the tributaries of Detour River. The appearance (physically) of that country is spoken highly of by those men.

"It is anticipated by miners that Thibert's Creek will yield handsomely this season, and the lead of gold found there has been discovered to exist further up the creek than has been hitherto obtained. The workmen there are all busy preparing for the low stage of water.

"Mr. Fannin, in company with another miner, left Laketon yesterday, intending to proceed to the upper portion of the Stickeen River. It was his, Mr. F's, intention to go there last winter, but the arrangements he had made for so doing were upset and consequently he had to defer it till now.

"The progress of mining operations this year having been hindered by the late and inclement spring season, I can offer no details whereon to base an approximation of the probable yield of gold that may be taken out for 1875, in the Cassiar gold fields, but that confidence exists in the inhabitants here with regard to the extent and richness of the district is unquestionable and exemplified by the numerous storehouses that are being erected, the large boats on Dease Lake built for the conveyance of merchandise and the numerous pack-trains on the trail, as well as other matters bespeaking faith in the permanency of this section as containing rich auriferous deposits.

"Some of the miners who went to the Deloire River last fall arrived here a few days ago looking delicate and worn, some still suffering from scurvy. They report that four of their party died on that river last spring from the same disease. Their names were James Maxwell, Neil Hagan, August Nartz, and Henry Jackson.

"Twelve men remained on the Deloire to prospect the east branch of that river.

"The prospecting done by these parties last winter was very trivial, and no sound opinion can be formed from same of the mineral wealth of that section. They found one nugget weighing about \$17, a certainty of the existence of gold there.

"The population estimated here I conclude to be about 800 whites, 80 Chinamen, and 200 Indians, exclusive of the Cassiar natives, *i. e.* in the mining portion of the District. Probably 200 whites may be added to the above estimate and form the total population of Cassiar.

"Subjoined I beg to forward a list of the prices current in Laketon.

"I have, &c.,

(Signed)

"J. H. SULLIVAN."

LIST OF PRICES AT LAKETON.

Flour, per lb.....	\$	25 cts.
Beans, ".....		25
Bacon, ".....		50
Beef, ".....		30 and 35
Sugar, ".....		45
Tea, ".....	1	25
Dried fruit, per lb.....		50
Shovels		3 50

Axes	4 50
Tobacco	1 50
Brandy, per gallon	8 00
Gum boots	11 50
Packing rates from Telegraph Creek to Dease Lake, per lb.....	15

(Initialed) J. H. S.

"LAKETON, CASSIAR,
"28th August, 1875.

"Sir,—I have the honour to report regarding the Cassiar District.

"The mines on Dease Creek are at length yielding fair harvests to the miners who have experienced much trouble and delays in combating a continued high stage of water in the creek during the summer months.

"Some of the claims on Dease Creek are paying handsomely, while nearly all are yielding fair average results. I have been informed that the "Andrew" Co., situated about five miles above Laketon, washed out on the week before last, 500 oz. The "Godfrey" Co., "Harris" & Co., "Hosford" & Co., average about 2 oz. per day to the hand. The "Carrigan" and "Williscroft" Co.'s, about 3 oz. The "Scott," "Forest Rose," and "Discovery" Co.'s, average about 1½ oz. per day to the hand. The "Caledonia," "Rath," "Lyons," "Three to One," "Fontaine" & Co., and "Wyoming" Co.'s, from 1½ oz. to 3 oz. per day to the hand employed.

"I mention these companies merely to exemplify and give a fair idea of the average pay taken out of Dease Creek at present.

"On Thibert's Creek the claim holders are doing well, taking out, say, from 1 oz. to 3 ozs. per day to the hand employed.

"There are about 300 miners on McDame's Creek. The mines there do not yield equally, some pay very well while others have been very unprofitable, the latter so on account of the difficulty in damming the creek, miners, in several instances, being obliged to throw up their summer's work, consisting of partly erected wing-dams which could not be completed owing to the high stage of water, and at other times to the slides from the hill-sides, which break up their works and fill their diggings.

"However, McDame's Creek is proved to be rich, and the miners who have succeeded in wing-damming their ground have been well rewarded for their labour. The Discovery Co., on that creek, washed out last week 170 oz., and for the week preceding that 200 oz., while the McCrum & Stuart, Caledonia, Walker, Mitchell, Black Jack, and others, are paying largely.

"There are about 25 men on Quartz Creek, who are, I learn, doing well, and on Snow Creek (both tributaries of McDame's Creek) two companies are making over wages.

"I am under the impression that the yield of gold from Cassiar District this season will exceed its last year's returns.

"I learn a new creek has been discovered about forty miles below McDame's. Four have visited it and have obtained very fair prospects. Mr. Brousseau, one of the discoverers, informs me that he does not think very highly of it, that it prospects only on the bed-rock, and that he obtained as much as \$4 to the pan from the crevices of the bed-rock, and that the creek can be easily managed as it is not large.

"I have no doubt but that the prospects obtained will lead to this section of my District being thoroughly prospected.

"All the prospectors who visited Francis or the Deloire River have returned and report nothing of any importance.

"There are seven miners on the upper Stickeen prospecting its head waters. I learn from one party, who merely visited that country this summer, "that the country physically appears to be auriferous."

"There are, I may say, no idle men in Cassiar District, all who understand mining finding ready employment.

"Messrs. Walsh, Rogers, and others, have brought in, *via* Skeena, a large band of cattle, numbering about 300. The drovers report that the trail is in better condition this year for driving cattle over than it was last year, *i. e.*, the trail from Dease Lake to Fort Fraser.

"The prices of goods, etc., on Dease Creek continue the same as mentioned in my last report.

"I have, &c.,

(Signed)

"J. H. SULLIVAN."

"LAKE TON, CASSIAR,
"25th September, 1875.

"SIR,—I have the honor to report that a new, auriferous creek has been discovered on the north-western tributary or branch of the Francis or Deliore River, where it empties into, about one hundred and seventy miles from the confluence of said river with Dease River.

"The discoverer of this creek is Mr. John Sayyea, who informs me that he and a party of three others took out, for 115½ days' work, seventy-seven and three sixteenth ounces, making an average to each man, per day, of \$10 80 nearly. The gold abstracted therefrom is coarse, and seems to be of excellent quality; some pieces weigh, respectively, \$28, \$18, \$17, and a number of pieces average about \$10.

"The distance to Sayyea Creek, from Dease Lake, is about 370 miles, viz.: 200 to the mouth of Francis River, and from thence 170 miles. It is about the same size as Williams Creek, but much longer; the mountains rise abruptly from its banks. I have no doubt but that it will attract many miners next year.

"On Dease Creek the claims worked this season paid very well, and a number of hill claims will be prospected this winter.

"On Thibert's Creek the results are very satisfactory, and several parties are successfully prospecting the upper portion of that creek. A number of new claims have been staked off; shafts are being sunk in deep ground; the bed-rock has not as yet been reached, but the prospects so far are very favorable.

"The returns from McDame's Creek have equalled general anticipations, and this season a new and important feature, namely, a large lode of quartz yielding gold, silver, and copper has added to the attraction of that region.

"A lode of silver-bearing galena has been discovered and located by two companies on Francis River, above its confluence with Dease; and six or seven hundred pounds weight of the ore is being sent down for assay.

"The prices of provisions remain the same as stated in my last report.

"I have, &c.,
(Signed) "J. H. SULLIVAN."

Mr. G. B. Wright reports as follows:—

"PORTLAND, November 22nd, 1875.

"SIR,—I beg leave to hand you some mining statistics, filled out in accordance with your request, dated November 2nd, 1875. The total amounts of yield from each claim are *estimated* amounts. It is almost always impossible to get the exact sums, as the miners themselves are extremely reticent in such matters.

"I shall soon be able to furnish you a tracing of my map of the Dease Lake and River, and McDame's Creek.

"You also asked me to give my general ideas of the country and its requirements, which I will do briefly.

"I am firmly of the opinion that the Cassiar Mines are in their infancy. It is now well established that Dease, Thibert's, and McDame's Creeks have yielded in two seasons nearly *two millions* of dollars, and the two latter streams will, undoubtedly, produce far more in the future than they have yet done. Three other streams have been prospected, tributaries of Dease River and DeLiard, and gold in paying quantities has been found upon each. The last discovery (Sayyea's Creek) offers such inducements that hundreds of miners will visit it during the present season. Its discoverers report that there are deep deposits of auriferous gravel which will, probably, enable the miners to prosecute their work in tunnels and shafts during the winter season, thus removing one principal objection to the claims in this extreme northern region, viz., the shortness of the mining season.

"I believe that the number of miners in the District will be greater during the ensuing season, than it has yet been.

