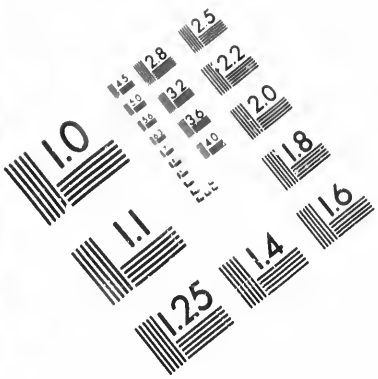

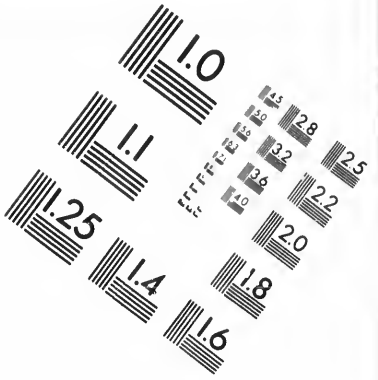

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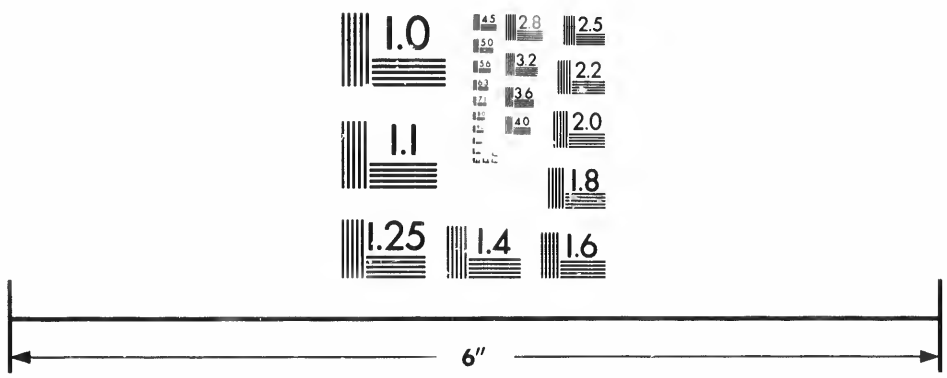

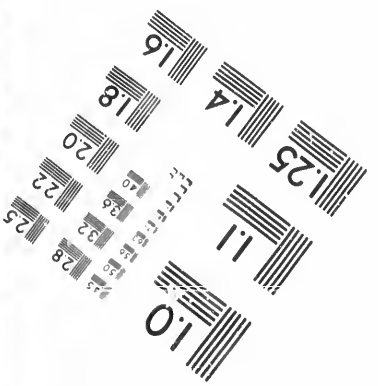

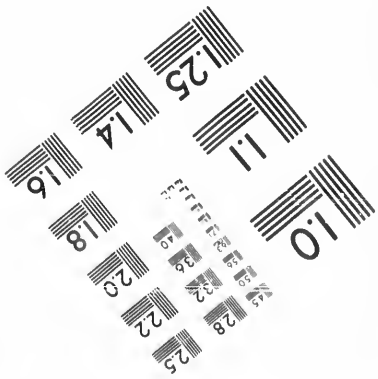

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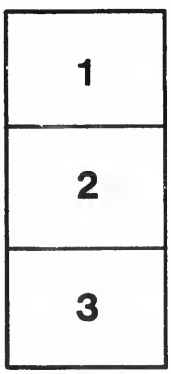

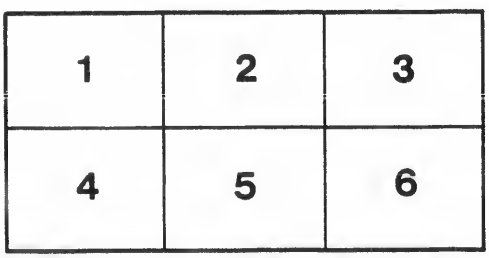

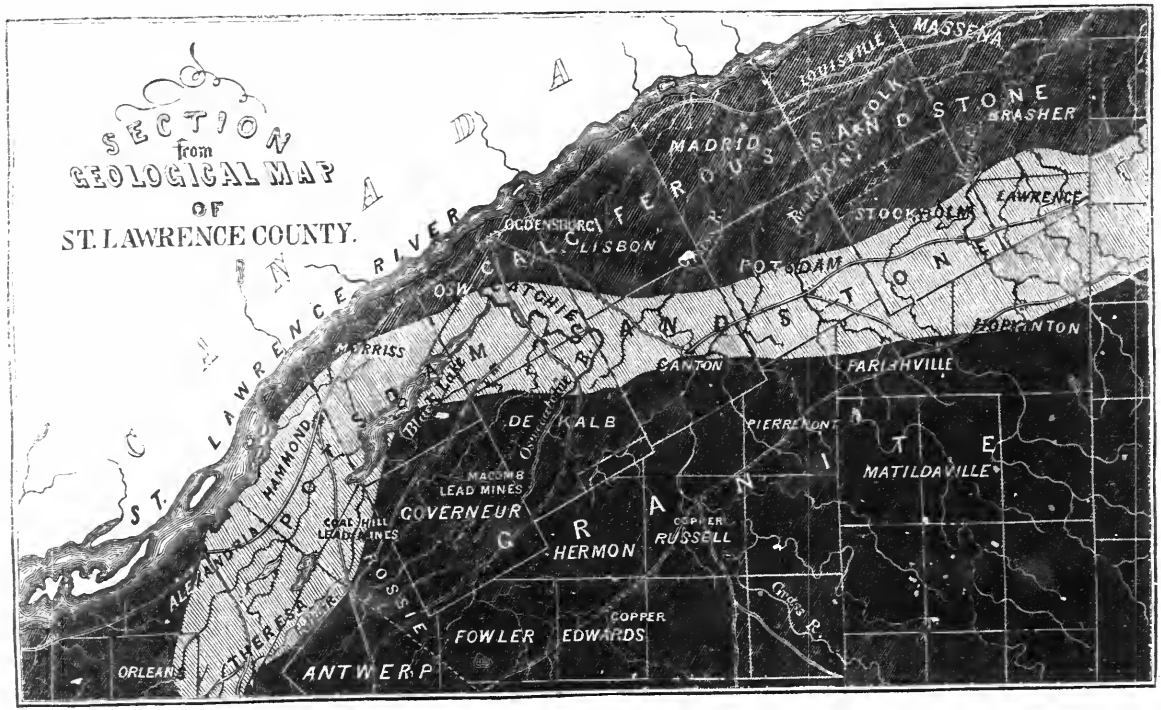
SECTION
from
GEOLOGICAL MAP
OF
ST. LAWRENCE COUNTY.
CANADA
ST. LAWRENCE RIVER
MASSENA
LOUISVILLE
MADRID
SANDSTONE
BRASHER
OGDENSBURG
LISBON
STOCKHOLM
LAWRENCE
POTSDAM
OSWEGATCHIE
MORRISS
HERMON
CANTON
FARMINGTON
FARRAHVILLE
DE KALB
PIERREPONT
MATILDAVILLE
MACOMB
LEAD MINES
COVERNEUR
COPPER
RUSSELL
HERMON
HAMMOND
ALEXANDRIA
COAL HILL
LEAD MINES
THERESA
ROSSIE
FOWLER
COPPER
EDWARDS
ANTWERP
ORLEANS

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DOCUMENTS

RELATING TO THE

COAL-HILL, VICTORIA,

AND

BEDFORD MINES,

ON

THE CANADIAN FRONTIER.

LONDON:
PRINTED BY WILLIAM TYLER, BOLT-COURT, FLEET-STREET.

1855.

London, *May 15th*, 1855.

J. Haynes, Esq.

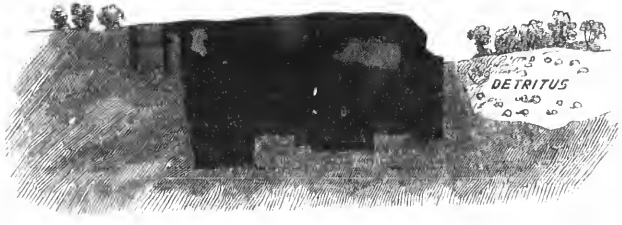
Dear Sir,

In the northern part of the State of New York, United States of America, six miles from the river St. Lawrence, and the Canadian frontier, there is a discovery called the Coal Hill Lead Mine, the principal vein of which, at a depth of 30 fathoms from the surface, has produced a greater quantity of Lead ore for the space thus far worked, than any vein of that description in the whole western hemisphere.

