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REPORT 3850

JUN 7 1935

Of the President and Directors of the ST. LAWRENCE MINING COMPANY, incorporated under the provisions of the Acts 13 and 14 Victoria, Cap. 28, and 16 Victoria, Cap. 172.

The summer months of the year 1853 were employed in examining cursorily the formations on each side of the Rivers Chaudière and River du Loup, so as to determine what portion of the lands it was prudent to purchase as securing Mineral deposits, especially the auriferous ones. Through the activity of Mr. De Rotterdam, whose exertions were indefatigable, an extent of ground on each side of the River du Loup, of about two miles in length by a depth varying from half an acre to thirty acres in depth, forming a total of 1,229 arpents, about 300 arpents of which are under cultivation, the whole extent being composed of good land valuable for tillage purposes; of this 551 arpents, including the farms of Semple, are in the Seigniorship of Aubin de l'Isle, and 678 arpents in the Township of Jersey and Linière, immediately adjoining, together with right of mining upon the whole of the lands to the depth of thirty arpents, equal to 1,350 arpents additional, where only the front has been purchased. There were also purchased on the River Metgermette, in the second range of Linière, 200 acres, giving a length on the course of this river of about a mile, by 10 acres on each side; also on the River Portage 492 acres, giving a length on this river which likewise falls in the River du Loup, of about one and a half miles by ten acres in depth on each side—these lands are also valuable for tillage purposes. On all the above lands deposits of Gold and other Metals were found, as will be seen on reference to the Report of Mr. De Rotterdam, hereto appended.

By an agreement made with William Pozer, Esquire, he has made over to this Company all his rights to Mining and Minerals in the Seigniorships of St. Etienne and Aubert Gallion, and in 16,000 acres of land in the Township of Shenley, bordering on the River Chaudière. In the Seigniorship of Aubert Gallion and the Township of Shenley, Gold deposits have been found as well as other Minerals: the Gold being found in the slate, gravel and sand, as well as in the quartz rocks. The Seigniorship of St. Etienne is supposed to contain both Silver and Lead, but as yet no time has been given to an examination of this locality.

It was thought prudent to send Count De Rotterdam in several directions east and west, the result of which was the securing by purchase in the Township of Leeds, of the lots 15 to 23 in the sixteenth range of that township, comprising 900 acres, upon which 20 acres are under tillage, with a small house and barn, the whole being excellent land. Adjoining

this range are the rich veins of Copper Ore of the St. Francis Mining Company, all which traverse the lands bought by this Company, and must make them of great value in a mineral point of view, exclusive of their actual value as lands.

The whole amount expended by this Company to the 1st November, 1854, is £4,160 3s. 4d., of which £1,639 16s. 2d. have been paid for explorations, salaries and travelling expenses, £2,251 for lands, and expenses incidental to their purchase, and £167 11s. 11d. for erection of saw mills and logs, the whole of which amount it is believed is fully represented by the present value of the land and property of the Company, without taking into account any minerals it may contain.

The Directors thought it necessary last winter to get a small saw mill constructed, and 700 logs of pine and spruce were procured, so as to supply the wants of the Company, for the erection of dams, sluices and buildings. However, the late season at which the mill was commenced, prevented its being finished in time to saw, the more especially as it received some slight damage from the spring freshets. The cost of the mill so far has been £73, and it will require about £50 to place it in working order.

Owing to the lateness of the spring of the present year, together with the high price of wages, and the difficulty of procuring intelligent miners of undoubted character to act as foremen, and the want of materials for building purposes on the ground, the Directors were induced to limit the expenses of the Company, and confine their operations to testing the value of the lands purchased. Operations upon a small scale were carried on at the River du Loup Jersey lots, which resulted in the discovery of large deposits of gold, mixed with platinum, both in the river and on the main land; also of large veins of gold bearing quartz, as well as others containing lead and silver. How far valuable these might be, it was not thought prudent in their exposed position to test, but sufficient was shewn to prove them of great value to the Company, and deserving of the application of skilled labour for their further developement, as will be seen on reference to the Report of the Geologist of the Company. It has been determined to limit all expenses to the narrowest limits possible, and to await the change of times before entering into the field, the property of the Company every day acquiring additional value. To meet the expenses of the Company already undergone, the Directors have made a further call of 2s. 6d. per share, payable 1s. 3d. on the 15th December, and 1s. 3d. on the 15th February next.

GEORGE DESBARATS,

President St. L. M. C.

Quebec, 10th November, 1854.

ST. L. REPORT

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TO THE
DIRECTORS

OF THE

ST. LAWRENCE MINING COMPANY.