"I also believe that rich and profitable silver-bearing leads of quartz and galena exist, and will be worked extensively during the next two seasons. I would therefore suggest—

"1st.—That the Dominion Government be requested to improve the *postal* facilities by sending, during the months of May up to October inclusive, semi-monthly mails as

far as McDame's Creek. In the remaining five months of the year, at least *four* mails should be dispatched to the mines and back. Last winter *five* months elapsed, during which not a letter was received from below; and the dread of this long dearth of communication with the outside world deters many from wintering in the mines and prospecting the country.

"2nd.—That *two* Gold Commissioners be appointed for the Cassiar District. The distance between Dease Creek and McDame's Creek is about one hundred miles. If the head-quarters of the Commissioner are at Dease Creek, he can only make short and few visits to the further stream. Not only in settling disputes among the miners, but in collecting debts due from them, his continued presence is a benefit; and, in the absence of a County Court Judge, is almost imperative.

"3rd.—Last year, no Supreme Court was held in the District, and the County Court only held a single session in the month of September. The former should, most certainly, hold a session each year. I know of one suit, in which the venue was changed to Victoria, in which the expense of getting evidence to that place exceeded far the amount in dispute,—nearly one thousand dollars. The County Court should remain in session at least a month.

"4th.—The newly discovered creeks, north and east of McDame's Creek, are, undoubtedly without the territory of British Columbia. Provision should be made for the extension of legal authority over them: and I would suggest such action as would place them temporarily under the control of the Provincial authority. This action would have to be taken by the Dominion Parliament.

"5th.—The Dease River and DeLiard are capable of being improved, with a small expenditure, so as to be navigable for small stern-wheel steamers. Upon the upper portion of the Dease River, the removal of sunken trees, and cutting off snags which overhang the stream, would enable small steamers to pass up and down during the entire season of high water, which includes the greater part of the mining season. Below the Cottonwood River, some rocks require to be removed, and in one other place a little blasting is needed. If these improvements are undertaken by the Government, it is certain that a small steamer will be constructed during the coming spring. I estimate the cost of these works at \$1,500 to \$2,000, and would suggest an appropriation of the latter sum, to be placed in the hands of some responsible person, and expended for this purpose. I consider this very important to the immediate prosperity of the district.

"6th.—If my anticipations of the extent of the mining district, and the richness of the quartz veins, are realized, another season will see the necessity of the introduction of heavy machinery for milling ore and for steam navigation. The DeLiard and Dease Rivers united, will offer 250 miles of uninterrupted navigation. To transport such machinery as is needed, will require the construction of a waggon road from the head of navigation on the Stickeen River to Dease Lake. I would therefore suggest that a small amount be expended during the present year in locating the line of a waggon road, and estimating its cost between these two points.

"7th.—The new discoveries upon the Tacoo River will soon render it necessary to establish the Boundary Line between Alaska and British Columbia. I think that the Dominion Government should be asked to propose to the United States a Commission to settle this question.

"I have, &c.,

(Signed) "G. B. WRIGHT."

THE DISCOVERY OF THE CASSIAR GOLD FIELDS.

As the gold fields of Cassiar seem likely to become of considerable importance to the future of the Province, it may be of some interest to trace the circumstances which led to their discovery and development:—

Fair prospects of gold had been from time to time discovered on the banks and bars of the Stickeen River, and several parties had been formed for the purpose of visiting and endeavouring to establish that part of the Province as a gold field. But no definite results followed the endeavours made in this direction from the sea-board, it was reserved for an explorer entering British Columbia through the

portals of the Rocky Mountains to discover this important tract of country, and it is to the intrepidity and perseverance of Mr. Thibert that attention is now called.

Leaving Minnesota in June, 1869, with one companion and a small supply of necessaries, chiefly consisting of ammunition, Mr. Thibert started on a long and perilous journey, intending to pass two or three winters in trapping in the North-West Territory, and finally to penetrate through the Rocky Mountains and British Columbia to the Pacific. They passed their first winter at Great Slave Lake; during 1870 they resumed hunting and prospecting, and passed the winter about seventy-five miles up the McKenzie River.

During 1871 they passed through the Rocky Mountains and wintered on the Ure or Deloire River at an old Hudson Bay Fort; by this time their supplies had run very short, only a small supply of ammunition and tobacco remaining. In this dreary, solitary, and inhospitable region, they suffered tremendous hardships, being entirely dependent on their guns for the means of living.

In the course of this year they met with another intrepid traveller, the well known McCullough, who wintered with them. Up to this time, they had heard or knew nothing about Dease River. By following the course of the Deloire River during 1872, they reached Dease Lake, where they parted with Mr. McCullough. The first gold struck by the party, was in a place known as Devil's Portage, where the river crosses the Rocky Mountains. On reaching Dease Lake in 1872, they passed three weeks in fishing and hunting, and then proceeded down to the Stickeen as far as Buck's Bar, McCullough proceeding to Victoria, while they wintered there; being the fourth year they had wintered alone, far from the habitation of man. On the 14th of February, 1873, they started for Dease Lake, prospecting the creeks that empty into it, and shortly struck rich prospects, as much as 2 ounces of rough gold a day, on Thibert's Creek, at a depth of from one to three feet, working with a rocker; the gold was found on slate bed-rock, in what in mining parlance is known as "black rock." Here they remained and worked three claims during the season. In July some more men, thirteen in all, arrived.

Toward the fall some twenty men arrived, all wintering on Thibert's Creek.

Having left on a prospecting tour they discovered paying ground on Dease Creek, and William Moore started work there at Mr. Thibert's instance.

Thibert's Creek, as will be seen from the sketch map of Cassiar accompanying this Report, enters the lake close to the exit of Dease River. It is from twenty-five to thirty miles in length, and almost fifty feet wide, with occasional flats covered with deciduous trees.

The most important work has been done on Rath's Bar or flat, about $1\frac{1}{2}$ miles up the creek.

Tunnels have been started in the hill sides, and are being worked on the head of Thibert's Creek, the results of which are not yet apparent.

During the years 1874-5, prospecting was carried on in the vicinity of Dease Creek in every direction, and up the Deloire River, resulting in the discovery of McDame's Creek, Trout Creek, Quartz Creek, and Sayyea Creek, all of which have been more or less successfully worked.

During these years over one thousand men have visited this locality; and although the season is very short, the estimate of gold produced is a little short of two millions of dollars.

The area of the gold field of Cassiar, thus far developed, comprises a tract of country of at least three hundred miles square.

It is almost impossible to forego the conclusion that for the discovery of this most important gold region, the Province is almost entirely indebted to the intrepidity and perseverance of Mr. Thibert.

CARIBOO.

Turning from Cassiar to the old established mining region of Cariboo, it is necessary to give the first place to Lightning Creek, which has continued throughout the year to give rich yields of gold from many claims.

The wealth taken from this creek has been so great that it was considered that a description of its discovery and a map of the various claims would be highly interesting. Captain Evans was therefore employed to prepare a map, accompanied by an account of the creek, which is as follows:—

Lightning Creek.

“Early in 1861, “Bill” Cunningham, “Jack” Hume, and “Jim” Bell, three gold hunters, started southward over the mountains from Jack of Clubs Creek on a prospecting tour. They found the trip exceedingly rough and laborious, especially in descending the steep banks of the creek they came to, the former called out to his companions “Boys this is Lightning,” it being a favourite expression with him in meeting anything difficult to overcome. This incident has been the origin of the name by which this creek has been known ever since. They returned unsuccessful.

“In July of the same year, “Ned” Campbell found gold in paying quantities a few hundred yards above the mining town of Van Winkle, in the second cañon. It was estimated that no less than \$200,000 was taken out of Campbell’s “discovery” and the adjoining one, the “Whitehall” Claim. These two claims form part of what is now known as the Spruce Company’s ground. This discovery brought hundreds of miners to the creek and tributaries.

“The same season pay was found in Van Winkle Creek—one of the tributaries—but only about 2,000 feet of the lower end of which paid well. One company of four men took out on an average \$600 per day during the season, and another company about \$100 per day to the hand. However on following up stream the lead was lost, and never since found.

“Last Chance Creek, another tributary, was discovered the same season, and proved to be a rich chance to those engaged. The Discovery Company took out as high as 40 lbs weight of gold in one day, the property of four men. At the least calculation no less than \$250,000 was taken out of this small creek for the distance of half a mile. Gold was also found on Chisholm, Davis, and Anderson Creeks—all tributaries—and good pay taken out of the shallow portions of each. Jaw-Bone, Amador, and Eagle Creeks, and the deep ground of Chisholm Creek, remain undeveloped, although strenuous efforts have been made to reach the bottom of the latter.

“In 1862 not an inch of vacant ground could be found on the main creek, all the way from Eagle Creek to the present Water-lily Claim; and shafts were sunk all along the line at great cost, but everywhere unsuccessful below Van Winkle, for the want of adequate machinery; and by the fall of 1864 all were abandoned, from the upper end of the present Ross Claim down stream.