An excavation of 2,008 fathoms of the vein has been quarried by an open cut from the surface downward upon the bunch of ore, as shown in the following—

Section of Workings at Coal-Hill Mine, St. Lawrence County, N.Y.

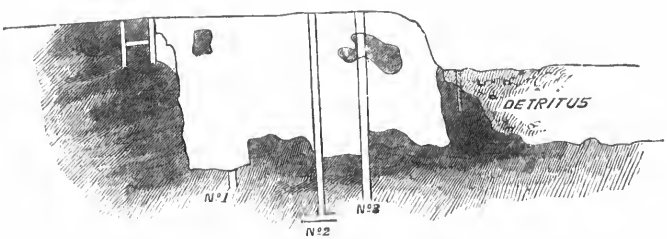
Product of whole Excavation	£18,000
Number of Fathoms excavated	2,008
Yield per Cubic Fathom	£24 sterling.



Fifteen thousand tons of ore, producing 2600 tons of metallic Lead, have been taken from the space shown in the Section. *This is testified to by the letter of the Smelting-house Clerk, hereto appended,* and marked A.

In order to convey a correct idea of the extreme richness of this vein, I refer you to a statement by J. Y. Watson, Esq., * in relation to the East Wheal Rose Mine, which averaged half a ton, or, £7 per fathom, while thus far the Coal Hill Mine has produced £24 or $1\frac{3}{4}$ tons per fathom for every fathom of ground mined there, as is exhibited by the section.

Recent expenditures made underground, prove that the bunch of ore holds down with regularity.



* See Mining Journal, 1849—Report by J. Y. Watson, Esq., who states in reference to this mine.—"The original outlay was £50 per share, or £6,400; up to 1845, the clear profits divided were about £150,000. In 1846, £30,726; in 1847, £34,560; in 1848, £25,500—making altogether, £250,000, to yield which, upwards of £500,000 worth of lead must have been returned. During some years, the profits were £50,000 per annum. The machinery is valued at £35,000. The lead raised yields from £12 to £14 per ton, *the value of the Lodes being about half a ton of ore per fathom.*"

No. 1 *shows a vein* 3 *feet and solid leader in it, worth* £40 *per fathom* * all the way down. Shaft No. 2, the Engine Shaft, has been sunk 60 feet deeper than the old workings, 240 from the surface. The lode in it is 3½ to 4 feet, filled with large spots of ore. *Shaft No.* 3, *sunk* 44 *feet below, and* 224 *from surface, contains a very rich lode,* worth from £20 to £120 per fathom, all which is testified to by Professor J. D. Whitney, U.S. Geologist, in his report hereto annexed (F).

As a proof of the persistent nature of this mine, it is proper to state that the lode is in Gneiss rock, somewhat similar to that of the Linares mines in Spain. The gangue is calcareous spar or carbonate of lime, with a very little sulphuret of iron and zinc. The lode is perpendicular. It traverses the sett (south of east) for nearly one mile, and in the workings shown it varies from 2 to 6 feet in width. *Mr. Whitney states, that* £1,300 *will develop or lay open, by driving and sinking,* £20,000 *of ore in the first level.* That is his opinion. Capt. Dunkin, whose judgment is recommended by Michael Williams, Esq. M.P., *says, that a small expense will make dividends.* His report is also annexed, together with extracts from a report of Mr. Thomas Petherick, (G), formerly manager of Fowey Consols, who holds a high reputation; and there are other letters (B, C, D, E), and evidence given, leading clearly to the belief that this

* This statement is based upon a market price of lead in America, of £22 per ton. The price there now is nearly £28 per ton.

mine is a valuable speculation, and that six months' application of preparatory work, will, with a moderate outlay, render the concern profitable and successful in a very high degree.

Ten thousand pounds sterling have been expended in erecting machinery and buildings, of which an inventory is annexed. Only £1,600 has been expended in underground work. The mine having now reached a point where careful and correct judgment is indispensable, it is brought to London, where the business is understood, and where such interests are extensively held. The lease of this mine is for 20 years, at $\frac{1}{12}$th dues. The title is held by Geo. Parish, Esq., and will be vouched for by Messrs. Baring Brothers, and Co., who are authorised to have it conveyed to the company which is about being formed to carry on the mines; and a special act of the government of New York has been obtained to enable the property to be held in this country, a copy of which is appended hereto.

Considering therefore *that the discovery of a large bunch of ore is proved to exist in a true and powerful vein at a very shallow depth;* that the vein extends for a mile through the sett, that the locality is very favourable for labour and for turning ore economically into metal (being done at 13*s.* per ton),* *with*

* Wood is abundant at 5*s.* sterling per cord. The prices paid thus far for labour are, for labourers, 3*s.*, and miners, 4*s.* 6*d.* to 5*s.* per day. Mr. Whitney's estimate of the cost of driving and sinking is given in his Report before referred to herewith annexed.

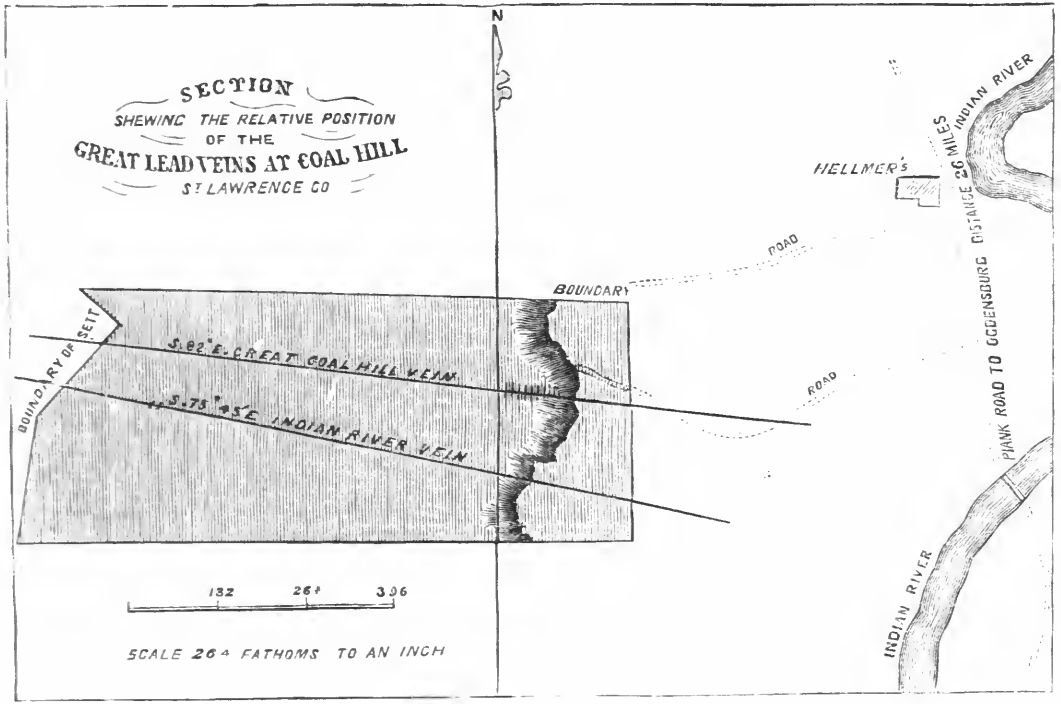
machinery and buildings erected, and shafts down nearly to a first level, these appear to be facts rendering this a most attractive investment, approaching as nearly to certainty of large profits as any mining operation can reasonably assume.

I am, dear Sir,

Very respectfully,

Your obedient Servant,

R. P. REMINGTON.


SECTION
SHEWING THE RELATIVE POSITION
OF THE
GREAT LEAD VEINS AT COAL HILL
ST LAWRENCE CO
N
HELLMER'S
DISTANCE 26 MILES
INDIAN RIVER
ROAD
BOUNDARY
BOUNDARY OF SETT
S. 82° E. GREAT COAL HILL VEIN
S. 75° 45' E. INDIAN RIVER VEIN
ROAD
PLANK ROAD TO OGDENSBURG
INDIAN RIVER
132
264
396
SCALE 264 FATHOMS TO AN INCH

(A.)

Sir,

In reply to your request for information as to the workings of the Lead mines at Coal Hill and vicinity, near the Indian River in this County, I would state,—

I became connected with those mines in the month of March, 1837. The Coal Hill vein was divided by a boundary line into two sections, and worked by two different Companies. The western section was worked partly during the year 1836, but was not regularly in operation until 1st January, 1837. The eastern section of the same lode raised no ore before the 1st January, 1837, *and neither section was opened upon the lode either side of the boundary beyond* 200 *feet in length* or 200 in depth.

