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GOLDEN, COLORADO
Excelsior Mining Co.
Park Co., Colo.
REPORT UPON THE EXCELSIOR MINING PROPERTY
SITUATE ON
MT. BROSS AND BUCKSKIN GULCH, BUCKSKIN MINING DISTRICT
PARK COUNTY, COLORADO.

Sir:-

Agreeably with your instructions, I have recently examined the group of lode claims and placer known as the Excelsior property, and situated as described in the caption above, and beg to report thereon as follows:

The property consists of the following four lode claims (patented) Excelsior, Pennsylvania, Bald Eagle, Pennsylvania lode is included in and covered by patent Excelsior lode and Young, also the Gold Star placer (patent applied for) all situate on the southern slope of Mount Bross, in Park County, Colorado.

The total area of lode claims and mill site free from any conflict with adjoining property and without dispute, the possession solely of the owners of the Excelsior property is 30.575 acres. In like manner the total acreage in the placer belonging to the Excelsior property is 57.29 acres and therefore the total acreage in the whole property is 87.865 acres.

The general topography of the mining district and its surroundings are plainly shown on plate No. 1, hereto attached, on which the various principal producing mines in the vicinity are shown, as well as towns, villages, railroad, wagon-roads, gulches streams and mountain ranges. Only such mines are shown as have been located and well known as producers of pay mines for years past, in some cases (as the Moose, Dolly Varden, Phillips, Orphan Boy, etc.) reaching back as such in their history for twenty years past. Distances can be estimated approximately upon the aforesaid map by means of the mile squares in red lines; from which it will be seen that the nearest important town to the property is Alma, distant two miles; and the nearest railroad about one and a half miles distant, at Park City. The nearest stamp mills are at the Phillips mine on Buckskin Gulch, and the Brownlow mine on Mosquito Gulch; but both of these are operated exclusively -- the former on ore from the Phillips mines, the latter on that from the Brownlow mines. Two wagon roads connect the property with Alma, etc., the one at the top of the Bluffs or brow of the hill, the other along the gulch or valley of Buckskin. The limit of lumber growth (about 11,700 feet above sea level) passes through the north edge of the property, as shown by the green broken line on plate No. 1, and the Golden Star placer is mostly covered with a fine growth of spruce (and a few pines), most of which is suitable for mining purposes.

On plate No. 2 the various lines of the claims are marked out, the whole property being surrounded by a brown line, the various boundaries of the separate lode claims being marked by black lines. This plate shows plainly the outcropping strata composing the mountain, from which it will be seen that commencing at the foot of the mountain and ascending, we have first, an immense mass of crystalline schists, comprising granulite, gneiss, and some quantities of mica and talcose schists; these are tilted up so as to present almost vertical lamination, the beds dipping apparently from 75 degrees to 85 degrees southeasterly. Through this mass of schist are found numerous fissure veins carrying both gold and silver, and on the discovery and exploration of these veins the various lode claims included in the Excelsior group have been located.

In various directions, also, gray porphyry dykes traverse and intersect both the schists and overlying beds of quartzites and limestones. The general directions of these porphyritic dykes is N. 30 degrees W. to N. 60 degrees W., and they appear to have had much influence in the creation of the numerous and

rich vein of ore in this mountain.

The schistose cliffs or bluffs show about an average of 200 feet in height, and they extend from an unknown depth beneath a mass of "slide" rock, consisting of debris from the schists and overlying quartzites and limestones. Unconformably upon the schists lies a bed of quartzite of brown color, stained throughout by iron oxides, about 185 ft. thick, dipping 18 degrees 30 minutes southeast. Upon this lies conformably a blue dolomite about 150-160 feet thick; upon this comes another quartzite, probably 80-100 feet thick, then a bluish gray limestone, extending nearly to the summit of the mountain.

