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I N S P I R A T I O N

Don H. Clair  
Dyer, Nevada

Report  
on

BULLION CONSOLIDATED MINES  
SYLVANIA MINING DISTRICT  
Esmeralda County, Nevada

September 1925

By

LYTTLETON PRICE, E.M.

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## LOCATION:

The property is located in the Sylvania Mining District, Esmeralda County, Nevada, in the Palmette Mountain Range. It is about two miles over the California-Nevada Boundary Line. Goldfield is 46 miles to the Northeast; Stonewall, a station on the Tonopah and Tidewater Railway, is the nearest shipping point and is 35 miles to the northeast on the highway to Goldfield. Big Pine, California is 50 miles westerly.

## DESCRIPTION:

The mineral property is composed of seven unpatented Lode Claims, each 600 feet wide by 1500 long, named Bullion No. 1, Bullion No. 2, 3, 4, 5, 6, and Bullion No. 7. The claims are contiguous covering a width of 600 feet and a total length of 10,500 feet. There are several millsites included in the property.

The claims are located on the southwesterly slope of the mountains in a northwesterly-southeasterly direction, covering about two miles along the strike of the Lode or Mineral Bearing Formation.

Lime Beds, which were once horizontal, have been intruded by Alaskite, an eruptive rock having much the same composition as Granite, and tilted to a position striking generally northwesterly - southeasterly, dipping generally  $65^{\circ}$  northeasterly. On the upper side of the lime beds there is a massive occurrence of Andesite Porphyry.

The Lime varies in thickness from 250 to 600 feet.

A section at right angle to the strike of the Lode, looking northeasterly, would show:-

First:- A thickness of several thousand feet of Alaskite.

Second:- An Alaskite-Lime Contact, dipping generally  $65^{\circ}$  northeasterly.

Third:- 250 to 600 feet of Lime Beds.

Fourth:- A Lime-Andesite Contact, dipping also northeasterly; and

Fifth:- Massive Andesite-Porphyry.

The ore is Lead-Silver-Zinc; composed primarily of the sulphides of these metals. The surface ores and ores from the shallow workings are almost completely oxidized resulting in the carbonates, sulphates and silicates with some silver chloride.

The mineralization extends, at intervals, throughout the entire length of the property. The ore occurs in shoots varying in length from 50 to 150 feet and in width from 2 to 25 feet. The vertical dimension of the ore shoots is undoubtedly great although 200 feet is the greatest depth yet attained on any shoot; at this point the shoot is holding its regularity in dimensions and the ore improving in grade.

The ore occurs in places at the Alaskite-Lime Contact; in other instances entirely in the Lime, parallel to the contact from 20 to 30 feet away and in other cases at or next the Lime-Porphyry Contact, although the last mentioned occurrences were not studied.

The grade of the ore varies from first class shipping ore up to 60% lead, 60 ozs. silver - to mill ore 10% lead, 10 ozs. silver. The ore does not occur sporadically in the Lime, but in well defined shoots, as replacement, sometimes along the Lime Bedding, sometimes transversely in fractures. The entire length and width of the Lime Beds within this property may be considered a huge Lode.

The surface indications of the ore shoots are sometimes very meagre but seem to be quite positive. They are sometimes rarely more than a stain but generally quickly develop into ore within a few feet below the surface.

The side hill slopes are smooth but not gentle, assuming angles of 30° in places.

The altitude varies between 7200 feet at lowest point to 7800 feet at highest point.

#### HISTORY:

This property was discovered and worked by the Spaniards as early as 1860. In the seventies it attracted the attention of the Lead-Silver miners and a period of exploration and ore extraction followed. The higher grade ores were sorted and shipped but the great cost of transportation and smelter charges and the low metal prices practically prohibited a profit. The second class, or milling ore, was left unbroken or on the dumps.

There is evidence of an attempt at smelting in a very crude way. A considerable production must have been made but there is no record of it.

The result of this campaign was the thorough prospecting of the entire surface area of this property. Many ore shoots have been discovered but no one of them had been developed for a depth greater than 100 feet.