Messrs. Moss and Knap had the smelting of the lead ore from both companies by contract, and smelted the greatest proportion of the ore raised from both sections at a contract price of 25 dollars per ton of metallic lead. *I was in their service during this period, and had charge of the smelting and dressing department,* and kept the records of the amount of ore and lead smelted.

The following statement will show you the amount of metallic

Lead obtained from both sections, so far as I have been able to glean from memoranda in my possession, leaving, however, some of the product, which I am not able to give you with certainty.

STATEMENT OF LEAD SMELTED AT COAL HILL.

Western Section.		Eastern Section.	
Months.	Lead Smelted.	Months.	Lead Smelted.
1837.		1837.	
To January 1 .	110,434 lbs.	January 3 } Feb'y 2 . }	60,699 lbs.
January .	50,901	March . .	80,872
Feb. & Mar.	68,890	April. . } May . . }	121,888
	Slags, 8,382 }	June . . .	60,714
April. . .	39,214 }	July . . .	45,071
May . . .	25,836	August . .	60,802
June . . .	90,298	September .	43,965
July . . .	76,113	October . .	83,753
August . .	73,749	November .	16,927
September .	118,058	December .	20,996
October . .	188,788		
November .	54,842	1838.	
December .	101,211		
1838.		January . .	29,915
	Slags, 7,412 }	February .	39,222
January . .	110,292 }	March . . {	52,864
February .	48,613		Slags, 5,285
March . .	68,954	April. . .	64,963
April. . .	34,609	May . . .	49,460
May . . .	80,534	June . . .	35,641
June . . .	67,892	July . . .	10,664
July . . .	90,486	August . .	51,921
August . .	111,349 }	September .	44,422
	Slags, 6,503 }	October . .	
September .	111,271	November &	
October . .	67,575	afterwards, in all	405,559
November .	32,892		1,405,603 lbs.
	1,845,088 lbs.		1,845,088
			3,250,691 lbs.

Tons 1.625

Average yield of the ore, 67 per cent.

The other smelting accounts of which I cannot give you the exact details, were for my own account, 151 tons, and for O. Whittlesey, S. Barker, Dr. Hutton, and balance for the Company's account subsequent to the above statement. *As near as I can estimate, the amount of money the Lead produced from the whole excavation at Coal Hill was about Two hundred and forty-one thousand dollars.*

The lead ore in this region is connected with a gangue of beautiful white calcareous spar, free from any mineral in intimate combination with it, which renders it very easy for dressing, *and the smelting of it in the large way has been found not to exceed three dollars per ton of metallic lead.*

Taking into view all the advantages of this section of our country—the rich developments in mineral wealth—the ease in preparing the ore for the furnace, and the simplicity and cheapness of its reduction to metal—the convenience of access by plank and good turnpike roads to the various mining localities—a healthy climate—abundance of fuel and products of the soil—altogether present it as a decided mining region, and worthy the attention of the miner and adventurer.

I most sincerely hope that you will set the Coal Hill Mines at work, believing from the facts of the past, that if controlled

economically and by experienced men, large profits will be realized.

Yours respectfully,

CHARLES L. LUM,
Of Ogdensburg, New York.

Being requested by R. P. Remington, Esq., we the undersigned take pleasure in stating that any declarations or statements made by Mr. Charles L. Lum, in our opinion, can be fully relied upon as emanating from a gentleman of integrity, candour, and truth.

S. GILBERT,
G. N. SEYMOUR,
H. VAN RENSSELAER,
CHAS. G. MYERS,
D. C. JUDSON.

The five gentlemen above-named are residing in Ogdensburg, St. Lawrence Co., New York, and are among the wealthiest and most respectable citizens of that region.

OGDENSBURG, *May* 31, 1852.

Dear Sir,

In reference to your request respecting my views of the Coal Hill Mines, I would say that I superintended the western section from April, 1837, to January, 1840, and that I think the prospect for mineral was as favourable when I left as when I commenced. We laboured under great disadvantage in working the mine, probably more than you would credit if related.

I have read a letter addressed to you, dated 27th instant, on the subject of the mine, by Mr. C. L. Lum, and I do consider that the statement therein made by him in reference to the working and results of the business, as well as the value of the mines, is a fair and just statement, so far as my knowledge extends.

Yours, with respect,

B. F. WILSON.

(B.)

Dear Sir,

Your favour of the 29th inst. I have just now received, requesting me to give you a correct and candid description of the Coal Hill Mine, &c.

In answer, I beg leave to state that I was Superintendent of the western section of the Coal Hill Mine during the last 12 months it was in operation, and had the underground work under my charge. I was engaged at the mines altogether more than three years.

At the time the work was suspended, the vein was as regular, and better charged with mineral in the very bottom, than it had been at any time for two years previous. I was very much pleased with the prospect then ahead, but our machinery gave way. I suggested to the Directors to erect a new and competent set of machinery or abandon the work. The latter course suited their ideas best, and consequently the work stopped.

In order to show you, Sir, the capacity and quality of the

vein, I will state the result of the very last month's work in that mine, with six miners, and then leave you to judge. I set a contract to them to work on the ore in the bottom—their names were Thomas Carr, Robert Drummond, John Cowan, Michael Cowan, Edward McGreevy, and Patrick Dorsey. In that month the amount of mineral raised by them from the vein was 31 tons clean ore, which produced at the smelting house $21\frac{3}{4}$ tons of lead, worth at that time 2,100 dollars—their month's expenses was 293 dollars.

The machinery and arrangements for carrying on the mine at Coal Hill were miserable. The Directors of the two sections could not have done things worse. They seemed to try to sink all the money they could, and blamed the mine for what they themselves were to blame. *I do assure you, Sir, no man need look for a richer mine to work than the Coal Hill Mine as it now stands—and produce and labour are now nearly fifty per cent. lower than they were when the mine was in operation.*

I have been a miner during 18 years, and have endeavoured to study the philosophy of mines, both by theory and practice. In all the history of mines that ever came under my observation *I have never read of any lead mine as rich as that mine is after calculating the amount of lead that came out by the quantity of vein worked,* and in comparing the same with other

mines, I do not believe any miner ever saw a richer or better mine than the Coal Hill, as far as it has been worked.

Respectfully,

Y'r ob't servant,

JAMES G. ROSS,

Waddington, New York.

I have known Mr. James G. Ross fourteen years. I have read the foregoing letter, and am prepared to say that his statements made therein can be fully relied upon, and I consider myself the better qualified to speak of Mr. Ross, from the fact that I was President of the Company under which he was Superintendent.

JOHN J. GILBERT,

Of the firm of C. P. Peck & Co., 60, Pearl-street,

New York City.

(C.)

ROSSIE, ST. LAWRENCE CO., New York,
May 30, 1852.

R. P. REMINGTON, ESQ.

My dear Sir,

To your inquiries regarding the management of the work at the Coal Hill vein, I can only say, that notwithstanding I was here during the entire period in which the vein was worked, I cannot now give any detailed information regarding it, having kept no memoranda.

The vein was discovered just before the unfortunate period (for the credit of the mines) of 1836, and from its rich and beautiful appearance, the lessees' heads became turned, and the lease was divided between two stock companies, to whose aid came the times of 1836-37. About this period the work of raising lead had fairly been commenced, and things were done apace with the times. Extravagant prices were paid for materials that were ultimately found to be of little use. Contracts were made for smelting for a long period, which soon proved injudicious; but while the ore was so easily obtained,

and the vein proving so very rich, all went on swimmingly, and the stockholders were tickled with dividends. Stock was sold at extravagant prices. As the times began to "right up," however, so did the Directors, but it was too late. One company had erected an enormous furnace for smelting on an "improved plan," at a cost of, it was said, 10,000 to 12,000 dollars, and after spending a vast deal of money in experimenting (8,000 to 10,000 dollars), it was abandoned. The other company had to haul the ore, spar, and stone a distance of two miles under a contract made in "better days," and to pay besides an enormous price for smelting, and in the end bought off at 16,000 dollars. Dissatisfaction of course arose, and then lawyers came in for a share. Matters had got into this shape mainly by the unfortunate period in which the mines were discovered and work commenced, and also by want of experience in mining of the Managing Directors. Dividing the ground between the two companies, however, proved to be very unfortunate for the credit of the mine, as by it two sets of superintendents, &c., had to be employed. With this bad beginning and many other mis-steps, it was easy to anticipate the result.