“In the early part of 1870, the Davis (now the Spruce) Company managed to sink to the channel, as did also the Ross and the Lightning Companies, and obtained good prospects. This gave a new impulse to mining on the creek, when the Van Winkle, Victoria, and Vancouver Companies commenced operations below the Town of Van Winkle, by sinking in solid bed-rock with the view of drifting from the bottom of their shafts to the channel; the object of this was to avoid as much as possible the surface water. It cost the former of these three claims no less than \$40,000, to twelve interests, before finding gold in their channel, which includes a long drain tunnel, much of it through solid bed-rock.

“Then followed the location of other claims in succession for nearly five miles down stream. The Vulcan, Costello, Gladstone, and Eleven of England Companies, put up heavy and costly machinery, and on the result of the operations in these claims depends the fate of the lower end of the creek for years to come.

“On reference to the transverse sections on the map, it will be seen that a separate run of gold was found at different elevations. The Butcher and Discovery bench being opposite the South Wales Claim, the former high above the present stream, and the latter deep under the opposite bank. The same characteristics are found in the Dunbar and Eldorado, opposite the present Perseverance and Ross Claims.

"The following will give an idea of the money taken out from some of the most prominent claims on Lightning Creek:—

"Dutch and Siegel (now Perseverance)	\$130,000
Dunbar.....	30,000
Discovery and Butcher	120,000
Campbell and Whitehall	200,000
South Wales	141,531
Lightning	153,962
Point	136,625
Spruce	99,908
Costello	20,476
Vulcan	56,955
Vancouver.....	274,190
Victoria.....	451,642
Van Winkle	363,983

These sums are made up to the 1st November, 1875. It is found impossible to get an accurate idea of the money taken out of the older claims, as the shareholders are scattered and the books lost.

"The Costello Company expended in all, up to date, \$71,345—\$37,493 of which before finding gold—so that it cost \$33,852 since, to take out \$20,476. The Gladstone expended \$53,794, and not yet in the channel.

"Had many of the companies machinery of powerful capacity at first, one-third the expense would have sufficed to prospect their ground, but unfortunately many of them were poor, struggling for existence, and coping with enormous difficulties.

"I have, &c.,
(Signed) "JOHN EVANS."

The following are the claims on this creek of chief importance at present. The amount of gold taken out of each in 1875, for 9 months, is placed opposite:—

Van Winkle.....	\$218,262
Victoria.....	202,282
Vancouver.....	54,115
Vulcan.....	15,000
Costello.....	17,442

It may be confidently expected that the lead of gold will be ultimately discovered in other claims on this creek.

Williams Creek, though not producing in any way so large a proportion of gold as Lightning Creek, has yet yielded fairly.

From Mr. Bowron's report, attached, it will be observed that he put down the whole yield for the Cariboo District at \$1,075,237, of which Williams Creek is credited with over \$68,000.

The Ontario claim on Conklin Gulch has paid handsomely, giving a return of \$23,500.

Mr. Bowron reports as follows:—

"BARKERVILLE, October 25th, 1875.

"SIR,—In compliance with the request contained in your circular of 11th June, 1875, I have the honour to submit the following report in regard to the portion of the mining district of Cariboo, embraced in the Barkerville and Lightning Creek Polling Divisions, together with statistics prepared with as much accuracy as possible as to the number of claims worked, hands employed, yield of gold, population, etc., etc., during the nine months of this year, from 1st January to 30th September.

"These returns do not include the bars of Fraser River, above and below Quesnelle-mouth, where a few Chinese still continue to work; nor the portions of Cariboo District in the vicinity of Quesnelle Forks, Harvey, Keithley, and neighbouring Creeks, (for which Mr. Hare is Government Agent), and Omineca.

"I regret to say that the information now submitted is not as complete as I would wish—there are so many obstacles encountered in the obtaining of accurate statistics, of which the following are a few:—The itinerant character of the population, some of whom may be working in half a dozen different creeks in as many months; the objections some persons have (especially Chinese) to disclosing the amount of gold taken out; the necessary irregularity in working many claims, caused by an excessive or an insufficient supply of water, through which, at times, two men only may be employed, upon other occasions twenty men would be necessary for the working of such claim, whilst frequently mining operations have to be entirely suspended.

"In the returns of claims and men employed therein, I have not included prospecting claims, worked only for a portion of the season, from which no gold was taken, which, of course, makes the total mining population more than the number enumerated as working in claims. Though not strictly appertaining to this report, I may mention that, in the lower portion of this District, extending from Quesnelmouth to its southern boundary, there is a population of probably one hundred and fifty persons, principally engaged in agriculture and stock-raising, who furnish a large proportion of the provisions consumed in the mines.

"From various causes the District, in general, has not fully realized the anticipations of last year, although some claims, particularly on Lightning Creek, have yielded very largely. The gold product of the hydraulic claims has been materially curtailed by the unusually dry summer and consequent scarcity of water, while the stoppage of the Lane & Kurtz Company's extensive works, on the Williams Creek meadows, has caused much disappointment, as it was fully expected that the richness of this large extent of ground would be proved this present year.

"On some new creeks considerable prospecting has been done, and with regard to a few work is still being carried on, but, so far, without any material success.

"Much faith is entertained concerning the richness of the deep ground on Willow River, Jack of Clubs, Antler, Cunningham, and other favourably situated Creeks, which from the great expense attendant on prospecting have hitherto remained undeveloped, although large sums of money have been spent in the attempt. One company alone, the Nason Co., on Antler Creek, has expended \$30,000 without succeeding in testing their ground.

"From the returns herewith submitted, the amount of gold taken out for nine months would appear to be.....\$ 688,152

"To this, however, I consider, should be added at least one fourth for amounts not accounted for, say..... 172,038

Product for nine months\$ 860,190

"To which, for the product of the remaining three months, allowing for the fact of the hydraulic claims doing but little work, add $\frac{1}{4}$, say 215,047

"Being an approximate yield for 1875 (which I believe to be a fair estimate) \$1,075,237

"During the nine months, from 1st January, 1875, the Bank of British Columbia, at Barkerville, has purchased..... 445,000

"And the Bank of British North America, at Stanley..... 324,308

"Leaving a probable amount in private hands 305,929

\$1,075,237

"As the alluvial diggings on the various creeks, now being worked, have become gradually exhausted, attention is being drawn to quartz mining. Quartz ledges are found in abundance throughout the District, on some of which prospecting has been done at various times, but, so far, unsuccessfully, though in some instances good paying prospects were obtained. Failure, no doubt, was occasioned by not possessing proper appliances for working the same. The chief drawbacks towards developing this most important branch of mining, which, it is believed, must eventually become the great source of wealth of Cariboo, are the difficulties of access, owing to its remoteness from navigation or railways, and the absence of mills for crushing purposes.

"Several assays have lately been made at the Government Assay Office here, some of which show very good results as regards both the yield of gold and silver, and were

the ledges, from which the specimens were taken, situated where machinery for reduction at any reasonable rates was available, they would, no doubt, be eagerly sought after by capitalists. A quantity of rock from the vicinity of Soda Creek, from which a very favourable assay of silver was obtained, I understand is about to be forwarded to San Francisco for reduction and a practical test of its value, which, if found satisfactory, will lead to extensive machinery being at once erected on the ground.

"The following are the prices current in this District :—

Wages : Labourers, per day.....	\$ 5 00
Mechanics, "	7 00
Flour, per lb.....	8
Beans, "	15
Bacon, "	35
Tea, "	1 00
Sugar, "	33½
Tobacco, "	1 50
Yeast Powder, per box.....	50
Butter, per lb.....	60
Cheese, "	50
Gum Boots, per pair	8 00
Candles, per lb.....	50
Soap, "	40
Beef, "	12½
Fish, salted, per lb.....	30
Pickles, in bulk, package of 5 gallons	10 00
Nails, per lb.....	25
Salt, "	20
Brandy, per bottle.....	1 75

"The rate of freight from Yale, the head of navigation, to Barkerville, averages from 7½ to 8 cents per lb. in the spring, and about 12½ cents per lb. in the fall.

"I have, &c.,

(Signed)

"Jno. BOWRON."

In what is known as the Keithley Division, comprising Keithley Creek, the North and South Forks of Quesnelle, Harvey, Snow-shoe, Spanish, and Kangaroo Creeks, considerable mining has been done. A report from Mr. O. Hare, the Government Agent for that District, is attached, which shows a return of about \$80,000, chiefly the result of Chinese labour, and gives a great deal of interesting information about this section of country, which Mr. Hare considers may, by the introduction of water and machinery, be largely and profitably developed.

Mr. Hare reports as follows :—

"FORKS OF QUESNELLE,

"September 16th, 1875.