REPORT upon the GOLD MINES of the ST.
LAWRENCE MINING COMPANY.

The past year was employed in making choice of the lands bearing gold and copper, and in purchasing them. This present year my attention was principally directed towards the examination of the importance of the mines, and of the localities where we should commence operations.

Although the gold appears to be spread over an extent of 10,000 square miles, according to certain vague data gathered from different individuals, and although the reports, given in to Government during a number of years, state that the auriferous land, bearing ore, proceeds from the washings of an unknown vein, such is not the case; the gold found in Lower Canada is generally due to the same material cause as all the other metals and minerals which are found in veins, both native and mixed or associated with other metals; I have not been able to find any character whatever in them denoting an alluvion nature. It is painful to see that a number of persons have shaken public confidence by the levity and misunderstanding of their remarks; and the greatest number are wanting in the knowledge which that portion of the science requires. The existence of gold in Canada was made known before the metal was found in California and Australia. If the knowledge of it has not been more extended, it is due to the uncertainty of our rights of working it and to the false impressions acquired in relation to the mineral in question.

Some places, of very small extent, contain gold, which is denominated alluvion, but such is not generally the case, and moreover such is not the case with regard to the different auriferous properties held by this Company. The gold veins traverse the mountains; in some places they are in the rivers and small streams, and the veins are cut by them, which is the cause why certain portions of the rivers or streams contain a quantity of gold in their beds, and this is the case with regard to a location granted under the name of Richard Oty.

The lands acquired during the past year for this Company, contain—

1. Gold upon the clay, under which is to be found an aluminous soil filled with white pyrites, quartz and pieces of rock of different dimensions, with decompositions of granite,

and of cristalline slate (*groupes de phillades*), full of corindon. Having had an excavation made of four or five feet in depth, by from five to six feet in length, I found that this clay contained a large quantity of auriferous sand, corindon, small jaspers and quartzites, in which was found gold sand. It is also probable that the want of the proper means requisite for the washing of this sort of aluminous soil prevented me from ascertaining the real quantity of gold.

2. We have gold also in the veins of schist; this schist is cut by veins of white, red, black, grey and green quartz and by amethysts. The veins of quartz are of different thicknesses, are generally porous, and contain white pyrites, oxide and hydroxide of iron, white topazes, spinel rubies, carbonate of lime, magnesia, chlorites, galena containing silver.

I feel convinced that we have gold in the quartz, as I found some in a detached piece, but I have not yet seen it in the fixed rock, except in one of the locations, in small grains on the surface. I did not wish to have the place opened up as it is exposed to the passers-by and at a distance from the habitations. It is in the schist mixed with iron pyrites and sometimes in a native state. I found one vein of from fifteen to twenty feet in breadth in grey and blue-black schist, upon the clay filled with jaspers, intersected by veins of quartz, one of which is almost in a state of decomposition; gold with platina and native platina.

POSITION OF THE MINERAL BEDS; ROCKS IN THEIR PLACES.

Mineral Substances.

Quartz, sometimes hyalia, sometimes amethysts, translucent, of the character of opals, yellowish, or cairngorm, black, brown, greenish and itacolumite. Besides the sands and clays we find all sorts of small unassorted rocks, in different stages of decomposition, from granite, pigmatite, sienite, porphyry, to serpentine schist and several kinds of freestone; together with those we find, in the sand, oxide and hydroxide of iron, white topazes, corindon, spinel rubies, almandine, zircon, iron pyrites, nacrite.

I feel satisfied that we must have diamonds, for according to all appearances and the composition of the ground, it is exactly identical with that where the diamonds are found. The search for diamonds requires much more particular care in washing than the gold does, on account of the difference in the density.

In casing Rocks.

Schist, freestone, chalk and serpentine in different stages of decomposition. The chalk contains fossils of the same description as those found in the surrounding chalk in Australia. This chalk alternates with grey and black schist and with freestone.

This is the description of the land belonging to the Company on the south of the River St. Lawrence, in the Townships of Linière, Jersey and Shenley, and in the Seigniories of Aubert Gallion and Aubin de l'Isle.

