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IRA B. JORALEMON

(C O P Y)

Report On

ARIZONA COMSTOCK CORP.

Virginia City, Nevada.

By Ira B. Joralemon

April 28, 1934

Table of Contents and Conclusion

CONCLUSION: The Arizona Comstock Corp. owns or has under option 2571 feet along the central portion of the Comstock Lode, in Virginia City, Nevada. This area produced more than $50,000,000 from rich silver ore between 1863 and 1875. Since then production from leaner ore has been comparatively small. The old workings have caved, and only a few thousand feet of workings on upper levels have recently been reopened.

Rather uncertain evidence indicates that there may be 1,400,000 tons of $7.90 ore remaining above the 732 foot level. About 65% of the values are in gold and the rest in silver. After $100,000 in new money has been spent in development and in completing an increase in flotation mill capacity to 350 tons per day and a plant for cyaniding tailings, the total cost should be $4.70 per ton of ore and the paid-for recovery $6.70 per ton of ore. The possible profit is therefore $240,000 per year for 11 or 12 years.

Ira B. Joralemon.

$7.90 x 35% = $2.76 in silver at 64½¢/oz

$7.90 x 70% = $5.53 in silver at $1.29/oz.

ARIZONA COMSTOCK CORPORATION

Virginia City, Nevada

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April 28, 1934

Property and Location:

The Arizona Comstock Corporation owns the Hale and Norcross mine, and has under option the adjoining Savage mine on the north and Chollar-Potosi on the south. The three mines together take in 2571 feet in a compact group along the central portion of the Comstock Lode, including the southern part of the old town of Virginia City, Nevada. The claims are wide enough to give all necessary room for short crosscut tunnels, mill sites, etc. The unpaid balance on option amounts to about $260,000, due in yearly payments through 1937. After purchase is complete, small royalty payments must be made to the Sutro Tunnel Co., the underlying owners, - in return for the use of the tunnel for drainage and ventilation.

Virginia City is located in west-central Nevada, 21 miles by good highway southeast of Reno. A broad gauge branch railway runs to within a few hundred feet of the mines. Timber is delivered from mills in the nearby Sierra Nevada Mountains for $17.00 per thousand, and abundant electric power costs from 2 cents per kilowatt hour down, depending on the amount used. An ample supply of good water is piped in from the Sierra Nevadas. Although the mines are at 6500 feet altitude, high up on the semi-desert slope of Mount Davidson, operating conditions are excellent.

HISTORY:

The Comstock Lode has been the greatest silver district in the United States. It has produced nearly a billion dollars worth of precious metals. The most productive period was from 1862 to 1875. Then the discovery of rich "bonanzas" below the 1500 level lead to a campaign of deep development. By vertical shafts in the hanging wall, the mines were opened to a depth of 3500 feet. A great flow of water made the work expensive. The Sutro Tunnel was driven 8 miles to drain the mines to the 1700 level, after a state law was passed giving the tunnel company a royalty of $2.00 per ton of ore mined above the tunnel level. This royalty has been repeatedly reduced, and is now a very small royalty on a sliding scale. Costs were excessive in the early days due to heavy ground, a large flow of water and difficult metallurgy. Ore carrying less than $15.00 to $20.00 per ton yielded no profit. The mines were run at a loss for many years in the hope of finding new bonanzas. Late in the eighties an enormous flow of hot water on the 27th level of the Exchequer Mine drowned out all the mines up to the Sutro Tunnel level. For 30 years thereafter the Comstock was dead save for leasing operations on upper levels. Virginia City fell into ruins.

Since 1919 there have been two ambitious attempts to reopen the Comstock. The Metals Exploration Company, controlled by Harry Payne Whitney, spent $4,500,000 on a 2500 ton mill and in an extensive program of mining old stope fillings and adjoining lean ground by caving. There was so much dilution by barren wall rock that the attempt was a complete failure. The Consolidated Goldfields of South Africa, through the Comstock Merger Mines, Inc., optioned another large section of the Lode and later bought the Metals Exploration Mill and property for a small fraction of the cost. The Comstock Merger ran tens of thousands of feet of drifts and crosscuts on upper levels, and made detailed assay maps that are still the only reliable records of most of the Lode. They mined more than 1,000,000 tons of ore

from upper levels, largely top slicing, and produced nearly $5,000,000. Heavy ground, dilution by wall rock, and the failing price of silver caused this well planned attempt to fail. The options were abandoned, and most of the underground workings caved.