"SIR,—I have the honour to forward the Mining Statistics of this District (Keithley), and to report I have used my utmost endeavours in collecting them. They are compiled from statements furnished me by the claim owners. Both whites and Chinese were more ready to give information, as to their yield of gold per month and season, than last year; but nearly all refuse to say what their ground will prospect to the pan or set of timbers.

"The season has been the most precarious ever known in this district for mining purposes. In the commencement, we had extraordinary high floods, which did great damage, especially on Keithley Creek; the extreme heat carried off all the snow, and since then the water in the creeks, owing to a long drought, has fallen so low that many of the claims have been but partially worked, and several stopped altogether.

"The disparity, in the number of claims recorded and those worked, can be accounted for in this way, that since the reduction in the fees, for recording, to \$2 50 for a set of claims, instead of individually, the miners—more especially the Chinese—as soon as they have taken a fancy to a piece of ground rush off to record it in as many names as they can get licenses, and if the ground does not suit, they take up another spot in the same way. I know of more than a dozen recorded claims that have been abandoned without scarcely any prospecting having been done on them.

"The Chinese population is much reduced in this section of the district, a great many having left for Williams and Lightning Creeks. Cedar, Duck, and Goose Creeks have been totally deserted by them this year, and very little has been done on Harvey. On Keithley, owing to causes before mentioned, less gold has been obtained this year than in any previous. Up to a short time since, the miners appeared greatly discouraged, but within the last two weeks their prospects have much improved, and great hopes are now entertained that several of the claims will pay big before the season closes.

"As will be seen, there are no white men engaged in mining, either on the Quesselle River or Forks; therefore the Chinese have it all their own way, and will find pay, remunerative enough for them, for many years to come. On the whole, I have found the Chinese more peaceable this year than usual, but to require the same amount of hunting up on the license question as ever; many of them try every scheme to avoid payment.

"There can be no doubt but a large amount of ground can be found on the benches of the rivers that would pay from \$3 to \$8 a day to the hand, if water could be got on it; I am told that several wheels will be erected next year for that purpose. The large flat at the back of the Forks town will pay from \$3 to \$6 a day to the hand. To work it, water has been taken out of the North Fork River by ditch and flume nearly a mile and a half in length; but the work has been stopped for a month past, in consequence of the low stage of the river. On the south fork there are several good paying claims, on benches from fifty to two hundred feet above the river, worked by water from small lakes, conveyed by ditches and flumes of great length; one claim raises their water by a wheel, sixty feet in diameter, beautifully constructed, and a great success.

"There are three well fitted up stores at the Forks, two of which are licensed to sell opium, and all for spirits. Judging from the vast quantity of goods brought in by pack-trains, they must do a large business. There are also two butcher shops. On Keithley Creek there are four stores, three kept by white men, the other Chinese; two of the former are licensed to sell spirits.

"The rate of wages for labourers throughout this District is \$5 for whites and \$3 for Chinese, per diem; mechanics, \$6.

"I have, &c.,

(Signed)

"OLIVER HARE."

OMINECA.

Amid the excitement, consequent on the wealth developed at Cassiar, this District has nearly faded out of view. Though mining is still carried on here, there is no doubt that the expectations formed about its wealth have fallen far short of what was anticipated. From Mr. Page's report, which is annexed, it will be seen that the estimate of gold produced in this section, is only \$32,000. The total population amounts to 68.

Mining in Omineca for the year, as appears from Mr. Page's Report, like that of the other Districts, was, in 1875, much affected by climatic influences, and severe freshets affected the reasonable anticipations of the miners. Mr. Page's Report is, in many respects, worthy of a careful perusal, and points to the fact, that although mining in this section is not at the present time very flourishing, there are sufficient evidences to warrant hopeful expectations for the future.

Mr. Page reports as follows:—

"OMINECA,

"18th October, 1875.

"SIR,—I have the honour to enclose, herewith, mining statistics of the Omineca District for the year 1875.

"I have endeavoured to find out from claim-holders the actual yield of gold, which, with few exceptions, was readily given, and I feel certain that the amount as shown in the tabulated statement is nearly correct.

"The creek claims on Germansen Creek, which up to high water had paid as well as expected, were completely washed out by the flood during the month of June; and

before the water had subsided, so as to allow them to replace their wing-dams, one month of the short mining season had gone. The Keynton Company on resuming work after repairs, lost the bed-rock, and with it the pay; they spent the rest of the season prospecting their ground, making about wages. The Good-as-any Company (creek) after repairs got on good pay, but as the lead of gold is spotted, and the ground very deep, they have not done as well as expected. The hill claims of this Company, which were worked during high-water by hydraulics, prospected exceedingly well; but the water running short, and the hill sliding into their works, they have not been able to clean up.

"The Discovery Hill Company on which one man worked all last winter, and two at the commencement of the mining season, after working a month this spring by hydraulics, cleaned up less than one hundred dollars. The Morrison Company (bench) from which large returns were expected, paid less than three dollars per day for work done on it this season. The Rim Rock Company (hydraulic) paid best of any on Germansen Creek, yielding \$6,200. The bank on this claim is from twenty to fifty feet high, and but for the scarcity of water, would have shown a much larger yield. This Company have sold out to some Chinamen and left the country. The Discovery Bench Company last fall left off on good pay; on resuming work this spring the pay dwindled out, so that they abandoned it in a month. The Reliance Company (hydraulic) paid less than wages for the season; and is so near worked out that the owner does not intend to come back to it next year. The Marshall Claim (bench) worked two months, and made wages, but on running back into the bench, the pay gave out and they abandoned it. A few other parties on this creek (prospecting) made barely expenses.

"On Mansen River only two companies (one bench and one hill claim) have been at work for the season (the hill company all last winter) making less than wages. The creek claims on this stream were all abandoned last fall.

"On Slate Creek a company of Chinamen bought the Slate Creek Ditch at the commencement of the mining season, and by the time it was repaired, the water got so low that they abandoned it. The Conner Claim paid small wages for the season. A company of four men who had been prospecting on Lost and Government Creeks, and not finding any pay, sunk a shaft on Slate Creek, and found a small prospect; and if they had had sufficient water to drive their wheel, they might for the past four weeks have made wages. Two other men have been prospecting on this creek for the season, making expenses.

"On Elmore Gulch the Manhattan Company, which paid well last year, have not made enough this year to pay hired help. The unusual dry season slackened the water so that they had to stop work in the middle of July; and they have only done four days' work since. The other Company (New Zealand) paid barely enough to subsist on. This company will work all winter, expecting to get on to better pay as they run back.

"On Lost Creek two Chinamen made about wages. The Discovery Company, which up to the middle of September had not paid wages, got on some very good pay afterwards, and stopped work on the 16th instant, paying a dividend of \$210 for the season. This claim is nearly worked out, and an interest in it could now be bought for fifty dollars. About 300 feet above the upper lines of this company the ground runs off very deep, and several attempts were made in 1871 to bottom it, but without success. Next year it is the intention of this company to run a bed-rock drain from their claim into this ground, being of opinion that the lead is there, as it cannot be found in either bank.

"There are about thirty men in this camp who have diggings for next season. And in view of the decline of this camp, I would call your attention to the expediency of voting one thousand dollars for prospecting the Findlay branch of Peace River. The Omineca empties into that stream fifty miles below Germansen Creek Landing; from there up to the cañon, a distance of eighty miles, gold was found by "Pete" Toy, Evans, and others, on all the bars, some paying as high as seventy-five cents to the pan. Beyond this cañon no prospecting has been done, as it is impossible to get a boat through except at very low water. The South Fork of the Findlay, which flows into the Findlay Branch a few miles below this cañon, has been prospected for a number of miles up, and fine gold found on all the bars as far as the prospectors (Toy and party) went. According to Indian authority the source of the Findlay is two hundred miles north by west of the cañon referred to; and it seems reasonable, from the amount of fine gold taken from the bars of the Lower Findlay, to expect heavier deposits further up. The miners here are too poor to allow them to undertake such an expedition with-

out assistance. There are some good miners here who would willingly go, provided they were fitted out. Prospectors for that country would have to leave *here* about the middle of April.

"Three men left last week with seven months' provisions, to commence operations on the Vital Creek Bed-rock Flume. Vital Creek is about sixty miles due west from here, lying a little east of the divide between the Omineca and Tatla Lakes; it is one of the tributaries of Silver Creek, which flows into the Omineca seven miles above Hogem.

"I enclose, herewith, a list of prices of provisions in this camp. The supply of flour is very short. The usual freights from Yale to Mansen were 18 cents, and from Quesnelle 10 cents per lb. This fall packers were offered as high as 15 cents from Quesnelle, but would not take it on account of the rough roads, consequently the winter supply of flour did not come in; and the stock here (about four tons) being in the hands of Harper, of Clinton, the price was raised from 20 to 40 cents, which has driven a number of men out who would have stayed here this winter; that price being out of all proportion to the yield of diggings. All supplies for this camp are brought in by the mule trail, which runs due north from Fort St. James, on Stuarts Lake, crossing the mouth of Nation Lake. The route *via* Tremble and Tatla Lakes has not been used for transporting freight since 1871. (See Minister of Mines annual Report, 1874.)