With the exception of the lowest quartzite, the outcrop of which is clearly shown upon plate No. 2, none of these sedimentary rocks show outcropping ledges of rock in any size, their surface being much weathered and covered with debris. Yet from the various mining developments made, and the character of the loose slide or surface rock, the lines of contact between the various strata are easily determined, and it may be here mentioned that these contacts are all more or less mineralized. In fact, the principal mines on the mountain (Moose, Dolly Varden etc.,) are opened upon contact veins between limestone and porphyry and segregations and impregnations of ore within the limestone beds themselves, much of which has "leached" or "filtered" down from the contact vein on the upper surface of the limestone. At least two contacts cross the Excelsior claim, one near the discovery cut, and one about 50 feet above the open cut on the Pennsylvania vein. Very little exploration has been done on either of these, but the upper or limestone quartzite contact has been opened at one or two places lately, at a point about 60 feet northeasterly from the Pennsylvania open cut, and looks very promising. The lower or quartzite-limestone contact has been traced through the Excelsior claim, passing under the boarding and shaft houses, and is partially developed by the Excelsior Discovery cut, an open cut across the contact, 21 feet long by 7 feet wide. This cut is located entirely in the contact a few feet below its upper surface and therefore does not show clearly the true contact vein, but merely impregnations in the quartzite, from the said vein lying in the contact above. An average sample from this cut assayed in gold (au) 0.25 oz. silver (ag) 8.75 per ton, giving a coin value of \$13.14 per ton. As before mentioned, the developments are not sufficient to judge of the size of this contact vein or the amount of ore that could be realized by its exploration; but, judging from the outcrop indications and experience in other parts of this mountain, a constant supply of fair grade ore could be confidently looked for from this lower contact, and the indications as to the upper contact are almost the same.

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The principal mineral veins, however, in this property are fissures, of which the "champion" vein is the Excelsior. This vein has been traced on its outcrop for some 800 feet, of which 600 feet strikes about N. 62 degrees E., with a dip of 75 degrees 30 minutes from the horizontal, the direction about S. 34 degrees 30 minutes W., and continues in this course through the schists until hidden in the mass of slide at the foot of the bluffs. The principal developments on the whole property are upon this vein, and the great mass of ore proven up is in this vein. The vein apparently extends for a total length of about 3,000 feet in the property, as indicated on plate No. 2, and is proven to exist to the southwest of the Gray Eagle cut, 20 feet long, 4 feet wide, 12 feet face, 7 feet being under cover and the Sunny South cut, 25 feet long and shaft 10 feet deep, all of which are situated upon the Young lode claim. The developments in the latter named workings are not sufficient to prove the economic value of the vein at these points, other (?)

and no samples therefore were taken thence for assay. By reference to the figures on plates 2 and 4, the relative elevations of various points, with reference to the mouth of tunnel No. 1 on the Excelsior lode can be seen. For example, it will be noticed on inspection that there is a difference of elevation of 600.2 feet between the Sunny South cut and corner No. 1 of the Excelsior lode claim, the latter being 412.9 feet above tunnel No. 1, and the former 187.2 feet below said tunnel. This amount then of 600.2 feet may be considered approximately the total depth of the Excelsior vein, proven thus far by developments on the property.

The inclined shaft, 6 feet by 3 feet by 150 feet deep, timbered throughout with ladder-way at the eastern edge, connecting with tunnel No. 2 and certain old stopes and workings, follows down along the footwall of the vein with an inclination of 1 in 4 from the vertical, or about 75 degrees. At 84 feet from the top is a platform across the shaft, connecting through crosscut No. 3 (see general plan and section B.B., plate No. 5) with tunnel No. 2. This shaft passes down through an old stope about 120 feet deep, 75 feet long and five feet wide, from which has been removed much high grade gold and silver ore, and from the walls of this stope, especially towards the west end, can be taken still many samples which will yield high returns in assays. For example, an average of certain quartz in the stope west of shaft gave a recent assay of au. $2\frac{1}{4}$ oz., ag. 227.55 oz., per ton; value \$259.62 per ton. I could not visit the bottom of this shaft, since it contained about 25 feet of water; but am informed that it is still in the vein, which, since winze No. 2 which connects tunnel No. 2 with the shaft just at the water level, shows no change in the vein, I can well believe to be true. This shaft and the stopes east and west of same, explore the southeast wall of the vein, and determines its general character and direction. Thus far no wall on the southeast side of the vein has been found, which will be referred to again in describing.