In 1904 the property was purchased by Mr. W. D. Clair. A spasmodic operation was carried on; no continuity of operation or purpose is in evidence. However, during Mr. Clair's ownership, a large amount of surface improvements were made and a certain but limited amount of good mining was done.

A production of \$183,000.00 was made. This production consisted of first class ore sorted for shipment and some small amount of concentrates produced in a small mill now on the ground operated principally to determine the treatment for the ores.

Under the Clair administration, a point on one of the ore shoots at the lowest elevation on the property at the northwest end, was selected to perform some work which would, if carried to completion, demonstrate the size and permanence of ore bodies at depth and also show any change in character of the ore. A shaft was sunk 200 feet on inclination of the vein, 62°, and proved the continuity of the ore shoot on which it was sunk from surface. At bottom of shaft the ore is 9 feet wide with the sulphide minerals predominating. Water was encountered at a depth of 100 feet so that shaft should soon pass through the oxidized zone.

From this shaft a drift, at the 100 feet level, was driven southeasterly to encounter a second ore shoot showing on surface. This shoot was cut in proper position and showed a width of 20 feet in grade ore. The ore shoot is very strong and shows a considerable proportion of shipping ore or first class ore at the bottom; it is, at the bottom, just passing through the oxidized zone and into the primary sulphite zone.

#### EQUIPMENT:

Water for domestic purposes is ample and piped to the houses.

No. 1 workings is completely equipped with steam plant, pumps, hoist, compressor, air drills, steel, blacksmith shop, self dumping skip, ore bin, track and cars; sufficient for operating to a depth of 500 or 600 feet. 250 cords of wood on hand.

No. 5 workings equipped except for hoist, compressor and drills. 30 tons concentrating mill is on one of the millsites. It can be operated now but should be overhauled, redesigned and capacity increased.

## METALLURGY:

The ores from the 200 level of No. 1 shaft and below are principally sulphides, the oxidized zone having been practically passed. The milling of these ores is comparatively simple, consisting of gravity concentration and flotation of the natural fines and slimes. Jigs and tables should be employed and in addition, flotation equipment should be installed.

The upper oxidized or semi-oxidized ores can be treated in much the same way except the use of jigs is hardly necessary and there will be the necessity of sulphidizing the lead carbonates before flotation.

Flotation tests have been made on the oxidized ores which have given the following general results:

Heads: - Lead 10.1%; Silver 6. ozs.; Zinc 12.4%  
Concentrates: - Lead 58.4%; Zinc 4.4%; Silver 35. ozs.  
Middlings: - Lead 9%, Zinc 11.5%; Silver 3.6 ozs.  
Tails: - Lead 3%; Zinc 14.1%; Silver 2.3 ozs.  
Concentrates amounted to 10.9% of the whole  
Middlings " " 12.3% " "

This test shows an extraction in the "Concentrates" alone of 62.7% of the lead and 63.6% of the Silver. The "Middlings" contain 10.9% of the lead and 7.4% of silver and would of course be retreated. A combined extraction of 73.6% of the lead and 17% of the silver. This result was obtained by sulphidizing before flotation. No gravity concentration was done either before or after flotation. The result of flotation however is under the circumstances very satisfactory.

The milling operation should consist of:-

First: - Gravity concentration on jigs and tables.

Second: - Sulphidizing and flotation of table tails, and reground jig middlings.

Third: - Table concentration of flotation tails.

This should accomplish an 85% extraction on the oxidized ores and a 95% extraction on the straight sulphide ores. No account was taken of the zinc and no attempt made to effect a saving. It is, however, an important component of these ores and can be made to yield a profit as a by-product of the operation.

## GRADE OF ORE AND ASSAYS:

A certain portion of the ore as extracted will be first class and will be shipped direct to smelter without treatment in the mill. The balance of the ore will be of a milling grade or second-class and will require concentration; the concentrate will be shipped to smelters. Both classes of ore will be mined together and the first class sorted from the second class at head of mill.