I have said more than I designed to, and with the foregoing explanation, I annex what in my opinion is near the amount of money wasted by the Coal Hill Mine by mis-steps and want of experience, viz.:

	Dollars.
Erection of smelting works not used	16,000
Experimenting in new smelting works	8,000
Extra set managers 3 1-2 years	12,600
Hauling stone and spar to smelting works, which should, at least, have been separated on the mine, say 15,000 tons, at 3s.	6,500
On contract given to smelt 2000 tons, say 12 dollars 50 cents per ton	25,000
On excessive rates for materials	5,000
	73,100
Add dividends	24,500
	97,600

Yours truly,

D. W. BALDWIN.

This gentleman is agent for large estates, and bears as high a reputation as any citizen of that country. He resides near the mines.

(D.)

Sir,

We will endeavour to give you some information respecting the Coal Hill Mines. We were employed there from the commencement to the suspension of the work, and were among the last men who worked in the bottom in both sections.

The manner in which the mine was worked was by sinking shafts, and what is termed stopeing underhand. Had they sunk shafts, drove levels, and stoped the backs, there might have been a saving of fifty per cent. in labour. Should you undertake to work those mines, you will find that they are far above any one's expectations in quality and quantity.

From yours, respectfully,

JOHN COLHEAN,
JOHN McGRATH,
St. Lawrence Co., New York.

(E.)

Dear Sir,

Agreeably to your request to communicate to you what information I can respecting the Coal Hill Mine, I can say *that it is twelve years since I was President of the Company which worked the western section.* I was elected in 1838, and remained until 1840.

The Company was organized in 1837, and began without any capital.

They were compelled to pay their men extravagant wages, and to pay the highest prices for all provisions. Pork, 32 dollars per barrel; flour, 10 to 12 dollars per barrel; corn, 1 to 1¼ dollars per bushel; oats, six shillings, hay as high as 20 dollars per ton. These were the prices of 1838.

The ore was smelted by Messrs. Moss and Knap on a contract of 25 dollars per ton, delivered at their works 1¼ miles from the mines. There was a clause in the contract which allowed them a portion over 68 per cent., which, I believe,

taking their whole work from the western section, made the actual amount paid them $28\frac{18}{100}$ dollars per ton for all the lead smelted after delivering the ore at the works.

The cost of delivering the ore in the manner it was taken from the mines to the smelting works, taking the actual yield of lead, was near two dollars per ton of metal, as we were compelled to cart a large amount of spar with the lead over almost impassable roads in the spring and fall, making the whole cost of drawing and smelting not less than 30 dollars per ton for all the lead from the mine. It is my opinion that with proper machinery at the mines, the cost of smelting and dressing would not exceed 7 to 8 dollars per ton.

The Directors here repudiated their contract with Moss and Knap, and sent a Mr. O. Whittlesey to erect a smelting and dressing works at the mines, which was done at an expense of from 8,000 to 10,000 dollars, which proved a failure, and cost the Company a large amount of mineral in experiments. I have no doubt that the loss to the Company from this was more than 20,000 dollars.

I have examined Mr. Charles L. Lum's statement, dated the 27th of May last, and find his statements fair, so far as I can judge, excepting that he has not made the waste of money as much as it actually was, either in erecting the new works, by experimenting, or from salaries to the officers of the two com-

panies. For a portion of the last year the salaries paid or agreed for by the western section alone was 4,900 dollars.

I believe that with money to pay men and purchase supplies to advantage—with proper machinery for freeing the mine from water, and dressing and smelting the ore, and with miners instructed in such business, the mine would have made handsome dividends.

When I left the mine in 1840, *the bottom looked as well or better than it had averaged for the time I was there. With regard to the statement made by Mr. Lum of the whole amount of production being two hundred and forty-one thousand dollars, it is my opinion that this amount is short of the actual amount produced by the Coal Hill Mine.*

Yours respectfully,

JOHN J. GILBERT,

Of the firm of C. P. Peck & Co., 60, Pearl-street,
New York City.

(F.)

Report of Professor J. D. Whitney, U. S. Geologist for the Lake Superior Land District.

THE veins of Galena, at Rossie, in St. Lawrence County, New York, have attained a world-wide celebrity for the splendid crystallization of this ore, and of calcareous spar, which have been found in them. The first and most important of them, the Coal Hill, according to Professor S. C. Beck, then Mineralogist to the State of New York, was opened in the winter of 1835-6. He gives the following description of it, as it appeared in August, 1836. (Report on the Mineralogy of the State of New York.) "The vein of Galena and white decomposed ore was distinctly visible for some distance, passing down a precipitous ledge of primitive rock, about fifty feet in height. The average width of the vein was two feet, and it cut the rock in a nearly perpendicular direction; at the lower part, however, inclining slightly to the north. On ascending the ledge, the course and extent of the vein could be easily determined by the excavations which had been made, and by the appearance of the surface in those parts where it had not been opened.

Professor Beck's account of Coal Hill vein.

"Its course was found to be about south south-east, and north north-west; and its length as exposed at that time was about four hundred and fifty feet; and throughout the whole extent the vein seemed to be so distinctly characterized as to excite surprise that it had not long before been noticed."

Farther on he remarks "that the average width of the gangue is about four feet." He also writes with regard to the productiveness of the Rossie Mines as follows:—

Produce of Rossie Mines in 1833.

"Some idea of the extent to which the Rossie Mines were worked, may be inferred from the fact, that the amount of lead produced from them in 1838 was 3,347,463 pounds.

Professor Emmons, one of the State Geologists of New York, in whose district these mines were situated, says of the Coal Hill Vein, (Report p. 355,)—"The vein is four feet wide, and is filled with calcareous spar and galena; the latter having only a width varying from two or three inches to eighteen, probably the average width is about ten.

Professor Emmons.

The Coal Hill Mine was worked with great activity in 1837 and 1838. It was divided into two sections, and worked by two distinct companies. The amount of lead smelted from these two mines, whose excavations occupied a length of only about 100 feet, has been certified to by Mr. C. L. Lum, who

had charge of the smelting and dressing departments for the contractors, Messrs. Moss and Knap. According to his statement there was produced 3,250,691 pounds, according to the record in the Company's books, together with a lot of 151 tons, and other smaller amounts of which no record was kept. Mr. Lum estimates the total amount received for lead smelted from this mine at 241,000 dollars. Farther on, will be found some estimates of the number of fathoms of ground opened, and the value of the lode per fathom. All the workings on these veins were discontinued in 1839. The great productiveness of the vein being perfectly evident, it becomes an important question why these mines were thus abandoned? Mr. Lum has given several reasons why this took place; and shows that over 100,000 dollars was thrown away in useless experiments, or lost by the ignorance and inexperience of the Managers. That the vein was worked in the most unminer-like manner possible, is evident from a simple inspection of the ground. *The vein, as before stated, was divided into two sections in a length of 400 feet, worked; and these were kept separate by a bar of ground left standing between them.* Thus, of course, a double expense was required for freeing the mine from water. No system whatever was pursued by the miners, but an immense open cut was made, into which the water found ready access. The ore was smelted on contract at the enormous price of 25 dollars per ton of lead produced. These are sufficient reasons why the

Mr. Lum's estimate of the amount of lead produced at Coal Hill.

Mine abandoned in 1839.

Reasons for this course.

mines would almost necessarily be brought to a stop when they had reached a depth such, that the extremely rude and imperfect machinery then used, would no longer answer for freeing them from water.

To have prosecuted the work with success would have required skill, capital, and confidence; all of which requisites were wanting entirely at the time of the closing of these mines, the period of the greatest commercial depression which the country has ever seen.

In working down upon the vein, it showed, like every other, some portions richer than others; but in general throughout the whole extent worked, the average yield of the lode must have been very high. In regard to this point, a writer in Silliman's Journal of Science for 1842, remarks,

Silliman's Journal, 1842.

"Whatever may be the present difficulties of the unfortunate tenure of this mine, there is little doubt that it will eventually be efficiently wrought, and yield a uniform and adequate return. *The vein descends perpendicularly; the quantity of ore in a given space remains about the same; and in all probability is inexhaustible.*

Opinion of the writer as to the character of the lode.

On returning to the mine on the 6th of November last, I was pleased to find that my anticipations with regard to its prospects had been more

Appearance of the lode.

than equalled. The amount of work which had been done, owing to the smallness of the force employed, was not considerable; but every part of the mine was showing a rich lode.