Two men left this morning to go to a silver lead on Mansen River, some thirty miles below Dunkeld, to get some quartz to send to the American Centennial.

"I have, &c.,
(Signed) "FRANCIS PAGE."

KOOTENAY.

In turning attention to the southern gold fields of British Columbia, there is less reason for congratulation.

Kootenay, during the year 1875, has barely held its own. The total population was only 144, of which 40 whites and 50 Chinese were engaged in mining, with a total yield of \$41,000.

The Government Agent there, however, considers that there "are manifestations of more energy on the part of our people this year."

He says—"From all I can learn, I am of opinion that Quartz Creek and other tributaries of the Columbia River will prove a good section of country for miners.

"Arrangements are being made to prospect the deep ground on Wild Horse Creek this fall and winter. A number of new hill claims have been opened out "on Wild Horse Creek this season."

At Rock Creek, only eleven men are now engaged in mining, and no returns have been received of the result of their work.

FRASER RIVER.

The only portion of our gold mines to which allusion now remains to be made, are those situated on the banks of the Fraser, between Yale and Soda Creek. Mining is chiefly confined in these localities to Chinese and Indians, and it is estimated that about \$50,000 has been produced by their operations in 1875.

The Government Agent, at Yale, in reporting on the diggings in his neighbourhood, makes the following observations, which are not devoid of interest, as there is not the smallest doubt that very large deposits of gold still remain undeveloped in the extensive flats, bordering on the Fraser River, in this region; and which, though not suitable to remunerate individual labour, would return a large harvest to united efforts:—

"YALE, 27th September, 1875.

"SIR,—I have the honour to transmit, herewith, Mining Statistic Form for Hope and Yale divisions, commencing at a point near the Cheam Indian village, extending up the Fraser, and terminating at Boston Bar, a distance of about sixty miles, giving the particulars of mining in these divisions, as requested in your circular of the 11th June last.

"You will please to observe, by the within returned form, that mining industries in these divisions are comparatively small; and that mining operations, on the bars of the Fraser, in these localities, are not so numerously or extensively worked as formerly. The falling off is partly attributable to the alluvial deposits on the bars of the Fraser having ceased to be remunerative, after having been successfully worked and yielded gold in large quantities for a number of years.

"High benches, which flank the course of the river, and bear large deposits of wash gravel on either side, and which can be seen in considerable numbers, stretching most extensively along the Fraser, with every appearance favourable, and giving indications of containing rich deposits of gold, yet remain unexplored; and practical men are of the opinion that, if the same skill and capital were employed in working these as is employed in working the Californian mines, the results would be, no doubt, as satisfactory. In conjunction therewith, I might add that Siwash Creek, situated about three miles above Yale, and the Que-que-halla, which rises in the Similkameen range, and empties into the Fraser about a mile above the town of Hope, are known to contain gold in sufficient quantities to yield a fair remuneration for labour. These streams, probably, would have had a goodly number of Chinamen working on them, with a certain amount of success, had it not been for the exciting news caused, some short time since, by the richness of the newly discovered gold mines of Cassiar, on which account large numbers of miners left these localities to try their success in the mines of that district.

"A party of Chinamen have just commenced operations to prospect the large flat, immediately at the head of Hill's Bar, in which they expect to strike the famous Hill's Bar lead, which yielded about two millions of dollars within an area less than half a square mile. This flat is extensive and unexplored, with a deposit of wash gravel, characteristic as Hill's Bar; this undertaking may yet prove a success, and add a new feature to mining in these divisions.

"Two silver mining licences have also been issued during the year for these localities, and the lodes are located on Silver Creek, a short distance south-east of Silver Peak, where the stream runs through the valley at the foot of Silver Peak Mountain. The lode is supposed to be a continuation of the Van Bremer, and runs parallel with it. Specimens of the rock have been forwarded to San Francisco for assay, but no results have yet been ascertained.

"Operations at the Eureka and Van Bremer silver mines have been at a stand still, although, from each of these mines, specimens have been assayed with such results as would justify a vigorous development of the mines.

"I hear nothing of any importance, further, to report.

"I have, &c.,
(Signed) "WILLIAM TEAGUE."

It is proposed to give, each year, in a tabulated form, the known and estimated value of gold produced in British Columbia since 1859, adding each year a Return for the current year. A Return of this description faces the title page, from which it will be observed that about thirty-eight million of dollars is estimated to have been produced in British Columbia since 1858. Opposite the yield of gold in each year, has been placed the number of miners employed, and their average earnings per year. The least amount earned was, in 1859, \$403; the greatest, in 1875, \$1,222. No fair estimate can be made for 1858, as the mining only extended over the last half of the year.

It is satisfactory to remark that the actual known returns of 1875, viz.,—\$1,856,178, is larger than for any year since 1867; the average yearly earning being greatest of any year since gold was discovered.

An average has also been struck, shewing that the number of men employed in each year was 3,220; and their average earnings per man, per year, \$658.

In addition to the above form, a graduated tabular form has been prepared, shewing the rise and fall in the produce of gold, and in the number of miners employed, which faces the title page, and which contains a good deal of interesting information. The rise in the gold product in 1874-75, in consequence of the discovery of Cassiar, is clearly demonstrated in this table.

COAL MINING.

In the Report for 1874 the fullest possible description of the Coal Fields of Vancouver Island, as at present known, was given, and copious extracts published from the Geological Reports of the Dominion of Canada touching on this subject. It will not, therefore, be necessary to go over this ground again, but merely to state the results of the workings in mines actually opened, and the steps that have been taken for developing fresh seams.

Returns from the several companies engaged in this industry have been obligingly furnished, and are appended to this Report, from which the following general statement is prepared.

The Coal Mines actually in operation are all at or in the immediate neighbourhood of Nanaimo, Vancouver Island.

RETURN OF COAL RAISED AND SOLD, 1875.

	Actual output of Coal, 1875 Tons.	No. of tons sold for home consumption.	No. of tons sold for exportation.	No. of tons on hand, Jan. 1st 1875.	No. of tons unsold, Jan. 1st 1876.
Vancouver Coal Co.	59,803	22,376	27,045½	5,065	15,246½
Wellington Colliery	50,542	8,876	39,347	2,384	2,318
Total Output	110,145	31,252	66,392½	7,449	17,564½

COMPARATIVE STATEMENT SHOWING AMOUNT OF COAL RAISED AND SOLD IN 1874 AND 1875 RESPECTIVELY.

	Tons.		No. of tons for home consumption.	No. of tons for exportation.	Total Sales.
Total output of Coal 1875	110,145	Sold in 1875	31,252	66,392½	97,644½
Do. do. 1874	81,547 8 cwt.	Do. 1874	25,022	56,038	81,060
Increase 1875	28,597 12 cwt.	6,230	10,354½	16,584½

It is satisfactory to observe that in one year the output of coal from these two mines should have increased from 81,000 to 110,000 tons, and that the home consumption increased over 6,000 tons, while the export sale increased 10,000 tons. The increase in home consumption indicates increased vitality in manufacturing and home steam shipping interests.

The returns from the Vancouver and Wellington Mines are well worth consulting, in view of the interesting particulars given as to the workings, hands employed, rates of wages, machinery in use, value of plant, &c., &c.

With reference to explorations for coal and the development of the mines, it is well to state that the Vancouver Coal Co. has been engaged during the year 1875 in searching for fresh seams of coal by aid of a diamond drill. An engineer has been specially engaged from England to conduct the operations, and in less than three months the hard Nanaimo rocks have been pierced to a depth of 500 feet. A description of the working of this most useful machine is annexed.

VANCOUVER COAL MINE, 1875.

Output of Coal for 12 months ending 31st Dec., 1875.	No. of tons sold for home consumption.	No. of tons sold for exportation.	No. of tons on hand 1st January, 1875.	No. of tons unsold, including coal in stock, 1st Jan. '76.
59,603 tons.	22,376	27,045½	5,065	15,246½
No. of hands employed.			Wages per day.	
Whites 272	Chinese 66	Indians 43	Whites \$2 to \$5	Chinese \$1.12½ to \$1.25 Indians \$1 to \$1.50

NOTE.—The number of hands employed does not include Indians and Chinamen working for miners.

Name of mines (1) Douglas mine, (2) New Douglas mine, (3) Fitzwilliam mine, (4) Newcastle mine, (5) Chase River mine.

Value of plant Machinery, Railway, and Rolling Stock, \$102,398.

Description of seams worked, depth of shafts, &c.