TUNNEL NO. 2

Commencing at the mouth of this tunnel, and travelling eastward, one finds the vein first enters on the south wall about 72 feet from the mouth, crossing diagonally, and entering the north wall at 84 feet from the mouth. This portion, therefore, of the tunnel, from the mouth to the first appearance of the vein, belongs to the "hanging wall" region, and is entirely of quartzite. From the first appearance of the vein, clear on to the surface of the tunnel, a distance of 479.5 feet from the mouth, the tunnel continues entirely within the vein without a break, and is timbered from a point 163 feet from the mouth up to crosscut No. 4. In all the remainder the walls are strong enough and roof firm enough to stand until general stoping is begun. At 163 feet from the mouth one finds the first connection made with a large chamber above the tunnel stoped out in the vein, measuring 80 feet in length, 28 feet to 44 feet in height above the floor of tunnel, and 15 feet in width. AND SHOWING ORE ON ALL SIDES SAVE THE EAST, where the vein is temporarily cut off by the first intersecting porphyry dyke, about 7 feet in width. One of the lowest values in the mine was found in the southwest end of this stope, the sample giving gold 0.6 oz., silver 1.4 per ton; value \$13.30 per ton; an average of the lowest grade being purposely selected. On the east end two samples were selected from the porphyry dyke to determine its character, and with the following result:- No. 1 au. .1 oz; ag. 5 oz; value \$6.65 per ton. No. 2 au. 0.15 oz; ag. 4.4 oz.; value \$7.00 per ton; thus showing some mineralization of the porphyry.

On the east side of this porphyry dyke, is a chamber on the south side of tunnel No. 2 in which a considerable body of white and yellow stained decomposed quartz is found, as in many places elsewhere, throughout the vein and on which a small qinze has been sunk about 10 feet deep. An average of this quartz was assayed with the following result: Au. 0.8 oz; ag 32.7 oz.; value \$46.41 per ton. At this point, 220 feet from the mouth, the tunnel takes a sharp bend to the north; formerly it continued straightforward, intersecting with the inclined shaft stoped overhead and through crosscut No. 1; but now both tunnel and crosscut are filled up with low grade ore, so that I was unable to examine them. In working the mine to its fullest capacity, this tunnel should be re-opened, making thus direct connection with the inclined shaft, through the stope west of same. Crosscut No. 2 runs westerly for 50 feet in length with the intention of futting the Pennsylvania vein, but without reaching it, which was to be expected, inasmuch as the Pennsylvania and Excelsior veins are 80 feet apart at their outcrops. This drift or crosscut is in the vein throughout and never reached the western wall, and thus proves the width of the vein at the face of crosscut No. 2 to be at least 65 feet, but in estimating hereafter, I prefer to take the width as determined at crosscut No. 4 in which the width is clearly proven to be at least 40 feet and must be more, as no western or hanging wall is reached. Crosscut No. 3 connects tunnel No. 2 with the inclined shaft and stopes. Winze No. 2 connects with the tunnel with the same shaft at a lower level, just above the water's level in said shaft, and throughout its depth passes through argillicaceous oxidized ore, out of which many high assays have been obtained. An average sample gave me au. 1.75 oz, ag 96.25 oz. pb 15.7 per cent per ton; value \$127.65 per ton. Another sample gave au. 2.4 oz; ag 131.5 oz., value \$170.29 per ton. The ~~general~~ general gangue of the whole vein is quartz in various forms; "honeycombed", "hardwhite", "yellow" (i.e. stainte with ferric oxide) etc., "iron stained" (i. e. of reddish brown color). Until recently the whole mass of rock between the tunnel No. 2 and the inclined shaft and old stopes, which is intersected by crosscuts Nos. 1, 3 and 4 are barren quartz in face a "horse", but recent assays have proven part of it to be equal in average value to \$13 and \$15 per ton, both in gold and silver. Thus the old stoping was done merely on a rich "pay streak" in the vein, not nearly on the whole width of the proper vein. Crosscut No. 4 has recently been driven into the footwall of the vein for a distance of 36 feet from the center of the main tunnel, and has disclosed two small veins of mineral in that short distance, which seems to indicate that further exploration in this direction would discover other veins perhaps as large as the Excelsior; though possibly these two small veins are only spurs of the main Excelsior vein. Continuing onward through the tunnel, we find chiefly "hard white" and "honeycombed" quartz, as the general mass of the vein. At D.D. a small cut has been commenced to cut through to the foot-wall, but not carried far enough, though disclosing some good ore. At the west end of crosscut No. 4 some high grade silver sulphurets were found in a decomposed quartz, heavily stained with black, assaying as much as 9,000 oz. to 10,000 oz. silver per ton, the last assay giving a value of \$9,251 per ton; this is, however in small quantities only, not more than a few hundred pounds weight being found together in any one place and all were removed. The upraise at E.E. and the main tunnel from E. E. to the breast show very good streaks of mineral, but the general average of the vein in the tunnel is low at that point. The breast of the tunnel gives au. 0.1 oz., ag 15 oz., value \$15.95 per ton; average sample of the vein at a point 8 feet westerly from breast of tunnel No. 3 gave au. 0.1 oz., ag. 5.5 oz., value \$7.11, the lowest