Crystal shaft. *In the crystal shaft, which had been sunk about six fathoms below the point at which it was at my former visit, I found the lode had undergone a rapid change soon after I left, and that a solid leader of galena had made its appearance, which soon widened out to eighteen inches, and maintained a width of from six to eighteen inches, down to the lowest point the shaft had reached.*

Engine shaft. In the engine shaft, which was not so deep as the crystal shaft by about two fathoms, there was every appearance of soon striking the same rich ground as had been already opened in the latter shaft; the lode was becoming more crystalline and carrying good stones of ore.

Western Section. *In the "Western Section" a winze had been commenced, and carried down about three fathoms; and the lode was seen to be very rich, worth from* 200 *to* 300 *dollars per fathom. On the whole, the appearance of the mine in every part was, and is at the present moment, in a high degree promising: the value of the lode varying from* 100 *to* 600 *dollars per fathom.* All that remains to be done to put the mine in a paying condition is, to sink the shafts, respectively, to a depth of eleven fathoms below the old workings, as represented in the section, and extend the level

Amount of work to be done.

between them. The Crystal and Engine shafts have already reached within four and five fathoms of the requisite depth for commencing a level. *By inspecting the section it will be seen, that by only twenty-four fathoms of sinking in the three shafts, estimated at* 100 *dollars per fathom; and eighty-five fathoms of driving, at* 50 *dollars per fathom, making the expense of sinking and driving* 6,650 *dollars; about* 980 *fathoms of ground will be opened for stopeing, which would be worth, at a low estimate,* 100 *dollars per fathom; making the whole value* 98,000 *dollars, at an expenditure of* 6,650 *dollars, together with the incidental expenses and the cost of stopeing.* No additional expenses in machinery will be required, as the present engine is amply sufficient to work the mine to that depth.

Purity of the ore.

The galena of the Rossie lead veins is, in respect to its freedom from any association with foreign metals, quite remarkable. Most of the lead ores of the Eastern States are contaminated with the sulphuret of zinc (black jack), or mixed with iron or copper pyrites, so that the reduction of the metal is more difficult, and its quality injured in some degree. The St. Lawrence county ores are almost pure galena, with hardly a trace of any other metal than lead. They contain only a minute portion of silver, not enough to be worth separating. The quality of the metal made from them is excellent. The vein stone is remarkably homogeneous in its character, and easily crushed and washed from the ore.

Why is capital wanting to develop these mines?

Such being the facts with regard to these veins, it may very properly be asked, How can there be, by any possibility, a lack of capital to carry on a mining operation, already so near being crowned with success? To this it may be replied, that the Shareholders in such enterprises in this country are too frequently, as in this case, entirely unacquainted with the real value of mining property, and unable to discriminate between a valuable and a worthless mine. They are led to believe that a mine may be made to pay a dividend on an enormous fictitious capital, within three months after commencing operations; and unless there exists a power in the hands of the Directors to cause the stock to be forfeited and sold on which the assessments are not paid; or unless a sufficiently large working capital has been paid in at the start, to open the mine and put it in a paying condition, which is rarely the case, the enterprise is very likely to be abandoned by the original shareholders, perhaps, when just on the point of succeeding. I have known the stockholders in one of the most productive mines of the country, which is now selling at the rate of half a million of dollars, to refuse to pay assessments on their stock, and allow it to be forfeited, when they owned in fee simple an immense and unexplored tract in one of the richest mineral regions in the world. A few months only were sufficient to convince them of their folly.

The Coal Hill vein has an extent in the sett of nearly a mile

in length, *and has been opened at various points, where it shows the same character* of vein stone, and ore. The great object of a company possessed of sufficient means, should be to develop the vein in length as well as depth, as rapidly as possible. On the whole, I do not hesitate to say, that this mine, if managed with judgment and economy, is almost, if not quite, sure to reward the Shareholders for their investment.

NOTE.—I find, on calculation, that about two thousand fathoms of the vein have been removed in the workings of the Coal Hill Mine; and taking the whole amount produced by the sales of the lead, according to Mr. Lum's statement, at 241,000 dollars; and adding 5,000 dollars for what has been taken out since working was recommenced, we have as the average value of the whole lode, per fathom, nearly one hundred and twenty dollars.

J. D. WHITNEY.

(G.)

Extracts from a Report made by Captain Thomas Petherick (formerly Manager of Fowey Consols, &c.).

To George Parish, Esq.,

"In considering the circumstances and prospects of this mine, it is not necessary to refer to its former productiveness, on which you are yourself so well informed.

"In lead and copper mines, the richest of them, the masses of ore or 'bunches' in the vein are more or less variable, sometimes declining temporarily in quantity or value, or both, and sometimes apparently running entirely out.

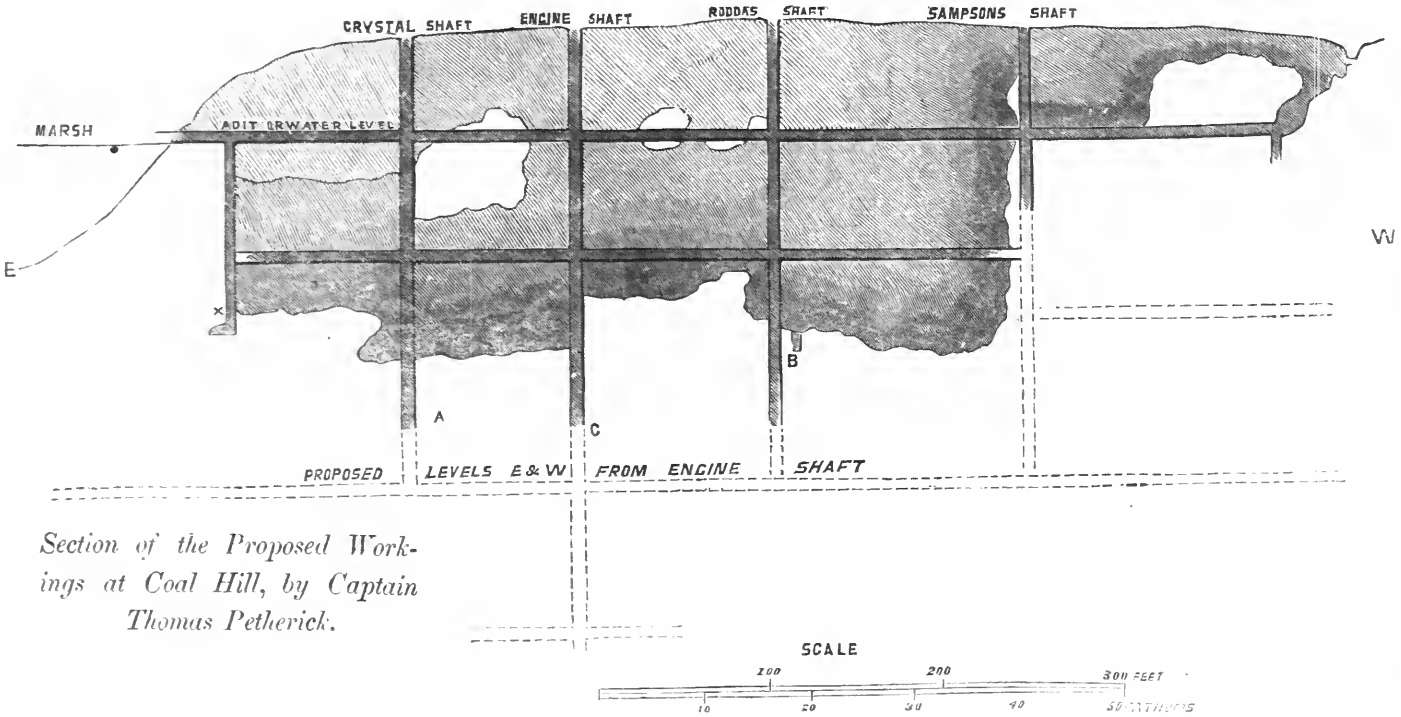
"It has therefore been a matter of careful consideration with me, how the Coal Hill Mine stands in this respect; and I have come to a favourable conclusion on the subject, on the following important grounds." After this he says: "This favourable conclusion would have been come to, I have no doubt, by any intelligent experienced miner who might have inspected the concern when the present lessees entered upon their under-

taking. *It is very satisfactory and important to find that in the very little that has yet been done by them to open fresh ground in depth, a decided improvement has taken place as to the prospects of future productiveness.*"

After stating at great length his views as to the proper method of laying out and working this mine, and describing the value of the lode at different points, in which he rates shaft No. 3, as containing lead ore clean galena, two to three tons per fathom, he closes his report thus: "In the accompanying section I have shown by heavy dotted lines the operations which I think should be resorted to for the early trial of the mine, and the lighter dotted lines those which may be probably found to be desirable subsequently, if the results of that trial should be successful, of which I consider there is a very satisfactory prospect.