- (1) *Douglas Mine*, half a mile from Nanaimo Harbour, is worked by slope 550 yards from the surface, and in the lower levels the coal is 5 to 6 feet thick. Capacity upwards of 200 tons per day. The product of this mine is first-class for gas making purposes.
- (2) *New Douglas Mine* is being opened up also by slope, about 1½ miles from the old Douglas pit. The average thickness of the seam is fully 7 feet, very clean, and it is pronounced an excellent steam coal. By a branch railway, from the Douglas pit line, the new coal is brought to the main shipping point in Nanaimo Harbour.
- (3) *Fitzwilliam Mine*, 800 yards by slope, on Newcastle Island. At date of last report had met with a barrier in the shape of a "want," i.e. a *rock fault*, which occupied the position of the coal. The want is now passed and we are driving into good coal, 5 feet thick—say 2½ feet bottom coal, 11 inches shale parting, and 2½ feet of top coal.
- (4) *Newcastle Mine*, 240 yards by slope, Newcastle Island. Only a few men are employed here exploring. The coal, which is termed Newcastle, is intercalated with bands of shale; only a top bench, 2 to 3 feet thick, is found clean. As far as the seam has been pursued we have not developed anything to warrant extensive operations.
- (5) *Chase River Mine*, 290 feet deep by shaft, the coal of which is identified as the Newcastle, partakes of the same general characteristics, and is not at present being worked. We are, however, sinking a series of bores under this coal, and at a depth of 46 feet below it discovered a seam 7½ feet thick, which will probably be exposed during the year.

Number, horse-power, and description of engines

On the surface, 1 horizontal pumping and winding engine, 45 horse-power; 1 beam winding and pumping engine, 22 horse-power; 1 horizontal engine, 90 horse-power, in reserve; 2 horizontal engines (coupled), each 10 horse-power; 2 locomotives (1 in reserve), 10 and 12 horse-power; 3 steam winches, 5, 8, and 10 horse-power. *In the Mines*, 1 7-inch double acting steam pump; 1 5-inch do.; 1 4½-inch do.; 2 10-inch plunger pumps. *In Reserve*, a patent steam pump, 20-inch steam cylinder, and 6½-inch water cylinder.

Additional information of interest or importance

In the course of twelve months or so the Vancouver Coal Co. expect to increase the force at present employed at least 50 per cent., and to augment their production of coal accordingly. The examinations in progress with the diamond drill will probably lead to the opening of other new mines and a still further enlargement in the supply of Nanaimo coal. It may be stated that the diamond boring machine purchased by the company is Major Beaumont's patent. In less than three months it has pierced the hard Nanaimo rocks to a depth of 500 feet. The following paper will serve to describe the machine and its method of working.

(Signed) M. BATE.

DESCRIPTION OF THE DIAMOND ROCK DRILL, BY J. KER GULLAND.

"The boring of rock in a rapid and efficacious manner must be deeply interesting and of great value to all engaged in wresting from mother earth the treasures and secrets which she hides beneath the surface, whether the work be undertaken for profit or for scientific research.

"Perhaps there is no branch of mechanical engineering where more rapid strides have, of late years, been made than in machinery for boring rocks. Rocks are bored either by steel through the medium of percussive drills, or by diamonds acting without percussion, by reason of their extreme hardness. Many of the percussive drills now made have reached a high standard of perfection; but it is foreign to my subject to speak of them, and I will confine myself to the subject on which I have the honour to address the body of scientific and practical gentlemen here present—namely, the patents for diamond rock-boring machinery of Messrs. Beaumont and Appleby, now extensively worked by the Diamond Rock Boring Company.

"1st—Prospecting Machinery.

"The drawings on the wall show two views of a prospecting machine, and although recent improvements have been made in the mechanical details, yet in all essential particulars the machine remains unaltered.

"It consists of a frame, shewn of wood in the drawing, but now, for the sake of strength and durability, made of H shaped wrought iron. The power to drive the machine is transmitted by means of a belt, and the hollow quill which carries and revolves the boring rods is driven by suitable shafting.

"The quill is given a rise or fall of about 6', and is guided by a cross head working in slides attached to the two upright side frames of machine.

"On the under side of the quill are placed three grips worked inwards and outwards by means of a scroll and nut; these grips on being screwed up grasp the rods firmly and compel them to revolve with the quill.

"On the top of the quill there are also steel set screws to steady the rods and keep them in the centre of the hole in the quill.

"The boring rods are hollow, and on the top end of the boring rod is placed a water union joined up to a force pump by means of flexible hose and wrought iron pipes. The

force pump being driven by suitable gearing, on the lower end of the rods is placed the crown, which is merely a piece of steel tube set with carbonate (or diamonds in an uncrystallized state) in the following manner:—Holes are first bored in the end of the crown of a size a little less than the diamonds to be inserted, and then cut exactly to the shape of the piece of diamond, which is then placed in the hole and the metal of the crown drawn round it on every side by means of a punch, leaving only a very small portion of the stone projecting beyond the surface of the crown. Hollows are then cut between the stones to allow the water to pass freely while the crown is at work; the water answering the double purpose of keeping the crown cool while boring and washing the debris resulting from the boring to the surface of the ground.

“Balance weights are attached to the cross head by means of chains and pulleys for the purpose of regulating the pressure put on the crown while boring. This pressure depends on the nature of the rock to be cut, and varies from 400 lbs. to 800 lbs., when the drill should penetrate at speeds ranging from 2" to 4" per minute; granite and the hardest limestone are readily cut at 2" to 3" per minute, sandstone at 4", and quartz at 1" per minute.

“These speeds are obtained when the drill is making 250 revolutions per minute, and they may be increased if necessary; but the increase of speed which might be obtained beyond the figures already quoted would throw such a strain on the machine as would not be compensated for by the increase of work done.

“A power crab is also attached to the machine for the purpose of lifting and lowering the rods by means of a chair passing over a pulley placed directly over the bore hole and carried by shear legs.

“For speed of boring through the hardest rocks, and giving a true and reliable sample of the strata passed through, this machine far outstrips any that have hitherto been invented; a solid core being produced and brought to the surface in the following manner: The boring rods and crown being tubular, it follows that only an annular space is cut out of the strata passed through, leaving a piece in the centre uncut which passes up the inside of the boring rods in the form of a cylinder and by means of a projecting ring or sliding wedges attached to the crown, it is jammed inside the boring rods, and is removed when the rods are drawn up to the surface.

“Several samples of such cores are now before you.

“In addition to this, when the machine is in motion the water from the source force is sent down the inside of the boring rods and rises on their outside to the surface of the ground, thus washing up all the debris formed by the diamonds whilst boring the rock. This debris alone would enable any one to judge exactly of the strata which is being passed through.

“I beg to read a few extracts from the reports of Mr. Willett, of Brighton, the Hon. Secretary of the Sub-Wealden Explorations:—

“SUB-WEALDEN EXPLORATION.—Since his last letter he says the new contractors (Diamond Rock Boring Company) have displayed great energy and skill in prosecuting the enterprise, and he is very sanguine that, if found necessary, nothing but a want of funds will preclude the boring being continued to a depth of 2,000 feet. This was considered an impossibility by many, but if attained the £50 promised by Mr. Warner for the achievement will be added to the fund. He also says: ‘I have already seen quite sufficient of the present plan of working to convince me that it must supersede all other systems, in every kind of strata but that of running sand. At the termination of Mr. Bosworth’s Contract in December last, the 9-inch bore had reached 313 feet; my contract with the Diamond Company stipulated for a 3-inch bore extracting a 2-inch core. With laudable precaution, they commenced lining the old hole with a 5-inch tube, and had successfully affixed 280 feet, when alas! the upper clip loosened its grip, allowing the whole 280 feet to drop the remaining 30 feet. The bottom of the pipe, although of steel crumpled up like pasteboard; the remainder broke asunder about half way down. The upper portion was soon extracted; the lower half wedged itself into the side of the bore. A fortnight’s delay followed. On Monday February 9, I had the satisfaction of beholding a solid core, 7 feet long by 3 inches in diameter (representing 10 feet of boring, or about five hours’ work) drawn to the surface. One fragment 3 feet 1 inch in length, may, for the present, be seen in the geological department of the Brighton Museum. When I saw it, how I wished I was rich enough to have altered the contract, and authorised a continuation at this enlarged diameter.’—(*Standard*, February 13, 1874.)

“THE SUB-WEALDEN EXPLORATIONS.—*To the Editor.*—Sir,—Your readers may like to know that the Diamond Boring Company reports the depth attained up to Saturday last to be 481 feet, being 55 feet for the week's progress. We are still in Kimmeridge Clay. The fresh drawn cores smell strongly of petroleum or mineral oil, so that we may say we have ‘struck *it* at last.’ In addition to the characteristic fossils described heretofore, we have found three specimens of ammonites.’—(*Sussex Daily News*, March 10.)

