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# ISLAND MOUNTAIN MINE,

## CARIBOO DISTRICT, B. C.

Reports of Wm. Craib and Geo. A. Koch on the Property.

# VICTORIA, B. C.

1886.

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# ISLAND MOUNTAIN MINE.

#### REPORT OF WM. CRAIB.

## ONWARD RANCH, CARIBOO ROAD, B. C., October 3rd, 1886.

## MESSRS. DUNLEVY, WALKEM & Co.,

#### GENTS.

At your request I made an examination of the Island Mountain Mine and Steadman Mine, and as it will be necessary to make separate reports on each property, I will first report to you on the Island Mountain Mine.

You requested and desired that I should make an examination of the property and report to you my opinion as to its locality and situation for a true and permanent vein and the best method of working the same, and also make a practical milling test of the ores from the face of the tunnels, along with such recommendations that I might suggest as to the most economical method of reducing the same.

The Island Mountain Mine is situated in Island Mountain, distant about 51 miles westerly from Barkerville, and near what is known as Jack of Clubs Lake (see map.) The vein is what is termed a true vein encased in schist or slate and can be traced on the surface northerly for over a mile. I found the ledge opened up in several places for over a thousand feet and the matrix of all the exposures showed the same character of ore, viz., quartz, heavily impregnated with auriferous pyrites or sulphurets of iron. The ledge, however, is more fully exposed in the two tunnels, Walker and St. John's, distant about 500 feet 1 a level from each other. The Walker being opened on the northern portion of the mine is in 300 feet, but as it was partly caved in it was impossible for me to enter more than about 75 feet, however I procured about 100 lbs of ore from the face of the vein matter in the roof of the tunnel.

Within the space of 75 feet there are three other tunnels drove in from 50 to 75 feet, and to all outward appearances running parallel with the Walker in the same character of ore, but upon a closer examination and with the aid of instruments it was fully proved that they coursed on an angle so as to connect with the main ledge (see map,) and therefore are merely slip offs; or it may be they are surface spurs that will materially enlarge the main ledge when they come in contact, thereby making the Island Mountain Mine ledge not only a very large one, but at their intersection a rich body of ore will undoubtedly be found.

The St. John's tunnel is started in about 750 feet southerly on the surface from the Walker, and is in twenty-eight feet. Although so near the surface it shows a very good compact body of quartz with a vein of solid ore measuring four and a half feet thick with good walls of slate and soft gouge on the foot walls, and like the vein matter in the Walker, has the regular dip and trend of the country rock, which proves it to be a true vein. I also procured 100 fbs. of ore from the face of the tunnel, so that with the ore from the Walker tunnel I could separately work the same and give you the milling test that you desired. The result which is very satisfactory will be found appended to this report.

Now, gentlemen, in order to be more explicit; in the geological portion of this report, I procured the assistance of James McEvoy, B. A., Sc., who very kindly offered his valuable services both with chain and instruments to assist me in any manner that he could be of service. The tracings accompanying this report are his productions. I will state that Mr. McEvoy is chief assistant to Amos Bowman, Esq., the Geological Surveyor for the Dominion Government, and who also gave me some very valuable information in reference to the geology of the country.

In concluding my report of the Island Mountain ledge, I might state that I consider it one of the best and easiest to be worked ledges that I have ever seen, and I have been practically following gold mining for the last 30 years, and from the result of the ore that I have treated it not only shows a good paying ledge but a permanent one. There is no doubt that, if properly handled, it will prove remunerative to the owners for many years to come.

I also examined your mill and machinery, which consists of stamps (10), ore feeder, a 60 horse power engine, and three boilers, with a capacity of furnishing steam for another engine equally as large as the one on the ground, which would be power enough to run 40 stamps with ease. All the machinery appears to be in first class order, and with very little expense can be placed on the site located by you for a mill.

I would recommend that the St. John's tunnel be driven in this winter to a depth of from four to five hundred feet, so that an air shaft can be sunk somewhere in the neighborhood of the mouth of the Walker tunnel, which will give you free ventilation and open up a large body of ore, so that when you get your mill ready for work in the spring you will have your mine in a condition to slope out ore at a very little cost in sufficient quantities to keep your mill going and twenty stamps more if necessary. Moreover, I think by the tunnel being run to that depth a much richer and larger body of ore will be struck that will surpass anything found yet. I would also recommend that in driving the tunnel-which will be the working tunnel—that the same shall not be less than six (6) feet high, and seven (7) feet across, with a drainage of one (1) inch to the rod. I recommend that size of tunnel, for should additional reduction works be erected—and in all probability

they will be—a double track will be necessary to bring out the ore.