What proportion the first class grade will bear to the second class is impossible to say and it is therefore difficult to arrive at a general average value of the ore reserve in the mine today.

It must be remembered that nearly the entire production, referred to before, has been from shipments of first class ore, only second class or milling ore was left in the mine and on the dumps.

The average value of all my samples taken both underground and on surface over width varying from 2 feet to 10 feet is Lead 10%, Silver 10 ozs.; Zinc 8%. At the present metal market and not considering the Zinc contents, this ore is worth on basis of smelter's liquidation today, \$21.40 per ton. Zinc in future consideration will substantially increase this value; but for a basis of valuation it is perfectly safe to consider the average grade of the ores in numbers 1 and 5 workings at \$20.00 per ton.

During the Clair administration 3825 tons of ore were shipped to smelters. This ore averaged: Lead 23%; Silver 23 ozs. (computed from smelter liquidation sheets) or \$49.00 per ton.

Following list of samples and assays made during an examination in 1910 by Mr. R. J. Anderson, E. M., for purpose of placing a valuation on the property. They show values as of that date. Value of samples computed at market price of the metal today: - Lead \$9.50 per 100 lbs.; Silver at 70cents per oz. Smelter deductions taken into consideration. At time of this examination market price of Lead was \$4.60 per 100 lbs. and of Silver 50 cents per oz.

SAMPLE DESCRIPTION:

	<u>Lead %</u>	<u>Silver ozs.</u>	<u>Value</u>	<u>1959 Value</u>
#A-3 Bullion No. 1 Drift at 40 feet level. Width 5 feet.	24.7	36.1	59.56	106.59
#A-4 - Across shaft half way down	0.9	2.5	2.95	4.94
A-5 - Croppings on hill south east of shaft	6.1	22.7	23.87	38.70
A-1 - "Low Grade" on dump below shafts	6.0	8.8	14.49	38.40
A-2 - "High Grade" on dump at shaft	25.6	28.8	56.01	102.70
B-1 - Bullion No. 2 "High Grade" from dump at No. 2 shaft	67.1	76.5	147.49	270.30
B-2 - Gen. Av. of dump No. 2 shaft	20.0	29.5	48.41	86.50
B-3 - Small drift down shaft width 4 feet	28.0	20.0	53.64	101.00
B-4 - Sides of shaft stope was 10 feet wide	11.1	14.5	25.62	46.40
B-5 - Gen. sample of East dump	32.9	27.6	65.71	123.60
B-6 - "Low Grade" of East Dump	12.6	29.2	37.57	64.10
B-7 - Stope at bottom of main shaft	19.6	25.6	45.24	82.20
B-8 - Bottom of old shaft	2.1	4.1	5.74	10.01
B-9 - Bottom shaft at beginning of Clair shoot	34.1	35.1	72.44	133.90
B-10 - Side of upper shoot	4.3	7.1	11.01	19.30
B-11 - Upper big cut	3.6	7.1	9.89	17.20
C-1 - Bullion No. 3 "New Find"	40.0	39.1	83.60	155.40
C-2 - Sample from dump	29.1	29.6	61.58	113.90
D-1 - Bullion No. 4 "Low Grade" from dump	17.6	19.5	38.30	70.30