assay in the mine, due to considerable manganese in the vein at this point, while in the top of the upraise at E. E. the average of a 3-foot streak of ore showing copper carbonate and oxide gave au. 3.3 oz. value, \$66; the silver button was considered in this also, showing probably 60 oz. per ton, but was unfortunately lost before it could be weighed. The gold was ascertained in a separate crucible assay.

TUNNEL NO. 3.

6 Ft. by $3\frac{1}{2}$ ft. by 103.4 ft. long, was apparently the Discovery tunnel, in which the first discovery and exploration of the vein was made; it is untimbered throughout. At the mouth of this tunnel, the curious manner in which the porphyry dyke ruptured the lower limestone beds in breaking through is shown. This is also noticeable for the narrow outcrop of the vein -- not over two feet wide -- which widens out in depth to such a great extent, as clearly shown by the drawings. Tunnel No. 3 shows the vein from 2 feet to 3 feet in thickness, between well defined walls of limestone, the quartzite limestone contact being about 12 feet below floor at the mouth of the tunnel, as shown in plate No. 4. The eastern part of the old stope in plate No. 5 in the general plan and cross-sections B.B. and C.C. reaches the ground surface about 5 feet from the mouth of tunnel No. 3.

The total length of the developments upon the Excelsior lode claim is as follows: Old workings 1,280 feet, present workings 1,170 feet; total 2,450 feet.

Since no hanging wall has yet been determined to the Excelsior vein, it is difficult to estimate even with reasonable approximation the amount of ore in sight, but taking the developments to have proven the vein for an average width of 40 feet, length 300 feet, depth 150 feet, we have a total mass of 2,400,000 cubic feet proven. Deducting 182,030 cubic feet for voids in stopes, tunnels, shafts, winzes, levels and crosscuts now existing, we have 2,217,970 cubic feet as net contents of ore proven. Dividing by 13 cubic feet per ton, we have 170,613 tons of ore now in sight in mine.

The principal other vein on this property is the Pennsylvania, which is a vein of quartz outcropping for a distance of some 700 feet, and with a strike almost parallel to that of the Excelsior vein, and distant therefrom about 80 feet to the northwest. It is traceable through the crystalline schists, with a width of 6 feet to 8 feet between walls, clear up into and through the quartzites and limestone, in which the quartz gangue is less easily distinguishable from the quartzite country rock. In the quartzite the vein appears to be from 12 to 20 feet wide. The only developments made in this vein are by the discovery cut, about 12 feet long and 4 feet wide, and open cut No. 2, crosscutting the vein for 12 feet in length and 3 feet wide along its intersection by the Porphyry dyke, as shown on plates Nos. 2 and 3. This vein is little more than scratched as it were by these cuts, and an average sample yielded au 0.25 oz. and ag. 5.55 oz. per ton. The gangue shows considerable copper, carbonate stain and copper pyrites.