“At present date (April 1st.) the hole is about 670 feet deep.

“The following table shows the date of commencement and depth on 1st April of some of the bore holes now being bored by the Diamond Rock Boring Company:—

No. 1	Commenced,	Depth.
1	13th February, 1874	207
2	9th March, 1874	202
3	1st September, 1873	583
4	5th December, 1873	510
5	8th December, 1873	344
6	2nd February, 1874	621
7	8th January, 1874	258
8	3rd November, 1873	588
9	6th February, 1874	265
10	24th November, 1873	993
11	24th November, 1873	1012

“Although this table shows results which it is impossible to obtain by any other known system of boring, it must not be supposed that we do not encounter difficulties, and those of the most baffling nature on account of the strata met with, such, for instance, as coming on running sand, or other soft strata, after passing through solid rock, the soft falling in and filling up the holes faster than it can be washed out.

“The only course we can then pursue is to line the hole with wrought iron tubes through the soft and into the solid rock underneath. This causes a great loss of time, but in every system of boring the same difficulty is met with.

“The speed with which the hole can be widened to receive the lining tubes gives the diamond system an enormous advantage over all others when such difficulties do arise.

“Generally speaking, by the Diamond Rock Boring Company's system boring can be done in a less number of months than formerly took years. The fact of a solid core being brought up by this new system places it far in advance of the old method, by which evidence of a very doubtful and unsatisfactory nature was afforded by pounded material only being brought up by shells or sludge pumps.

“When we remember the importance of winning a coal-field or other mineral property at the right points, I do not think it a bold statement to make that few shafts will henceforward be put down—at any rate where the strata is not thoroughly known—without first testing the ground by the Diamond Rock Boring process, the cost being comparatively so small, and in most cases the delay in beginning to sink for a month or two is of no great consequence when in that time reliable information as to what is underneath can be obtained.

“To know the nature of the strata to be sunk is a direct course of economy, as suitable provision can be beforehand made to meet such difficulties as may arise; but the economical working of a coal-field is affected by the shafts being sunk in such a position as properly to command the whole field, and at the same time to enable the water to be most effectually dealt with. You, gentlemen, will know that these points are effected by the position of faults and by the dip and rise of the measures—in fact, to know thoroughly what a coal-field is is half way towards its economical winning.

“In prospecting the Diamond Rock Boring Company do not confine themselves to working from the surface, but readily undertake boring to be continued from the bottom of shafts or headings. In one instance they have a machine and engine working in a recess cut at the bottom of a trial shaft 6' in diameter and 390 yards deep. This shaft is sunk at the end of the heading, a considerable distance from the pit, which is 160 yards deep. The steam to drive the engine is conveyed down the shaft in pipes in the usual manner. This boring is to be carried to a depth of 450' from the bottom of the trial shaft. The boring was begun on the 13th February, and up to the 28th March over 240 feet of boring had been completed, a 3" hole being bored giving a 2" core.

“In many cases where the boring does not exceed 600' a small drill-head, such as is used in tunnelling and which I shall shortly describe, is used for prospecting.

"The Company's agents at Darlington, Messrs. Blumer Brothers, have at the bottom of a shaft put down, with a drill-head, a hole 588 feet in depth. This hole was commenced on 3rd November, 1873, and the depth I have just mentioned was reached on 21st March. Deep holes are not only of use for the purpose of prospecting but also to drain pits where an outlet exists for the water below the level of the sinking; thus a pit is now being sunk above some old workings. The work is considerably impeded by water, which would necessitate heavy pumps being put down to lift it. To avoid this, the Diamond Rock Boring Company are putting down a 4" bore hole, which will drain the old workings, whence it is passed by existing pumps.

"It is proposed to further utilize this bore hole by exploding charges of dynamite in it—say 5 feet from the bottom of the sinking, which it is anticipated will so shatter the bottom of the shaft as will materially assist the labour of excavation."

WELLINGTON COLLIERY, 1875—DUNSMUIR, DIGGLE & Co.

Output of Coal for year ending 31st December, 1875.	Sold for home consumption.	Sold for exportation.	On hand 1st January, 1875.	On hand 1st January, 1876.	
Tons. cwt. 50,542 5	Tons. cwt. 8,876 15	Tons. cwt. 39,347 10	Tons. cwt. 2,384 5	Tons. cwt. 2,318 0	
No. of hands employed.			Wages per day.		
Whites 124	Chinese 110	Indians 8	Whites \$2 to \$3.50	Chinese \$1 25	Indians \$1.25

Miners' earnings, \$2.50 to \$5 per day.

This Colliery is situated three miles west from Departure Bay; the slope is 600 yards; the depth below the surface is 120 feet, and the seam averages a thickness of 9 feet, 6 inches.

No. 1 shaft is situated about 1400 yards from Departure Bay, 180 feet deep, the seam being four feet in thickness, and rather soft at present.

Description of Machinery.

- 2 horizontal engines (coupled), each 16 horse-power, on slope.
- 1 pumping " 6 " underground.
- 1 " " 10 " shaft.
- 2 locomotive " 8 " "
- 2 horizontal " (coupled) " 6 " on wharf for hoisting coal on board large vessels.

Value of plant and rolling stock (not including workshops, stores, dwelling-houses, &c., &c., &c., \$110,000.

There are two wharves at Departure Bay; one 12 feet above high water mark; depth of water at extreme low tide 18 feet; length of wharf 500 feet. The other is 18 feet above high water, with a depth of water at low tide of 25 feet. This wharf is 350 feet long, on which the two engines above-mentioned are in course of erection, for the purpose of facilitating the loading of the largest of the Pacific Mail Company's steamers.

(Signed) R. DUNSMUIR.

The number of miners employed at Nanaimo and in the neighbourhood amounts to—

Whites.	Chinese.	Indians.	Total.
396	176	51	623

not including the hands employed on the Harewood mine, being an increase of nearly 200 over the number employed in 1874, a fact satisfactorily illustrating the advance made in active operations in these mines.

At the back of Nanaimo, some three or four miles, is situated the fine property known as the Harewood Coal Mine. This property consists of about 9000 acres, situate in Mountain, Cranberry, Douglas, and Nanaimo Districts, and active operations in mining were commenced by the present proprietor, T. A. Bulkley, early in the year 1874, and have been steadily continued up to the present time.

The point of shipment for the coal raised on the Harewood mine will be on Cameron Island, in Nanaimo Harbour, a distance of about three miles from the mines, the means of transport being by an elevated wire tramway, driven by an engine situated at the Harbour terminus.

The workings actually opened up to the present time in this mine consist of 700 yards of levels and airways, the mine being worked by a "level free" tunnel. The seam of coal now being worked varies from about 7 to 8 feet in thickness. The coal is believed to be superior for steam purposes.

A large quantity of coal is now in bin, but the completion of the tramway has been delayed by non-arrival of machinery and other accidents. It is expected that everything will be ready for shipping coal in April, 1876.

The present arrangements contemplate an output and shipment of 3000 tons of coal a month.

A fresh impetus has been given to the Coal interests of Vancouver Island, in the commencement of active operations, by the Baynes Sound Colliery Company, on their property, situate in the Gulf of Georgia, between Nanaimo and Comox, and opposite Denman Island.

As considerable interest has been evinced in reference to this section of our coal fields, it would be as well to republish the following extract from Mr. Richardson's description of the Baynes Sound Coal Seams, which was given in full last year:—

"Five miles along the coast, in a bearing S. 18° E. from the trail to the Perseverance Claim, a path runs inland, in general bearing S. 70° W., and leading, in a distance of a little over two miles, in a straight line, to the Baynes Sound Coal Mines. Here, in a deep gorge, through which a small stream of water finds its way in its course to Fanny Bay on Baynes Sound, occurs the following descending section:—

	Ft. Ins.
Brownish-gray or drab, moderately fine grained sandstone, slightly calcareous, with scales of white mica, and in layers of from six inches to two feet, holding fragments of the stems and leaves of plants	30 0
Coal, clear and hard	5 10
Brownish-gray or drab sandstone, in beds of from six inches to four feet thick, holding fragments of plants	48 0
Black, soft, argillaceous shale, with short thin lenticular patches of coal.....	5 0
Brownish-gray or drab sandstone, in beds of from six inches to two feet.....	5 8
Black, soft, argillaceous shale, with obscure impressions of plants	2 0
Coal, which appears to vary in its thickness, being in some parts not over five feet two inches, and in others seven feet, while the lower two feet shew occasionally thin seams of carbonaceous shale, with obscure impressions of plants, say.....	6 0
Brownish-gray or drab, moderately fine-grained, slightly calcareous sandstone, with scales of white mica	5 0
	107 4

"The dip of the strata is here N. 86° E., < 15°, gradually increasing to 40°, and the two coal-seams are seen descending in both sides of the ravine, the edges of the lower one meet in the bottom of the stream, but while those of the upper one are still about twenty feet above the water, a fault occurs cutting them off. The underlie of the fault is S. 62° W., < 38°, and the dip of the strata on the other or eastward side of it is N. 64° E., < 43°. The strata on that side, after an interval in which seventy feet of the base are concealed, consist of seventy-two feet of brownish-gray sandstone, holding a few fragments of plants, overlaid by ten feet of black argillaceous shale. As these beds are not recognised on the west side of the dislocation, the amount of it, on the side on which the strata are thrown down, cannot be determined with certainty, unless a small mass of coal which is caught in the fault, and lies lower than the extremity of the upper

seam, be derived from it. In that case the down-throw would be on the east side. In a position, which appears to be close to the east side of the fault, a shallow shaft has been sunk in search of the upper seam; it penetrates the measures on that side, but sandstone alone appears to have been excavated."