	<u>Lead %</u>	<u>Silver ozs.</u>	<u>Value</u>	1959 <u>Value</u>
D-2-"Medium" sample from dump	29.0	72.9	90.23	152.70
D-3-"High" Grade from dump	35.1	52.2	85.25	152.30
No. 1-Bullion No. 5 Face of tunnel	24.1	13.3		84.20
No. 2-Face of bank opposite No. 5 shaft	5.6	8.8		24.70
No. 4-Gen. samp. of dump No. 5 shaft about 1250 tons	17.2	31.2	48.04	80.50
No. 1-Samp. from dump	48.6	32.1	91.32	174.60
No. 2-"Rhodes" cut out crop hill N.E. of No. 5 shaft	33.6	15.3	58.45	114.57
No. 3-Dump over face of tunnel No. 7	31.1	10.2	51.56	102.50
E-4-Dump at cut above No. 7 tunnel	11.1	19.5	28.94	50.90
E-5-Vein at 70 foot level No. 5 shaft Width 3 feet	21.5	22.1	45.65	84.20
E-6-At 70 foot level No. 5 Shaft	16.1	10.4	30.09	57.67
E-7-At 70 foot level No. 5 shaft "Vein 20 feet wide"	43.0	31.1	74.01	156.90
F-1-Bullion No. 6 Extreme east dump top of hill	36.1	19.2	64.74	125.60
F-2-Second dump on east end "Jasper"	46.2	66.5	110.74	198.50
F-3-Second dump east "Carbonates"	10.9	43.0	44.20	71.60
F-4-"High Grade" west dump	42.7	62.4	102.97	184.10
F-5-"Large Blue Samp." Top of dump in- cluding Jasper	36.0	21.9	66.39	127.70
G-1-Bullion No. 7 "Low Grade" dump at top of shaft	24.0	12.2	42.67	83.00
G-2-"High Grade" dump at shaft	43.5	26.8	80.46	127.70
G-3-Gen. Samp. dump at tunnel	14.8	16.2	32.08	59.00
"Heads" for concentration test composed of pulp of all samples taken	23.0	26.5		92.80
Concentrates	70.0	119.6	180.33	317.50
Ratio of concentration 5.5 into 1				

From next to last sample, marked "Heads" for concentration test - note is average of pulps of "all samples taken." This average is more than double the average value of ore I have discussed in this report.

Also note sample No. 4 - "General Sample of dump at shaft on Bullion No. 5 Claim," "about 1250 tons," Lead 17.2%; Silver 31.2 ozs. This was the total ore extracted from the shoot at this shaft, less the amount of first class ore which had been sorted and shipped. My sample of the remnant of this dump, which has since been hauled to mill, mixed with a large proportion of waste material assayed 10% Lead: 11 ozs. Silver.

Following analysis has been made to show general characteristics of the ore.

<u>AU.</u>	<u>AG</u>	<u>PB</u>	<u>ZN</u>	<u>FE</u>	<u>INSOL</u>	<u>CAO</u>	<u>S</u>
.02 ozs.	15.8 ozs.	14.2%	3.1%	5.0%	10.8%	19.8%	5.5%

This sample is of a semi-oxidized ore.

#### ORE RESERVE:

Prospecting work has proved the existence of many ore shoots on this property. Only the ones on Bullion No. 1 and Bullion No. 5 Claims have been considered in this report.

Development work has not been done in such a way as to permit the measurement of four sides of the ore shoots. Exposures of ore in a sufficient number of places have been made to justify certain tonnage calculations, providing safe factors are used.

Reference to the maps of the workings at No. 1 and No. 5 hereto attached, will give sufficient description to identify the following "Blocks."

Block "A" at No. 1 workings between levels 100 and 200 at shaft. Depth 100 feet; length 50 ft.; width 5 ft. Of this ore, 10 cubic feet per ton.

$$\frac{100 \times 50 \times 5}{10} = 2500 \text{ tons}$$

Say 1/2 is ore - - - - - 1250 tons

Block "B" - between surface and Level 100.  
Depth 250 ft.; length 60 ft.; width 5 ft.  
Width at surface is 10 ft.; at 100 level is 20 ft.

$$\frac{250 \times 60 \times 5}{10} = \text{---} 7500 \text{ tons}$$

#### Miscellaneous Ores;-

- (a) Shoot "A" between levels 55 and 100;
- (b) Between Level 55 and surface, especially near shaft;
- (c) In "Hanging Wall" vein Northwest of shaft

"b" - - - - -  $\frac{1000}{9750}$  tons

#### TOTAL NO. 1 WORKINGS

Block "A" at No. 5 Workings at shaft.  
Depth 120 ft.; length 30 ft.; width 5 ft. My measured widths are 8 to 15 ft.