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As to the richness and value of the produce of the metal, and for further information, I will merely state that our specimens have been examined at the Mint of Paris by Mr. Peligot, Chemist, member of the Institute of France, and President of the Commission *des Monnaies et Médailles* of Paris, and in order to give them every authenticity he has signed the analysis he made, and his letter of the 1st February, 1854, proves that the fine gold contains 873 parts of gold and 128 parts of silver, and the large pieces 865 parts of gold and 140 of silver. It is therefore certain that the gold from the mines of the St. Lawrence Mining Company is of the greatest purity and value. Then the notes which I submitted through Mr. Elie de Beaumont, Senator and Member of the Institute of France and Inspector General of the Mines. Then upon the formation of our mines, accompanied by all the specimens which I took to Paris prove the value of our Mines. I state that my report has been examined by the Committee of the most eminent men in France, forming the Commission and who compile the "*Annales des Mines*." My report was inserted in these "*Annales*," and my specimens were deposited in the Cabinet of the "*Ecole des Mines*," among those from Australia, California and Ural. I have the honor to present you with the extract from the "*Annales des Mines*," upon the auriferous formation belonging to the St. Lawrence Mining Company.

"The gold is found in sand, in clay, in schist, in the decomposed granite, in gneiss, in the quartz veins and united with iron pyrites."

In the sand, the gold is found in heaps of different sizes; this sand is always black, and is full of titaniferous iron, rubies, adamantine spar, quartzite and quartz. The more there are of white milky quartz with yellowish spots of tubercular form, the greater the quantity of gold is; the larger these tubercles are, the larger are also the pieces of gold.

The clay which contains gold, is of a bluish grey color, sometimes it is whitish. The gold is in the sand or in small grains; it is very pure being only mixed with a small quantity of silver.

In the schist the gold is found in dust, in sand and in grains which are several cubic centimetres in size.

Sometimes also the gold is found in very large pieces, especially in the neighbourhood of the quartz veins.

The auriferous schist is sometimes of the nature of talc, sometimes clayey, and most frequently in a crystalline state, of a color varying from blue black to ashey grey. The blue schist contains the purest gold, especially when the stratification runs N. E. and E. to S. W. and W. and is inclined to the south; in the latter case also, the gold is more abundant. In the strata of schist inclined towards the north, the gold disappears, and only shows itself in the copper pyrites and in very small quantities.

Up to the present time, I have not found any pure gold in the schist where the stratification is inclined to the north.

The strata of schist are traversed by veins of quartz varying in thickness from 2 to 4 thousandth parts of a metre as far as from 30 to 60 hundredth parts of a metre.

The gold abounds especially in those veins when they are large and of a white opal colour, spotted with different shades of a brownish yellow, and containing pieces of oxides of iron, of talc chlorite and some substance of a micaceous talc appearance. The schist contains gold in clefts and between its strata. This schist has spots of different oxides of iron which appear to be the traces of electro-magnetic currents. They are frequently filled with fine gold together with excessively fine sand, rubies, oxide of titane, garnets; on breaking up the strata of this schist a lot of auriferous iron pyrites are sometimes discovered.

The schist contains large pieces or boulders of syenite, porphyry and other rocks in a state of decomposition filled with grains of gold.

The schist is sometimes of a greyish color and contains a great deal of corindon.

The stratification of this schist is followed by veins of very hard sandy free-stone and by veins of quartz, and in them I have found the gold mixed with small sheets of platina, especially in the neighbourhood of serpentine stones.

I have also observed that the gold is also found in abundance in the schist which contains jasper, serpentine stone, and a species of porphyry in a state of decomposition, when the serpentine is almost a magnesian rock and when the orthose and the hornblende of the porphyry are easily separated.

The auriferous iron pyrites are found in the blue schist, and in the schist decomposed almost to a state of clay, in the places where we also find in abundance, corindon, small quartz of different colors, jasper, different kinds of oxide of titane and black sand.

The streams which contain gold are filled with a large quantity of blocks of free-stone, jasper, quartz, serpentine, porphyry rocks, although all the mountains which surround them bear the continued stratification of schist.

I also found gold in the valleys, at the bottom and on the banks of the streams of water, at a distance of more than 200 feet from their beds, at a few feet in depth, and also in the mountains, both at the base and at an elevation of several hundred feet, particularly near those places where the rocks are displaced.

Mr. Peligot, member of the Institute of France, and Director of analysis at the *Monnaie de Paris*, communicated to me the following results of the analysis made by him of the several specimens of gold which I handed to him:—

Gold.....	873 small.	860 large.
Silver.....	127 “	140 “
	—	—
	1000	1000

During my journey I observed formations which present the most remarkable phenomenon, particularly with respect to the mines. According to my opinion, the presence of metals in those mines is not due to the volcanic action of the condensation of vapours, nor to that of chemical decomposition, as is the case in several other mines, but solely to the action of electro magnetic currents.