(Signed) "THOMAS PETHERICK.

"Pottsville, January 10, 1851."



Section of the Proposed Workings at Coal Hill, by Captain Thomas Petherick.

(H.)

Estimated cost of breaking, drawing, crushing, and dressing, a fathom of ore ground in the Coal Hill Mine:

	Dollars.
Cost of stopeing (the average)	22.00
Drawing to surface	1.50
Crushing and Dressing	15.50
	39.00
	£ 8.
Price or value is	24.
Profit per fathom	£16.

According to Messrs. Whitney and Dunkin's statements and Petherick's plan, the 1st and 2nd levels would lay open 3,000 fathoms of ore ground. If this does as well as hitherto, the profit would be £48,000 in the two levels alone.

(I.)

Report by Capt. John Dunkin, who is now at the Mines, waiting to take charge.

Sir,

According to your request, made to me by George Parish, Esq., I send you my report on the "Coal Hill" Mine in this town. The situation, geological formation, and former productiveness, have been so ably and fully described by J. D. Whitney, Esq., as to make it unnecessary for me to say anything on these points. I shall confine myself with a statement of the facts, and point out what I consider ought to be the course pursued to develop the mine and make it profitable to the stockholders.

In the western part of the mine there is a winze sunk three fathoms below the old workings, through a lode that is two and a-half feet wide, with a solid leader of lead ore six inches wide, the whole length (15 fathoms) west of this winze; the lode is worth from £20 to £40 per fathom.

The eastern shaft has been sunk eight fathoms, the lode for the whole depth is three feet wide, the first four fathoms is the same as the first in the engine shaft, *and the last four fathoms is through a lode of calcareous spar, with a solid leader of lead ore, from six to twenty inches wide, averaging for the*

four fathoms, ten inches wide, worth £30 per fathom. The bottom of the shaft is now rich, with every prospect of a continuance.

At the bottom of the engine shaft there are two levels commenced, one east, and the other west. In the former, which is extended east of the shaft two and a-half fathoms, the lode is of the same size and character as in the shaft; and in the western one, that is extended west of the shaft three and a-half fathoms, the lode is two feet wide and producing greater quantities of lead ore, and there are strong evidences of improvement.

I consider the most economical plan of operation would be to force down the engine shaft with all possible speed for another level (say 12 fathoms), with eight men; drive the bottom level east, with three miners and three labourers to communicate with the eastern shaft, to make the course of ore in that shaft available for stopeing, and drive the level west, with the same number of men, to communicate with the winze, to make that part also available. *This effected, would give an immense body of rich stopeing ground. I would also recommend the driving a level east under the flat from the bottom of the most eastern shaft at the foot of the hill. I am of the opinion that there will be large bodies of lead ore found in this direction, the dip of the hill and the ground being east.*

The engine shaft should be divided and cased down to serve

the purpose of drawing as well as pumping, and the next drawing shaft east should be the extreme eastern shaft; the next western shaft should be left for a future consideration; the adit should also be properly laundred and secured to prevent the surface water from going down into the bottom of the mine in the wet seasons.

There is a good engine of sixty horse-power on the mine, in good condition, except the boilers, which I would strongly recommend to be removed, and others substituted; the cost of the new ones would be saved in two years by the less quantity of wood required. There are ample buildings of every description erected on the mine, except dressing conveniences, which cost but little, as timber of every description is very cheap.

Looking at the mine in every aspect, the stratum primitive, the lode large, has produced very largely, no perceptible change but what is usual in all mines, a rich lode in two important points, and the general improvement that has taken place as far as operations are carried, I feel I cannot too strongly recommend it to the notice of the mining public, believing that those who may invest their money in it will be handsomely remunerated.

Yours respectfully,

JOHN DUNKIN, jun.

St. Lawrence Co., State of New York,
April 11th, 1855.

P.S.—*The engine is of ample power to drain the water from a depth of forty fathoms below the present bottom;* the quantity of water is small, not exceeding one hundred gallons per minute in the wet seasons.

Should your friends require any reference in England respecting myself, I would refer them to Michael Williams, Esq., M.P., Thomas Darke, Esq., Captain Jos. Vivian, or any of the Mining Agents of the Camborne district.

J. DUNKIN, jun.

(J.)

Statement of Buildings, Machinery, Materials, and Improvements erected on Coal Hill Mines, together costing £10,340.

I. Buildings.	Dollars.
Engine and Boiler House	
Crushing House	
Dressing House	
Smith Shop	
Material House	
Carpenters' House and Shop	
Agent's House and Office	14,500.00
Underground Captain's House	
Smelting House	
Wood House	
Stables	
Stone Dwelling for 40 men	
Powder House	
Ten Houses for Miners	
II. Machinery.	
Steam Engine and Boilers, 60 horse-power, Bobs, Rods, Connections, Shafts, Wheels etc., complete.	8,800.00
Carried forward . .	23,300.00

	Dollars.
Brought forward . .	23,300.00
New Steam Whim Machinery not erected . .	1,300.00
Crusher, with duplicate Machinery Gearing, etc. .	2,500.00
Steam Engine and Boiler at Smelting House, with Bellows, Sawing Machine and Connections .	1,500.00
Smelting Furnaces, Pots, etc.	800.00
Two Horse Whims, Kibbles, Chain and Cordage, 200 fathoms	950.00
Capstan and Shears, Iron work, Cordage, etc. .	700.00
100 fathoms of Pumps, Bolts, Washers, etc. . .	2,200.00
4 Drawing Lifts complete, Rod, Iron Work, etc. .	1,800.00
Duplicate Castings, and other Machinery, about .	1,000.00

III. Materials.

Iron and Steel, Safety Fuse, and Powder . .		2,800.00
Smiths' Tools		
Carpenters' Tools		
Oil, Leather, Stoves, Beltings, and various other Materials		
Household Furniture, Horse and Harness, Wood, etc.		800.00
Smelting House and Floor:		
2400 lbs. Metallic Lead in pots		
6888 lbs. Slags		
Lead ore from Stack . . .	2 tons 367 lbs.	
Carried forward . .		39,65.000

		Dollars.
Brought forward . .		39,650.00
Lead ore on surface Whim Shaft .	37 „ 290 „	
Lead ore at Crushing House . .	51 „ 772 „	
Lead ore at Crystal Shaft . .	54 „ 1398 „	
Lead ore at Crushing Floor . .	54 „ 448 „	
Lead ore crushed	3 „ 776 „	
	206 tons 879 lbs.	3,500.00
Underground Shafts, Levels, and Mining, with Casings and other Improvements		8,500.00
Total estimated value		Dolls. 51,650
		£10,340

An Act

TO AUTHORIZE CERTAIN LEASES

IN THE COUNTY OF ST. LAWRENCE,

Passed February 6th, 1855.

THE PEOPLE OF THE STATE OF NEW YORK,

Represented in SENATE and ASSEMBLY,

Do Enact as follows:

§ 1. The Proprietors of any Mines or Veins of Lead or Copper in the County of St. Lawrence, may demise, lease, or rent the same for a period not to exceed twenty-one years from the date of any such lease, to any foreign individual or Company. And such Lessee or Lessees may take, hold, work, use or convey the same during the said term, in the same manner and subject to the same liabilities as if such Lessee or Lessees were natural born citizen or citizens.

§ 2. This Act shall take effect immediately.

State of New York,
Secretary's Office.

I have compared the preceding with the Original Law on file in this Office, and do hereby certify the same to be a correct transcript therefrom, and of the whole of said original.

Given under my Hand and Seal of Office, at the City of Albany, this ninth day of February, One thousand eight hundred and fifty-five.

A. G. JOHNSON,
Dep. Sec. of State.

BY MYRON H. CLARK,

GOVERNOR OF THE STATE OF NEW YORK.

It is Hereby Certified, that Alexander G. Johnson was, on the day of the date of the annexed Certificate, Deputy Secretary of State for the State of New York, and duly authorized to grant the same; that said Certificate is in due form; that the Seal affixed to said Certificate is the Seal of the Office of the Secretary of State for said State; that the Signature of said Deputy Secretary to said Certificate is in his handwriting, and is genuine, and that full faith and credit may be given to his official acts.