In reference to working the ore, I think it will be necessary to work it through a twenty (20) mesh or screen and concentrate the sulpherets by a system of sluices and buddle, all of which can be constructed on the ground by any ordinary carpenter at a cost that will not exceed two hundred and fifty (\$250) dollars, that will concentrate at least 10 to 15 tons per day, which would do away with all other costly and unnecessary machinery.

There is but one practical method of reducing sulphurets and that is by chlorination, which can be done at a cost of about twelve (\$12) dollars per ton of 2,000 lbs. Such works as would be required to reduce 10 tons per day would cost, I think, in the neighborhood of ten thousand dollars.

I am under the impression that a chlorination works will be erected near Barkerville the ensuing season for custom work, but as all such works would require the lion's share it would be preferable to erect your own. I do not advise you to erect any reduction works until you, have, a tunnel in the hill and ore enough exposed to warrant the erection, for many a worthy enterprise has been swamped by being too fast.

After your tunnel is in to the depth I have suggested the ore can be extracted and delivered to the mill at a cost not to exceed one dollar per ton, for the ledge will undoubtedly enlarge as you go in; in fact I would be very much surprised if after you are in two hundred feet the ledge is not eight feet wide.

The cost of milling and mining the ore ought not to exceed three dollars per ton, and will not if properly attended to; that is with a ten stamp mill, but with a thirty stamp fifty cents per ton less would be a fair estimate, that is to say, 10 stamp, \$3.00 per ton; 30 stamp, \$2.50 per ton. There is timber enough on the property both for steam and mine to last fifty years.

In conclusion, I must say that I am very much surprised that such a valuable piece of property—as well as many others—has not been worked before now, when a chlorination works at a very little cost would have demonstrated that the permanent wealth was hidden away in her quartz veins.

The following is the result of my work in treating the ore taken from the Walker and St. John's tunnels, as heretofore described.

The assays were made from the average pulp of the whole amount after it was crushed.

	Silver.	Gold.		6	,
EL	3 Assays from pulp average 1.56	27.20 per	ton o	f 2,00	o lbs.
NNE NE	Milling free gold Amalgam	5.00	**	**	66
Nº 1	Sulphurets (concentrations)	48.17	66	**	**
	Sulpherets, per cent. 33				
<i>s</i>	( Silver.	Gold.			
EL	3 Assays from pulp average 1.56	34.25 per ton of 2,000 lbs.			
P.N.	Milling free gold Amalgam	5.00	66		"
Tu Tu	Sulphurets (concentrations)	51.25	"	"	"

By the above it will be observed that the ore goes from thirty to thirty-three per cent., which will return by chlorination very close on to fifty dollars per ton, and on that base I will calculate the profit to be derived from working the ore at the rate of thirty tons per day with your ten stamp mill, which can be done when working thorough a twenty screen.

30 tons of ore would produce free gold at \$ 5 00 per ton	\$150 00
IO tons concentrations 50 00	500 00
	\$650 00
Cost of reducing and milling 30 tons ore\$ 90 00	
Cost of reducing 10 tons concentrates 120 00	
Incidental expense 20 00	230 00
Net profit	\$420 00

All of which is respectfully submitted, in the hope that the time is not far distant when the sound of the stamp may be heard on every hill and valley in Cariboo.

#### Respectfully yours,

WM. CRAIB.

## REPORT OF GEO. A. KOCH.

MR. P. C. DUNLEVY,

SIR,—Notwithstanding the fact that you had not made any request for a report on your mining property, situated on Island Mountain, Cariboo District, I had nevertheless seen enough when we visited the property together to induce me to thoroughly examine it again, and in fact I thought I had seen enough to require a more thorough examination in order to intelligently report to the Government on the mineral bearing veins of the district; and after the receipt of your request that I should examine your property and report to you, I proceeded to do so with more caution than I should otherwise have done.

I, therefore, submit the following :

The vein (or principal vein passing through the mountain) is evidently a continuation of the great mineral belt passing through the district in an N. W. and S. E. course.