$$\frac{120 \times 30 \times 5}{10} = \text{---} 1800 \text{ tons}$$

Block "B" between Tunnel level and surface. Depth 100 ft.  
length 50 ft.; width 3 ft.

$$\frac{100 \times 50 \times 3}{10} = \frac{1500}{3300} \text{ tons}$$

Grand Total Workings No. 1 and 5 - - - - - 13,050 tons

#### WORKING COSTS:

Altho some of the ore is fairly hard, the greater part is very soft and easily and cheaply mined. The vein widths are large; 10 and 20 feet widths are not uncommon.

Mine development is uncommonly cheap on account of the softness of the ground. Shaft sinking can be done for \$25.00 per foot and much cross-cutting and drifting has been done by contract at \$4.00 per foot, therefore, the cost of exploration and development will be unusually low.

This ore can be mined and milled for \$6.00 per ton which figure includes cost of development.

The ratio of concentration on the ore average grade will be about six into one. The hauling and freight to smelter is \$12.00 per ton of concentrates which figures \$2.00 per ton of crude ore - which makes a total working and marketing charge of \$8.00 per ton of crude ore.

#### DISCUSSION:

By selective mining, a less tonnage of greater unit value will be produced than by mining enmasse and perhaps a greater profit realized; only experience can determine the more profitable method that should be employed.

Ore extraction by stoping is simple. The ore when once learned is easily followed. The ground, altho generally very soft, stands well with almost no timbering. There are "swells" of ore 20 and 25 feet wide in places, such stopes will either have to be well timbered or the "skrinkage" stoping method employed.

Through the leasing system, which was the practice during the early operation of the property, and the company's operations, a great many ore shoots were found by surfaces workings. Only the ore shoots on claims numbers 1 and 5 have been considered in this report. There is an opportunity to develop ore at many of these places and in time they should all be considered. They will be productive. Number 1 and 5 only were considered because they are the only workings having any equipment.

Reference to assays of samples of Mr. Anderson will show grade of ore encountered on every claim.

#### GENERAL DATA:

Good water for domestic purposes is already developed and is sufficient. Water for milling purposes will come from the mine workings and is sufficient for present requirements.

There is an abundance of timber for mine use and fuel for power. Wood costs \$6.50 per cord in the wood yard.

Hydro-electric high tension power line is within 11 miles of the property. This line supplies Goldfield and Tonopah.

Winters are open but with some snow. Operations comfortable throughout entire year.

Excellent road from mine to railroad. The haul except for one mile at the mine end is practically all down grade, the drop in altitude being about 2700 feet in 35 miles.

There is no local labor. It will have to be brought in; this is perfectly feasible.



SUMMARY & CONCLUSION:

(a) Taken as a whole, this property, at the price asked and the funds required to put it on production will form the basis of an absolutely sound, safe, profitable, mining project.

(b) Ore available at Workings Nos. 1 and 5 is - 13,000 ton	
Value per ton at Smelter	\$20.00
Mill losses 15% per ton	\$3.00
Working cost per ton	6.00
Transportation & Marketing cost per ton	<u>2.00</u>
Total charges per ton	<u>11.00</u>
Profit per ton	<u>\$ 9.00</u>

13,000 tons x \$9.00 = \$117,000 operating profits

(c) There is an operating profit of at least \$100,000 in the ore in workings numbers 1 and 5 alone; this ore is above the present bottom and no credit is given in this calculation for any ore extending downward in these shoots.

(d) All the work shows strengthening of the ore shoots downward.

(e) The mineralized area in this property is 2 miles long. There are many known ore shoots other than the ones under consideration at workings No. 1 and No. 5.

(f) There are several mines in this one property. The potential value of the property is enormous. There is every reason to expect great tonnage with depth.

MY CONCLUSION is without hesitation, that this project be undertaken and this conclusion has been reached after a careful study of the entire situation and a physical examination at the mine, occupying three weeks.

(signed) LITTLETON PRICE, E.M.