This is proven also by two cuts along the vein shown on plate 2 as the Blue Tiger cut, where it outcrops in the lower schistose cliffs -- one is 10 feet long, open with 12 feet in tunnel, or under cover at the end; and the other cut is located about 20 feet up the vein, and is 6 feet long. These prove a vein about 12 inches wide on the outcrop, and with a porphyry dyke for one wall. I regard this as a favorable circumstance, and the vein likely to improve, both in size and quality, as depth is reached. With so small developments, however, this cannot be considered at present as a "pay vein".

There is also another vein called the Young's vein in the Excelsior claim, near the west end line, opened by a single

tunnel, 72 feet in length, on the line of ~~the~~ strike, of the vein, and appears to be a true fissure vein, about 3 to 4 feet wide between well defined walls of granulite. This is either a cross vein or else a spur of the Excelsior vein; but it is a matter for regret that the tunnel (Young's) has not been driven far enough to prove which. An additional length of 10 feet or ~~10~~ 12 feet would intersect the Excelsior vein, and, in all probability prove a mass of ore higher in grade than the average of the veins at the point of intersection. An average of the Young's vein gave the following assay: au 0.75, ag. 7.05 oz per ton; value \$21.58. This, as in all the other veins, as quartz gangue and apparently carries a larger percentage of copper than lead, thus approximating more closely to the Pennsylvania than to the Excelsior vein. This vein may be considered "pay" -- that is, would pay a profit on the gold in the ore if worked in a stamp mill in the vicinity.

The Bald Eagle and Young's Discovery cuts and tunnels were not visited, as I understood they were not located on veins showing any paying ore. Their location is fully shown on plate No. 2.

With regard to future developments, the requirement of the mine are so obvious as scarcely to require mention. Tunnel No. 1 should be driven forward so as to intersect the Excelsior vein as it pitches downward. I am inclined to think that none of the veins thus far intersected by it is the extension of the said vein, but unless any faulting occurs in the vein, tunnel No. 1 should intersect it within 30 to 40 feet additional length. Before doing this work, however, exploration should be made from winze No. 1 by means of levels and winzes at junction of the quartzites with the schist to ascertain whether the vein continues downward in the schist with the same dip width and continuity, as in the quartzite and limestone, which I am inclined to believe is the case, and have so represented on the cross-sections.

Tunnel No. 3 might be continued forward on the line of the vein to the northern boundary of the property, and stoping over head commenced whenever the body of the vein proven up justified it.

The inclined shaft should be drained at once, which can readily be done by buckets as the water seems only due to seepage from the surface, and continued downwards upon the footwall until permanent water level is reached. The stopes already open, which have been worked from this shaft, should be continued northeasterly and southwesterly along the foot-wall, occasionally crosscuts into the foot-wall being made (as in cut No. 4) to ascertain if any other body of ore exists to the southwestward.

Tunnel No. 2 should certainly be straightened, the old tunnel extending from the first porphyry dyke up to the inclined shaft opened up and made a portion of the regular working tunnel, being also extended eastward along the line of the foot-wall and driven forward in this manner to the northern boundary of the property. Crosscut No. 2, now closed, should be opened up and driven forward, deflecting the course at the same time more northerly so as to prove the limit of the Excelsior vein or hanging wall, also to intersect and prove the width and character of the Pennsylvania vein.

There is a tramway already built, but needing repairs, from the north of tunnel No. 1 to a small leaching mill belonging to the property (see place No. 2, N.) another should be built from the mouth of tunnel No. 2, and the tunnels fitted with iron track cars and other suitable equipment. The mill also needs complete plant suitable for leaching, and has already a good 30 horse power engine and 40 horse power boiler, a large crusher, rolls, etc.