It is not necessary that a vein should continue an exact course for miles in order to ensure the different locations to be good mines. Crossing deep ravines and high mountains often materially changed the course of one location as compared with another; yet the vein will have the same general course. It is impossible to say what the actual course of your vein is until deeper work has been done at the point where it has been attacked. Enough can be seen, however, to say that the vein pierces the mountain in such a manner that it can be worked for many years by tunneling directly on the vein. I find much work done in the way of extracting ore, tunneling, etc., yet it required a fourth trip and examination to fully determine the probable value of the mine, and most advisable method of attack for future economical working.

Many tons of ore have been milled from one point which did not seem to give satisfactory results, and it is surprising that the results were even so good as reported, for I find the ore at that point to be a *fac simile* of all the ores in the district; that is, they are gold bearing sulphuret ores, and can only be reduced by chlorination.

I made two assays from tailings gathered below the mill, and they assayed \$10.30 and \$26.03 respectively, and it must not be forgotten that those ores were crushed through a 60 mesh screen, which reduced the pulp to a very fine powder, thus allowing much gold to escape, as slum. (See report to to Government on subject of milling sulphuret ores.)

The portion of your ground from which the above ore was extracted is somewhat broken and disturbed, and while ore in abundance exists at that point I shall advise you to commence work on the vein lower down the mountain, or at the point known as the John's tunnel.

I find the vein at that point 4 feet 6 inches wide, and well encased in walls of slate.

It is possible the vein may be wider, and the foot-wall is somewhat loose and broken, and it may only be a stratum of slate inter-lying the vein, yet if all the vein *is* exposed at that point it is certainly very encouraging. Some of my assays from that point, and taken from the face of the tunnel were astonishingly high, one going over \$600 per ton, yet you must not let such results carry you away with the idea that you have a bonanza—simply a magnificient mining property. At this point you have an elevation of over 400 feet above your mill-site, while by driving in on the ore, now exposed in the tunnel, you have ore at least 400 feet above the tunnel. Thus

your facilities for economical mining are not equalled in the district, and if your mill is erected on modern principles, and upon the site now graded, your ore can be mined and milled including chlorination at a cost not to exceed \$5 per ton. You must remember that in order to get your expenses so low you must drive a tunnel in on the vein on a level with your mill, which will not only drain the mine but reduce your actual mining machinery to a few cars and a mule to draw them. Your tunnel will cost some money, but it must be remembered that it will be driven on the vein from which ore will be taken as work progresses. Before commencing your bottom adit, I shall recommend that you push the work in the present tunnel, where you have such an abundance of ore, and also that you sink a winze (inside shaft) on or near the vein, so that at any desirable point you can cut the vein, and if you choose drift on it; also so as to determine its value, as compared with the ore in your present tunnel. Thus you are not only proving the value of your property, but you are doing actual necessary work as the winze not only determines the true course of the vein, enabling you to determine the point at which to start your bottom adit, but you will also continue to sink to the level of the adit, and when communication is made your mine is well ventilated, not alone giving you good air but clearing the mine from smoke after blasting, thus saving a great loss of time from miners waiting for the smoke to clear away before resuming work.

I have made many assays from the ores now on the dump as well as from the face of the tunnel, and as you will see in my report to the Government I have explained the great difficulty of sampling a gold-bearing sulphuret mine. Some of the assays were very high, while others selected on purpose were quite low. Yet judging from the average samples I selected it is not hazardous to say that the mining venture on Islan.<sup>3</sup> Mountain will be a perfect success if intelligently handled. 8

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No mine in the district gives better average assays, and no mine in the district is so well situated for economical working. A mine with such advantages and giving such good average assays would be ranked among the most valuable in California.

In conclusion, if your mine yields an average of \$8.00 per ton, a 20 stamp mill will return 20 per cent. per annum on a capital of \$1,000,000, yet I have not the slightest doubt that the result will be much better. I make my calculation based on the supposition that your stamps have a crushing capacity of two tons per day of 24 hours, which I, think they have. You have engine and boiler power to run a mill of 20 stamps, and necessary concentrators and furnace.

You must in order to complete your mill purchase 10 additional stamps, a rock crusher, self-feeders, concentrators and furnace Your engine, boilers, and 10 stamps, now on hand, are in first class condition, simply requiring a little overhauling.

I am,

Yours very respectfully,

GEO. A. KOCH.

VICTORIA, B. C., Sept. 24th, 1886.