The Comstock Merger group included the three mines now owned or optioned by the Arizona Comstock. These three mines are said to have produced over $50,000,000 from 1,479,000 tons of ore between 1860 and 1875. There was a much smaller decreasing production from 1875 to 1895. By the end of this period the grade of ore had fallen below $17.00 per ton, and the mines were losing money. Milling by the pan-amalgamation process cost the sum of $7.00 per ton, and the recovery was less than 70%. The mines were then shut down until the Comstock Merger took them over. This company carried on extensive top slicing in the upper levels of Chollar-Potosi and Hale and Norcross mines. No record of tonnage or yield is available. Mining continued until the Comstock Merger abandoned all its operations.

About three years ago Mr. Howard W. Squires took options on the three mines of the central group. The options were later turned over to the Arizona Comstock Corporation, which has completed the purchase of the Hale and Norcross. The new company has reopened several thousand feet of old half-caved workings on the 580, 365 and 300 foot levels. No development work has been done in new ground, save for driving headings along side of badly caved old ones. The company also repaired and converted to flotation a 100 ton mill, which has been operated continually since August, 1933. Enlargement of the mill to 300 tons daily capacity is nearly complete, and a 300 ton cyanide plant, bought at Rochester, Nevada for $5,000, is being moved to Virginia City for treatment of flotation tails.

Even without cyanide, the 100 ton mill is making a small operating profit. Additional capital of about $100,000 is urgently needed to complete payment for the new mill unit and cyanide plant; open up a larger area underground in order to allow safe and economical mining; and to furnish necessary working capital.

Geology and Vein System:

The Comstock Lode is a great fault zone that is mineralized at intervals for 8 miles from north to south. The average dip is 40 degrees east, although many strands are vertical or even west-dipping on upper levels. The main east-dipping footwall strand is a contact between quartz-diorite on the west and altered andesite lava on the east. Dikes or Diorite occur all through the zone. Below the 1500 level the zone is fairly compact, and 50 to 75 feet wide. Above the 1500 level, many strands with steeper dip branch off in the hanging wall, diverging toward the surface until the width of the zone at the outcrop is 600 feet or more.

In this fault zone there is mineralization on an enormous scale with quartz and kaolin. Often two or three bands of nearly solid quartz 20 to 100 feet wide are separated by altered andesite. With the quartz there is a little pyrite and very irregularly distributed silver sulphide and free gold. Oxidation is complete for 500 to 100 feet below the surface, and partial for several hundred feet deeper. The average ratio has been 20 to 40 ounces silver per ounce gold, though there are wide variations. The greater part of the quartz is lean, carrying less than $3.00 per ton in gold and silver.

Large bodies of quartz carry higher gold and silver values. Sampling of the upper levels by the Comstock Merger proved that strands as much as 100 feet long and from 5 to 50 feet wide average from 0.1 to 0.25 ounces gold,

and from 1.5 to 6 ounces silver per ton. Part of this low grade ore has never been broken, and part of it is in filling of very old stopes, often due to caving of lean material in the walls. In many places there are several parallel strands of this sort, separated by almost barren quartz or porphyry.

Still smaller areas within the quarts were much richer. The great "bonanzas" that made the Comstock famous were irregular lenses several hundred feet long, and 5 to 50 feet wide, extending 500 to 1000 feet down the dip, of ore that assayed from $25.00 to several hundred dollars per ton. In the sixties and seventies the average yearly grade from the best mines was $40.00 per ton or more. On the edges of the bonanzas the grade decreased to $10 or $20 per ton. This leanor material was mined in the eighties and nineties, when the mines were being kept alive by assessments.

There is a very heavy fault gouge on one or both walls of the principal quartz strands. The hanging wall gouge is often several feet thick. It swells after exposure to the air. For this reason it is almost impossible to keep stopes or drifts open for any great length of time. After every shut down a large proportion of the workings cave.