The Golden Star placer has not heretofore been referred to in detail, because I was unable to obtain any results of working the same as a placer. It is true that the present

owners of the property have put in sluice-boxes and placer working facilities to some extent, but no proof of its value as a placer has been adduced although, from the fact that the gold veins outcropping on the adjacent mountain side are very numerous, I should expect the placer could be very profitably worked for gold contained therein from the decomposition of these veins, having an abundant supply of water in Buckskin Gulch with a good fall.

I regard the placer as chiefly valuable at present, for its abundant timber, such of it suitable for mining and building purposes, and as affording to the owners of the Excelsior property ample ground, of convenient and suitable topography, for the erection of all or any kind of reduction works needed for the treatment of the Excelsior ores, and all buildings, dwelling houses, etc., necessary or requisite in the operation of the same and of the mines.

As will be gathered from the foregoing remarks, the ore in Excelsior vein is nearly all of one character, and suitable for treatment either by leaching or amalgamation.

In its early history, the vein was worked for its gold only, and as the high grade gold decreased and the silver increased, the mine was temporarily abandoned, as no facilities then existed in the neighborhood for the treatment of silver ores, and the ore was then treated entirely in arrastras or stamp mills. The ores in the mine may be simply divided into two classes, viz:

FIRST:- Milling. Free gold in hard white, quartz gangue, also in iron pyrites (this latter not abundant in the mine as yet, though liable to increase in depth), silver in the form of sulphuret in hard and honeycombed quartz gangue.

SECOND:- Smelting. This ore is very small in quantity chiefly an argentiferous galena, and would be simply sorted out and saved as occasionally met with in stoping the mine for its milling ore.

For milling treatment, the ore is probably equally suited to a process of roasting and amalgamation or to one of roasting and leaching. The actual cost of working in each would be about the same, but the latter would probably save the largest percentage of silver and gold. As given by the proprietors of the Russell process, the cost would be an average of \$3 per ton in a 75-ton mill, or say \$2.50 in a 200-ton mill -- from 200 tons to 250 tons per diem, say 200 tons of milling ore.

I have carefully estimated the cost of roasting and amalgamation, which it is unnecessary to give in detail, and based them upon a general "breaking down" or "stoping" of the whole mass of ore in the vein from wall to wall, producing say 200 tons of milling ore per diem; the cost would amount to \$2.90 by this process of treatment.

To ascertain the value of the ore many samples were taken at various points in the Excelsior vein and of a hard quartz which forms the largest part of the low grade ore, no less than 40 samples were taken. The results were as follows:-

No.		Gold Oz. per ton	Silver	Value
1	West end of old stope 60 ft. east of section A.D.	1.6	1.4	\$33.30
2	Chamber at S. side tunnel #2 35 ft. E. of section A.A.	0.8	32.0	46.41
3	General average of hard white quartz- 40 samples	0.1	17.0	17.81
4	General average of iron-stained quartz	1.0	32.0	49.76
5	General average of upraise at E.E. Manganese ore	0.4	2.1	9.95
6	Main tunnel #2 between E.E. & breach	0.1	5.5	7.11
7	Main tunnel# 2 at the breast	0.1	15.0	15.95

8	Genl. Avg. of the honeycombed qtz.	0.5	188.5	185.30
	Total	3.6	294.2	\$345.59
	General average of the whole	0.45	36.8	43.20

General average of the first 7 lots, excluding No. 8, gold 0.44; silver 15 oz., value \$22.84.

In taking the above samples, all pockets of high grade ore were carefully passed over, and the averages, therefore, obtained above, discriminates somewhat against the property.