From this, it will be seen that there exist on this property at least two well-defined seams of coal, of five and six feet respectively (easily workable by adit), and it is for the development thereof that the company in question has been organized.

The sea is distant about three miles, and the coal lies at an elevation of about two hundred feet above sea level.

A saw-mill is now in course of erection on the Company's lands, to supply the lumber necessary for opening the mine, and constructing wharves, building tramways, &c.

The mine will be worked "level free," by an adit driven, in the first instance, 250 feet from the bank of the river on which the seam crops out. This tunnel, it is expected, will cut through three seams of coal: the lowest, 8 feet; the second, 3 feet; and the third, 6 feet in thickness. All these seams will be worked through the same tunnel, which will be 6 feet wide, and 6 feet 8 inches high.

From the mine to the harbour, a narrow guage tramway will be constructed, which, with a 7 ton locomotive, and thirty cars of 5 tons each, will afford facilities for transporting to the place of shipment 500 tons of coal per day.

At the water, a wharf will be constructed, 410 feet in length, from high water mark to 6 fathoms of water at low tide, which will accommodate three large vessels and two coasting steamers at the same time. The wharf will be 25 feet above high water, and the coal will be delivered through the recently invented spiral chutes, constructed to break the fall of the coal.

The Company's coal depôt, or storehouse, will be at the pit's mouth, the ground affording great natural facilities for the purpose, and will be constructed to hold 12,000 tons.

It is anticipated that the mine will be in working order, and that the Company will be prepared to ship coal, by 1st August, 1876.

IRON AND SILVER.

It is a matter of regret that no active operations for the development of the Silver leads at Hope, or of the rich deposits of Iron on Texada Island, have to be recorded for the year 1875.

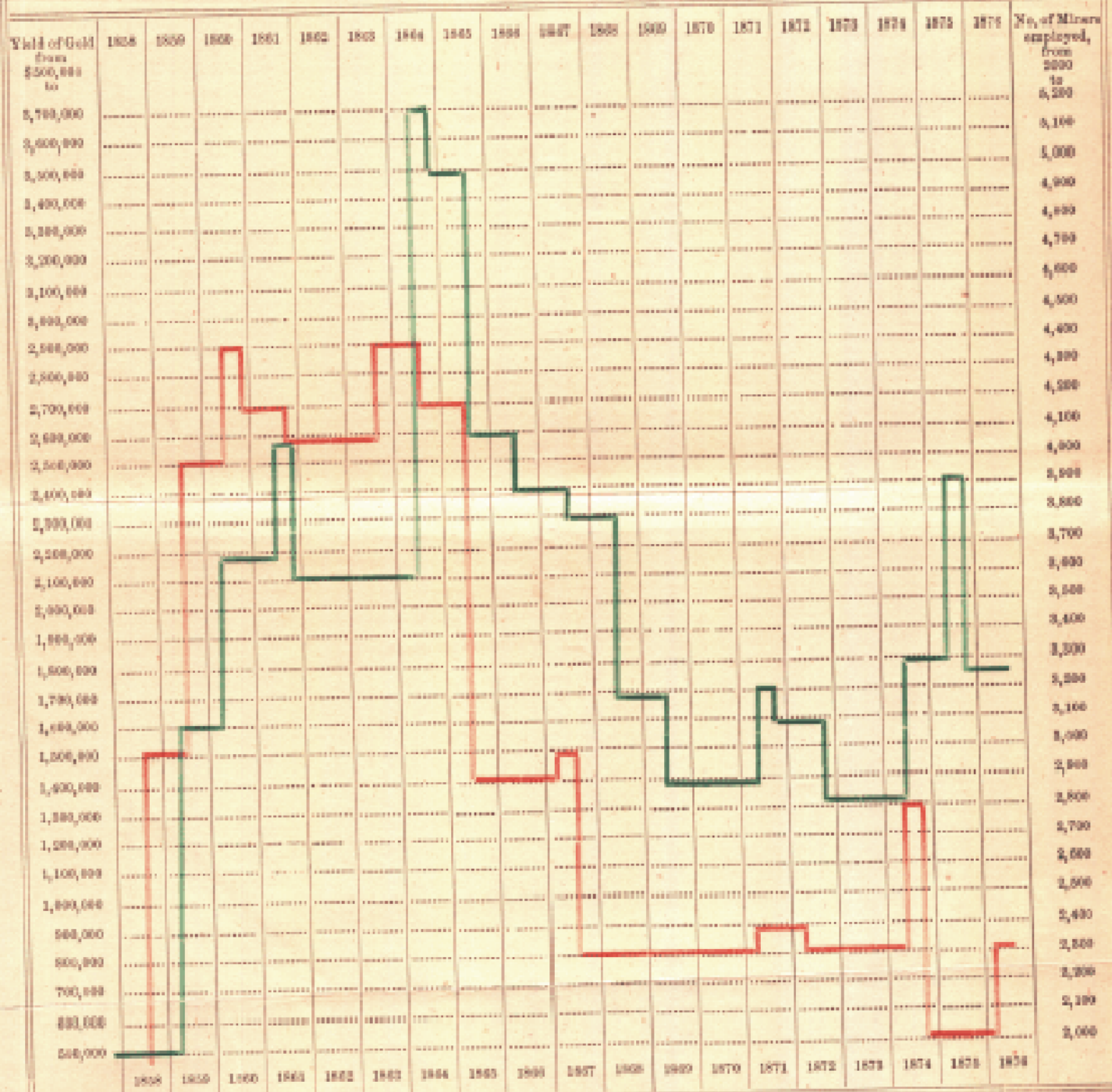
There is little doubt that these mines are of considerable value, a fact corroborated by the eagerness with which every available portion of the land, in the proximity of the leads, has been taken up.

It is only open to express a hope that, during the year 1876, earnest endeavours will be made, by those who have acquired possession of these mines, to commence operations for their actual development.

GRADUATED SCALE

Showing the rise and fall in the yield of Gold in each year, from 1858 to 1876 (coloured green).

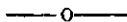
Reference to left column for yield of gold.



And of the number of miners employed in each year, from 1858 to 1876 (coloured red).

Reference to right column for number of miners.

PROVINCE OF BRITISH COLUMBIA.



TABLE

Shewing the actually known and estimated yield of Gold; the number of Miners employed; and their average earnings per man, per year, from 1858 to 1876.

Year.	Amount actually known to have been exported by Banks, &c.	Add one-third more, estimate of gold carried away in private hands.	Total.	Number of Miners employed.	Average yearly earnings per man.
1858 (6 months). }	\$ 390,265	\$ 130,088	\$ 520,353	3,000	\$ 173
1859	1,211,304	403,768	1,615,072	4,000	403
1860	1,671,410	557,138	2,228,548	4,400	506
1861	1,999,589	666,520	2,666,118	4,200	634
1862	} 3,184,700	1,061,566	4,246,266	4,100	517
1863				4,400	482
1864	2,801,888	933,962	3,735,850	4,400	849
1865	2,618,404	872,801	3,491,205	4,294	813
1866	1,996,580	665,526	2,662,106	2,982	893
1867	1,860,651	620,217	2,480,868	3,044	814
1868	1,779,729	593,243	2,372,972	2,390	992
1869	1,381,234	443,744	1,774,978	2,369	749
1870	1,002,717	334,239	1,336,956	2,348	569
1871	1,349,580	449,860	1,799,440	2,450	734
1872	1,208,229	402,743	1,610,972	2,400	671
1873	979,312	326,437	1,305,749	2,300	567
1874	1,383,464	461,154	1,844,618	2,868	643
1875	1,856,178	618,726	2,474,904	2,024	1,222
1876	1,339,986	446,662	1,786,648	2,282	783
			39,953,818	60,251	

Average number of miners employed yearly 3,171

Average earnings per man, per year \$ 663

Total estimated and actual yield of gold, 1858 to 1876 \$ 39,953,818