In Testimony whereof, the Great Seal of the State is hereunto affixed. Witness my hand, at the City of Albany, the ninth day of February, in the year of our Lord One thousand eight hundred and fifty-five.

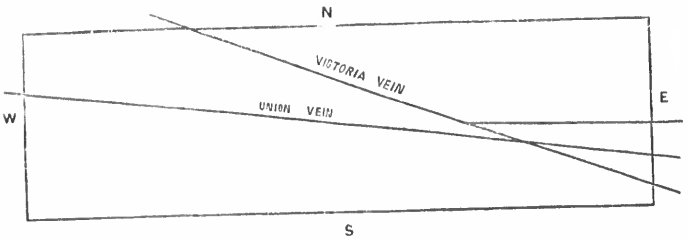
Passed the Secretary's Office, the
9th day of February, 1855.

M. H. CLARK.

E. W. LEAVENMOUTH, Secretary of State.

VICTORIA LEAD MINES.

These Mines are situated parallel with, and about 300 yards to the north of the Coal Hill Mines, described in the foregoing papers. There are three veins uniting at a point nearly opposite to the workings of the Coal Hill Mine. The outline of the sett, and position of the veins in it, are shown in the following section.



No shaft has been sunk deeper than 90 feet. *From that depth £10,000 of lead ore has been taken, and a large quantity already discovered remains standing in the back of the only level yet driven. The chief vein is six feet wide, and a number of rich bunches of ore have been cut, extending throughout a length of* 200 *fathoms, that being the extent upon which the veins has been tried at the surface.* The length of the sett is about one mile. The following section will show the amount of work done.

Section of Workings at the Victoria Mine.

Various flattering reports upon the Victoria Lead Mines have been received from Major Farrington, Professor J. D. Whitney, Professor C. T. Jackson, George Sumner, Esq., of Boston, Captain Dunkin, and others.

The mines have been visited by a great number of scientific and practical geologists, and mining engineers, and agents, all of whom express entire confidence in their success if judiciously managed. J. D. Whitney, United States Geologist, says of these veins, under date of July 15, 1853 :—

"There are two lodes here, which cut each other at an angle of about ten degrees. Both have been opened to some extent, *but the principal workings are on the Union vein*, which seems to have a course of about S. 62 deg. E. The course of the other lode (the Victoria) is about S. 73 deg. E., and it would seem that the two intersect each other a few yards west of the shaft which has been opened on the Victoria lode. In a shaft opened three or four rods further west still, there are seen two distinct branches or lodes, diverging from each other in the direction which the two other lodes should have after their intersection.

"In the Union Mine, the work is confined to driving, no sinking being possible unless a steam engine be erected. *In the sixteen fathom level, going east from the Victoria shaft, the drift is in forty feet, and is in a fine vein* 3½ *to* 4 *feet*

wide, and richly charged with galena. It is worth fully 100 *dollars per fathom.* Fine stopeing ground will be found above this level. *On the stope, above the sixteen fathom level, between the Victoria and Collins shafts, the vein is also looking very well indeed, and they are taking down an ore which will pay handsomely for the stopeing.* There is a back here of about 60 feet, in a length of nearly 120. At the bottom of the Collins shaft and west the vein is not so rich, but in the level driving west, which is now in 30 feet, the appearance of the lode is improving. West of the Collins shaft, at the surface, is a stope of 40 feet in length by 24 high, *which shows the vein to be rich in galena, and wide.* This stope is to be carried down to the level of the adit *now commenced, and coming eastward from a point* 525 *feet west of Collins shaft;* the object of which is, to prove the lode on the surface, and drain it. *This adit is in about* 30 *feet, and shows a lode* 2 *feet* 10 *inches wide, perfectly well defined, and carrying considerable lead.*

"*The Victoria vein* is seen exposed in an open cut for a few feet in length, a short distance north of Collins shaft. *It appears to be handsomely charged with lead, and about the same width as the Union vein.* Whether these two veins do actually intersect, and what the effect of their intersection upon each other is, remains to be developed by the workings. It is plain that a steam engine is necessary to enable this mine to be opened and worked as it ought to be.

"When we consider the width, the regularity, and the former productiveness of these veins, as well as the fact that there is no perceptible change in the character of the country, as far as the excavations have extended, it seems to me perfectly safe and proper to insist most strongly, that the work in these mines should be energetically prosecuted.

"*At the Union Mine the work ought to be paying for itself as soon as stopeing is commenced over the* 16 *fathom level, east of the Victoria shaft.* I coincide entirely in opinion with Captain Dunkin, that an engine should be put up, and sinking commenced as soon as possible.

"On the whole, after a careful examination of the mines, and of Captain Dunkin's Report, I can candidly say, that I coincide with him in all important particulars in his opinions and estimates, with regard to the work of carrying on these mines; and I feel a strong assurance that, with a judicious and liberal economy in the administration, the adventurers will be rewarded for their investment."

The following is from a Report of Dr. C. T. Jackson, made in August, 1853:—

"On examining the stopeing ground west of the Collins shaft, I found the vein of calcareous spar, richly impregnated with lead ore, to be three feet wide. Its course is N. 65 deg. W., and dip to the S. 65 deg. W. 85 deg.

"*In the Collins shaft, in the sixteen fathom level, the vein of calcareous spar is 3 feet 4 inches wide, and is rich in lead ore. In the stopeing ground of this level, the lode is 3 feet 9 inches wide, and at the sump at the bottom of the shaft it is 5 feet wide.* It is an important fact to note that on the surface of the rock over the mine the lode was but 8 inches wide, and here, at the depth of 80 feet, it has attained a width of 5 feet.

"At the eastern end of the level, from the Victoria shaft, the lead ore is not so abundant, but the lode is 4½ feet wide; but 40 feet to the westward the vein is rich.

"*We next examined a vein to the north of the Victoria shaft, between that and the Collins shaft,* where a vein 20 inches wide, rich in lead ore, was seen. This vein has a large "vug" or cavity in the centre, bordered with galena; and veins of the pure ore, 2½ inches wide, were seen running parallel with the dip of the vein 80 deg. to the south-westward.

"*West of Collins shaft, 350 feet distant from it, the vein runs 65 deg. E.,* and dips 80 deg. to the south-westward. It is flanked with brown "gossan" or ochreous rock in a decomposing state. *The lode is from 2½ to 3 feet wide, 10 feet from the surface, and the yield is estimated at 15 per cent. of galena. This vein is one of much promise.*

"On examining the ore-heaps at these mines, I observed that there was but very little pyrites or blends mixed with the galena. So it is very easy to smelt in the common Scotch furnace. It is readily washed clean from the spar by water, after the vein stuff and lead ore are crushed. The most simple working machinery is employed, consisting of nothing but a common strake and a sloping table, the latter being employed to separate the fine particles of lead ore in the waste from the strakes.

"*It is estimated that one gang of four miners can stope out 4 fathoms of the vein per month, and that this amount of vein stuff will yield 8 tons of pure galena or lead ore.*

"The average yield of the ore in the Scotch furnace is 67 per cent. of lead, and some of it yields as high as 75 per cent.

"*One Scotch furnace will smelt twenty pigs of lead per day, each pig weighing seventy pounds. The time estimated as a day in the furnace work is ten hours, which is as long as men ought to work amid the fumes of lead and of sulphurous acid gas.*

"Respectfully yours,

"CHARLES T. JACKSON, M.D.,

"Of Boston, Mass.

REPORT OF MAJOR A. C. FARRINGTON, MINING ENGINEER, ON THE VICTORIA MINES.