Assamples of the high grade ores in the mine the following list of assays made in May and June 1882:

No.	Gold oz. per ton	Silver	Value per ton
9	2.0	11.5	\$50.69
10	1.4	76.5	99.14
11	2.0	382.0	395.26
12	0.0	1139.0	1059.27
13	31.2	238.0	845.34

The mill runs ~~were~~ below were made several years ago; they are from a circular of the Pennsylvania Consolidated Mining and Milling Company and, I believe, may be relied upon as substantially correct.

Pounds	First Class		Coin value per ton
	Gold oz. per ton	Silver oz. Per ton	
4609	1.93	155	\$194.575
1249	2.5	148	216.50
534	1.60	363	440.37
428	1.60	123	170.375
1025	3.88	x 70	176.35
166	2.0	1367	1577.87

x Ten per cent copper.

Second class			
Pounds	Gold oz.	Silver oz.	Coin value
2389	2.30	35	85.375
2097	2.30	50	102.25
891	.93	50	74.85
2602	1.28	44	75.10
142	2.20	54	104.75
2574	1.53	60	98.10

The above was taken out in driving the levels no stoping having been done.

The following sample assays were obtained from this property, viz:

Sample	Gold oz. per ton	Silver per ton (oz.)	Lead %	Coin Value per ton
Sulphuret & Galena	.50	5819.5	63.8	\$5880.92
Yellow Oxide ore	2.4	131.5		195.94
Soft Carbonate	.95	167		206.875
Hard Carbonate	1.0	131.1		166.47
Fine Galena	4.94	1748.5		2066.065
Carbonate of iron and lead	.90	173.6		213.305

Rough sample of low grade ore, viz: 1.9 oz. gold, 13.1 oz. silver.

Another sample assayed 1.5 oz. gold and 25.5 oz. silver.

All the values in this report, except those above from the Pennsylvania Company's circular, are calculated on the basis of \$20 per ounce for gold and 93 cents per ounce silver.

Estimating the profit of working the mine upon the gross value per ton of the lowest average of samples, Nos. 1 to 7 viz: \$22.84, we have for	
Mining, sampling and laying in reduction works or mill	\$2.50
Loss of value in treatment 10% gross value of ore	2.28
Average cost of milling in 200 ton lots	2.50
	<u>\$7.28</u>

Making net profit per ton of average low grade ore \$15.56

Or net profit on average of the mine (samples 1 to 8) \$35.92

Taking the amount of ore in sight at 170,613 tons as given on page 4 of this report, and deducting about 10 per cent as likely to be lost in pillars, waste, etc., we have left, say 153,500 tons, which at \$15.56 per ton equals \$2,388,460 as amount of profit realized from the economic removal and treatment of the amount of ore now in sight alone, excluding it should be remembered, all the pockets of high grade ore. In this connection, also, it should be remarked that these estimates are based on the vein as shown in the cross section on Plate No. 5 by solid red color, whereas, the whole quartzite ledge in the vicinity of the Excelsior vein is impregnated with ore frequently of paying grade and quantity, and the adjacent Pennsylvania vein of good paying ore so far as can be determined from its outcrop and discovery cut, is still quite undeveloped. So it can be readily seen that the future resources of the property are immense even in the quartzite, and without reckoning the lower portion of the vein in the schist formation.

The only buildings in addition to the small mill mentioned, are the Excelsior shaft house, 41.5 x 115 feet; boarding house, 23 x 13 feet; and a large strong framing 36 x 34 feet, which can be covered in and used either as an additional boarding house or an ore house. There are remains of an old smithy near the mouth of tunnel No. 1 and some few remains of the tramway which formerly existed from the Excelsior shaft house to the foot of the slide.

A sum of \$300,000 spent in the erection of suitable reduction works, capable of treating 200 tons per diem, building the necessary tramways, ore bins, and ore houses, railways in the mine, etc., will be necessary in order to secure the profits shown in the foregoing estimates.

Of course the larger the amount of the ore treated, the larger will be the profits realized per ton of ore.