It only remains to be seen if it is possible to extract gold from these veins by the means of working them.

As I have already said, the gold is found in the veins in a state of working according to the following method:

I shall divide the operations into four parts.

1. Excavation.

2. Washing.

3. Concentration.

4. Separation.

1. Excavation.

The first operation is the excavation of the veins by means of powder.

2. Washing.

1. Washing.

The second operation is the washing of the gold by means of water.

2. Washing.

1. Washing.

The third operation is the concentration of the gold by means of mercury.

2. Washing.

1. Washing.

The fourth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The fifth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The sixth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The seventh operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The eighth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The ninth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The tenth operation is the separation of the gold from the mercury.

2. Washing.

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The eleventh operation is the separation of the gold from the mercury.

2. Washing.

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The twelfth operation is the separation of the gold from the mercury.

2. Washing.

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The thirteenth operation is the separation of the gold from the mercury.

2. Washing.

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The fourteenth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

The fifteenth operation is the separation of the gold from the mercury.

2. Washing.

1. Washing.

It only remains for me now to give you the plans and means of working the auriferous beds.

As I have described the several different states in which the gold is found, I am also obliged to employ different systems of working according to the different localities.

I shall divide the works into—

1. Excavation.
2. Washing and picking upon the spot.
3. Concentration of the auriferous substances.
4. Separation of the gold.

1. Excavation will be divided into two categories ; excavation by means of the shovel and pickaxe, and excavation by means of powder.

2. Washing and picking on the spot.

1. Washing by means of pumps which will obviate the necessity of carting useless substances, and prevent the incumbrance of them around the machines for the concentration of the auriferous substances.

2. Picking of the stones which contain mineral substances, such as gold, platina, silver, lead and pyrites.

3. Concentration of the substance.

Reducing the sand remaining from the washing and containing gold, to its perfect purity.

Afterwards the grinding and the separation of the mineral substances from the rocks which have been picked.

4. Separation of the gold.

By means of water, based upon the nature of the density, gold and platina, the sand to be separated for the purpose of being melted or sold in its natural state.

Gold pyrites,
Silver lead,

to be set apart for the purpose of being melted or sold in their natural state.

Excavation.

This mode of operation is so generally known that it is useless for me to give a description of it.

Washing and Separation.

Washing upon the spot is requisite, particularly where the schist is, the gold being between the cristalline lamina and the lines of cristallisation, therefore by breaking the lamina the small grains of gold are found sticking to the aluminous matter produced by the decomposition of the schist. The larger grains of gold become detached and fall into the cavities which are made by a separation of part of the stratification, and which cause a division in the lower part. As the ground always naturally contains water which constantly fills up the excavation, the pumps used to remove the water from the spot where the work is carried on, should also be used for washing, which will do away with the necessity of scraping and washing each separate piece of schist and other stone, and will also facilitate the separation of the different mineral products,

which being once transported to the boxes for concentration, may become mixed up with the heaps of stone and other substances as being useless, and thus be thrown away together ; therefore to avoid loss, this operation should be gone through. We therefore see that sucking and forcing pumps, provided with flexible pipes, of a certain length, are indispensable.

As to the mode of concentration.

By several practical experiments I have noticed that the smallest particle of native gold may be preserved by the following method.

Throw everything upon a spout where the water rushes with sufficient swiftness to carry off all kinds of rocks and stones of five or six cubic inches in size ; and all this substance carried away merely by the swiftness of the water, should fall into a box of at least two or three feet in height, raised a few inches above the level of the water, from which box the workman should remove the stones with a rake. The useless sand will be carried off by the water, and the sand and substances remaining at the bottom of the box, should be separated from each other with the greatest care, as all the gold and platinum are at the bottom ; therefore it should be done by individuals who are more expert and have more practical knowledge of washing in order that they may know how to extract all the metal from the sand either upon a piece of linen or by means of different kinds of sieve ; this constitutes the operation I call separation.

As to the separation of the gold from the pyrites and other substances which will require melting, I would advise the Company not to come to any decision for the coming year, but to have them stored away.

As to the process of culling and picking, which will consequently require crushing, I would propose that the Directors should make arrangements for machines in order that they may be at our disposal when required. We have a very considerable extent where the veins cross the rivers and streams where we use nothing but the pick axe, levers and blasts, where the gold is already laid bare, either by itself or combined with pyrites—In order to bring into immediate working order the mineral substances contained in the massive rocks, works on a larger scale would be requisite in order to point out the place where that species of work would be profitable.

DE ROTTERMUND.

*Geological Director of the
St. Lawrence Mining Company*