Sir,

I visited your mine the 6th of August last, and was highly gratified upon witnessing the improved condition it presented to what was exhibited about one year previous. At the first period it was as left by the miners who had worked there some eleven or twelve years before. Rude excavations and surface mining, made apparently with a view of obtaining such ore as was most accessible and at the least expense, rather than carrying on a regular and systematic course of mining, seems to have governed the operations of these pioneer miners. The surface appearance, or indications of the mine, shows the outcrop of two veins intersecting or diverging from each other at an angle of about ten degrees. The different veins are distinguished by the names of the Union and Victoria veins. The Union vein having a course of about south, sixty degrees east. The Victoria, south, seventy degrees east. Most of the workings are upon the Union vein. Four shafts have been commenced upon this vein, which I shall designate by the numerals 1, 2, 3, 4; calling the most easterly Number 1; the next as Number 2; and in that order to Number 4, the

most westerly of all. Numbers 1 and 2 are sunk a little below the hundred foot level. Number 2 is one hundred and ten feet from surface, or ten feet below the lower level. The lower gallery has been cut about three hundred feet, twenty fathoms of which has been stoped. The gallery east of shaft Number 1 has been driven upwards of thirty feet, and is through a vein near four feet wide, consisting of calcareous spar richly charged with galena; and I fully concur in the estimate made by Captain Dunkin, the intelligent captain of the mine, in reporting it worth one hundred dollars per fathom, and when the vein is stoped above this level, large quantities of galena will be obtained. Between shafts Numbers 1 and 2 there is one hundred and twenty fathoms ready for stopeing. West of Number 2 shaft the gallery has been driven about half way to the point where it will intersect shaft Number 3. The lode was not rich at the commencement of the gallery, but the last thirty feet exhibit a marked improvement. West of shaft Number 2, at the surface, is a stope forty feet in length, and twenty in height, in which the lode is over three feet wide, worth 80 dollars per fathom. Five hundred and twenty-five west of shaft Number 2, an adit level has been commenced, which is intended to intersect the floor of the last mentioned stope. For over one hundred feet, this adit is an open ditch, and at no point will be over twenty-five feet from the surface. The lode looks well for the surface, but I doubt whether the advantages derived from its connection with the eastern shafts will prove remunerative.

I am fully satisfied the Union vein is a true persistent and continuous lode, and will amply reward, with a rich return of metal, a judicious and systematic course of mining, and the sooner such a system is resorted to the greater advantages will be derived by stockholders or owners. The cautious policy so commonly acted upon by adventurers in mining enterprises of insisting upon extensive surface explorations being made and shallow pits sunk to satisfy the doubts of some timid stockholder of the actual existence of a vein, involves ruinous expense that might have been avoided. And as regards lead mines, all are familiar with their history in Wisconsin and Iowa, and having heard that deposites in those states often are exhausted, fear it may prove so with others. They do not consider there is a difference between a vein of metallic ore, and a deposite or bed lying in a nest conformable with the strata of rocks in which it is found, and that a vein cuts through strata nearly at right angles with their planes. A bed or deposite, if worked, must necessarily become exhausted; a true vein never can be, or at least never has been. Engineers and inspectors, when called upon to examine mines, are also timid (even though satisfied from examination that the lode is rich) in recommending a course of working they would adopt for themselves. They dread the responsibility of recommending an outlay of money by owners that may render them impatient for returns. The Union mine is not such an one as should deter a practical miner from putting in such work as will serve for a long period of time for raising the ore. *I have no fears the vein*

will ever become exhausted, or the bottom found; and as the history of nearly all metallic veins shows the deeper they are penetrated the richer and more abundant the mineral becomes, the natural conclusion must be that if unskilful miners or labourers could do a profitable business, mining upon the surface in the rude manner the mine was once worked, scientific and systematic efforts, with the aid of machinery, will render it much more so.

Whether you should decide upon carrying in the adit level or not, I would recommend the sinking a shaft suitable for an engine-shaft near the place where the adit commences to the level of the hundred foot gallery, and extend the gallery to meet it. You would then have stopeing ground over four hundred feet in extent by one hundred in height in case the lode would bear stopeing to the surface. The mine cannot be worked deeper than the hundred foot level until an engine is provided to drain it of water. No time should be lost in meeting this want, as the shafts should be sunk at least ten fathoms lower before another gallery is opened.

The force employed about the mine while I was there, consisted of sixteen miners, one blacksmith, eight labourers, and five boys, at an expense of about 900 dollars per month. There is another reason why I would strongly recommend the sinking the western shaft of size sufficient for all working purposes. In driving the hundred foot level it would intersect

the junction of the Union and Victoria veins. A branch level or gallery can be driven upon the course of the latter vein, which will determine its value at much less expense than open pits near the surface could possibly do. The level could also be extended westerly from the shaft, rendering three levels or systems of galleries tributary to the one shaft; and the time may arrive in the working of this mine when it will be deemed advisable to place most of the operating machinery near this point.

With a suitable engine for draining the mine, it ought to pay its current expenses from the sale of mineral, or nearly so, although three-fourths of the effective force at present employed are engaged on preparatory work, sinking shafts and driving galleries. *In a few months it can be put in condition to employ one hundred men in stopeing; when, if its present indications are not falsified, the mine must prove highly remunerative. A gang of four miners can now stope four fathoms per month, which now yields, in the lower level, over one hundred dollars per fathom, giving a profit of about* 70 *dollars per month upon the labour of each miner.* Basing the profits of mining upon labour expended, the more men employed when it can be done in a regular way, the greater will be the revenue.

I am, Sir, respectfully yours,

A. C. FARRINGTON,
Mining Engineer.

New York, September, 1853.

OGDENSBURG, *September* 30*th*, 1853.

My dear Colonel,

I must thank you for your suggestion that I should visit the "Union Mine," for I have been highly gratified. I passed a whole day in a thorough examination of the locality. I went down each shaft, and examined the lode in each; I also inspected the dressing floor and the smelting.

In the smelting, it seems to me improvements may be made; but this is a matter entirely independent of the value and richness of the mine.

Being on the point of embarking in the Lake steamer, I have no time now to say more, than that I am entirely satisfied with the mine. *You have an advantage in possessing two intersecting lodes. At the junction you will, as all experience shows, find a large quantity of ore, the extra richness of which will extend to about* 120 *feet to the west.* The part of this junction of the vein, already laid open, shows that theory and practice here agree. A cheering circumstance for you is, that in the lower level, about 100

feet down, the vein looks better than above. I can only say go on.

With much regard, my dear Colonel,
Very truly yours,

(Signed) GEORGE SUMNER.

To Col. C. L. Schlatter, Boston.

P.S.—I was much pleased with Captain Dunkin. He is, without exception, the most competent Cornish Mining Captain I have seen in this country. He is intelligent, well acquainted with his profession practically, and he keeps his accounts in perfect order. This last is no small praise, for the accounts of American mines are generally very badly kept.

This gentleman is highly scientific, and accomplished in mining matters. He is a brother of the Hon. Charles Sumner, Senator in Congress.

BEDFORD MINES.

These Mines are situated near Newborough, 20 miles north of Kingston, in Upper Canada; the property consists of about 2,000 acres. There are two veins on which pits have been sunk a few feet in depth. The great advantage of this location is, that adits can be driven upon the veins at a moderate expense, opening up backs from 125 to 250 feet in height. The appearance of the veins at the surface is very promising, and the terms upon which the property is offered are of a nature to warrant an examination of the veins, with every prospect of a most valuable and promising mine being laid open. The geological formation is the same as that of the Coal Hill and Victoria Mines, and the veins themselves precisely similar in their general features, with the exception that the lodes are in metalliferous limestone. These mines have only had a few pits sunk upon the lode, which have however yielded richly. The veins are from four to six feet wide.

REMARKS.

It is intended to incorporate the three foregoing setts or mines into a Company about to be formed, under the name of the British and North American Mining Association, the capital of which will be £100,000, divided into 20,000 shares of £5 each. The whole amount of money required to purchase the machinery, personal property, ores, etc., at the Coal Hill and Victoria Mines, is but £7,500.

For the Bedford Mines in Canada a provisional arrangement has been made. The mines are to be put into possession of the Company for one year under trial of £400 expenditure—for the lead taken out a rent of $\frac{1}{10}$ part is to be paid. At the expiration of the year, the estate of 2,000 acres and the mines are pledged to the option of the Company, if a purchase should be preferred, at the low price of £5 per acre.

No money is to be paid to the promoters or owners of these mines, except the sum named for personal property, £7,500. The capital reserved for working purposes, and operations of the

Association, is to be £40,000. The Association will be managed by five gentlemen, each of whom, to render him eligible, is to be a subscriber of not less than £1,000.

Lead having risen from £26 to £30 per ton, in Canada and the United States, in the vicinity of the mines, a difference of value over the markets of Great Britain is obtained there of about £6 or £7 per ton. The difference in favour of these mines, in consequence of the facility of communication with them by steamboat and railroad, and a more economical cost in working, owing to local advantages over the Spanish Lead Mines, is believed to be a nett profit of £10 per ton; and the veins are thus far as rich in yield as the Linares, which is believed to be the most profitable of the Spanish Mines now at work. It is therefore considered that this is a most favourable period for organizing such a Company.

London, *June* 6, 1855.

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