I regard this property as one of very great value and likely to yield under judicious management large and very satisfactory returns for many years. The Excelsior is one of the largest true fissure veins I have ever seen, and very promising for developments in depth. At present this property is suffering from the same causes as affect so many others in the neighborhood, and in fact in many other mining regions, viz: want of necessary and suitable facilities for the reduction of the ores in the neighborhood and want of capital on the part of the owners to erect and operate the same on their own ground. There is no mill now erected in the State of Colorado, so far as I am aware suitable for treating the ore of this mine most economically.

Yours very truly,
(Signed) Chas. J. Moore

The above report in substance was written upon previous visit, I have recently revisited the mine; revised the report to date; also made new drawings to accompany the same; and hereby take occasion again to endorse heartily all that is within contained.

(Signed) Charles J. Moore
Member Am. Inst. Mining Engineers, etc.

Leadville, Colo., June 16, 1892.

Mr. F. W. Buschman,
Phillips Mine, Park Co.

Dear Sir:

Enclosed please find your map which I found among my papers. Your letters of the 12th and 14th inst. duly to hand. I have averaged from the results of assays as follows:

Total number of samples	49
Of these 22 were pay ore averaging	\$47.39
Excluding the six highest samples which avg.	120.64
We have left 16 samples which average	19.91

This I think is a good and a fair showing for the mine, considering that in all the 25 samples which did not run pay, there are 3 or 4 which may be brought up to "pay" by screening and concentrating and of the other non-paying samples, nearly all were known to be either very low grade or barren before assaying.

Comparing No. 7 with No. 33 shows how suddenly a non-paying streak

may change to fairly good pay ore and with other examples indicates that great variability of the mine in grade generally.

I agree with your views that if some of these streaks will hold out or come and go at short intervals, you can get some good ore. I don't understand No. 12 and have estimated it from the list of samples; if it and the repeat are right, then some high grade ore unknown to us must have got into No. 13 and 14.

The assays also indicate that the size of screen we used in the mine, viz: 3/8 openings was about right; compare No. 37 and 41, Nos. 38 and 42; In comparing 39 and 33, we see that the ore which was stoped from the east end of the big stope by former operators (Cleary, etc.) must have been the same as our No. 33. The secret of working that mine to pay is chiefly in judicious screening and I am sure that if you keep this continually in mind as well as the great probability in high grade floating values in your concentrating operations, you will have good success.

I remain, (Signed) Chas. J. Moore

P. S. You will observe on page 8 that the silver was calculated on a basis of 93¢ per oz, which gave as a net profit \$2,388,460 in sight; while if estimated on the basis of \$1.14 per oz. (which is about the present price of silver) it gives \$3,022,865 as amount of profit realized from ore now in sight alone.

B. F. Randall.

St. Louis, Mo., Nov. 19, 1895.

Mr. Moritz Lippman,
New York, N. Y.

Dear Sir:-

In submitting Mr. Chas. J. Moore's report to you I will say that his written report was made several years ago and on account of its going into details of the formation so much and the high standing of Mr. Moore as an engineer is the only reason I use. Mr. Moore has been to the mine some two or three times to confirm his report and each time comes back impressed that his report is not extravagant. I however feel that the values of the mass of ore should not be taken as running over \$8 to \$10 per ton as that is certainly high enough for any one, besides, this, I will state that Mr. Moore's report is based on about half the ore in sight that we now have, as we have been developing for past two years, so that we now have about twice as much ground opened up as he bases this report on; in his last estimate for treating the ore, I consider he is wrong as since his report has been written, new methods have come into prominence, such as matting ore, that I wrote you about, which can be done at less per ton and at a more nominal expense for plant.

As regards my taking an interest, would say, I would at \$250,000 take \$50,000 in stock of a new company formed in lieu of that much cash, providing the \$200,000 were paid in cash.

I will await your further answer and will say if I can be of any service to you, might come to New York at your request, as one can often answer many questions verbally in matters of this kind that may be put by parties expecting to become interested.

I should be pleased to have you return these papers, promptly if nothing is done in this matter, as the map I send herewith is the only one I have, consequently do not wish to lose it if no negotiations are entered into.

Yours respectfully,
(Copy was not signed)