In the Arizona Comstock area the Lode on upper levels is up to 500 feet wide. The extreme east or hanging wall strand, or Lynch Vein, has been re-opened in recent years only in 505 South Crosscut on the 237 foot level. Irregular orebodies in the southeast end of the 237 foot level may also be part of this strand. It is said to have been extensively stoped many years ago. The main strand, below the heavy gouge, runs the length of the property in the form of a flattened S. In the Chollar-Potosi, at the south end, it strikes north and south; then bends sharply to the northeast for 300 feet; and in the Hale and Norcross and Savage Mines strikes first a little east of north, then west of north. The dip of this main strand was nearly vertical for about 400 feet below the outcrop, and then turned gradually to the east, flattening to 40 degrees on deeper levels. The footwall strand has the uniform east dip throughout. It was apparently lean, and little work was done on it either in the early days or more recently.

Three of the great bonanzas were mined in what is now Arizona Comstock ground. All of them were in the main strand of the Lode. The Chollar-Potosi Bonanza extended from 150 to 800 feet south of the present Hale and Norcross Adit and the Transfer Shaft, and 600 feet down the steep dip below the surface. Geological Survey reports published in the eighties show that the width of ore reached a maximum of 170 feet on the 218 foot level. Mining of this bonanza, together with the later top slicing, caused the surface to subside 50 to 100 feet, forming the large pit or "glory hole" outlined on the map. The central or Hale and Norcross Bonanza extended 100 feet south and 400 feet north of the Transfer Shaft. It started on the 500 level and continued to the 1000. There were usually two branches, each 10 to 20 feet thick, separated by 20 to 30 feet of lean quartz. The dip of this orebody was 30 to 60 degrees east. The third or Savage Bonanza started near the surface 1200 to 1600 feet north of the Transfer Shaft, in the adjoining Gould and Curry property. For 500 feet it continues straight down the dip. Then it pitched flatly to the south, into the Savage Mine. The portion in Savage ground was about 250 feet long, starting 500 feet down the easterly dip from the outcrop and phying out at 900 feet depth. From 200 to 300 feet of leaner vein separated the Hale and Norcross from the Savage Bonanza.

In addition to the Bonanzas, the main strand of the Lode was apparently mined for almost the whole length of the Arizona Comstock group. Incomplete old records show that the only large blank space was the area above the Hale and Norcross and Savage Bonanzas, extending 800 feet south of the present Transfer Shaft and from the present 500 level to the surface.

The grade of ore in the leaner stopes was probably from $10.00 to $25.00 per ton. The remaining still leaner ore will be discussed later on in this report.

Development and Orebodies:

The workings prior to the Comstock Merger period have so thoroughly caved that they have no value, save for two or three connections with the Sutro Tunnel for drainage and ventilation that still serve their purpose. Old records are so scanty that it is impossible to say whether or not deeper levels will ever be worth reopening.

The Comstock Merger drove or reopened the following main levels, -levels being named from the vertical interval below the highest point on the outcrop, 50 to 100 feet above the general outcrop:

Level	Length of Vein Developed
237 ft. level	1400 feet (out of 2550 ft. total length of prop.)
365 ft. level	1100 feet
465 ft. level	775 feet
580 ft. level	925 feet
732 ft. level	800 feet
832 ft. level	800 feet

There were also sub-levels in the old Potosi Bonanza area south of the Transfer Shaft at depths of 300 and 426 feet. The mine is entered through the Hale and Norcross Adit on the 237 foot level, and by the vertical Transfer Shaft from that adit. The 300, 426 and 465 foot levels were run from winzes or raises, while the other levels are connected with the shaft. The main levels, except for the 465, are shown on the accompanying map. As this was made up by the undersigned from many separate 20 scale Comstock Merger assay maps, it may not be accurate.

A description of the levels and of the ore shown on the assay maps or by recent work follows. The average values were computed by the writer from the thousands of assays at 5 foot intervals on the Comstock Merger maps.

237 Foot level:

This level is all inaccessible save from the main adit to the Transfer Shaft. The maps show that the Comstock Merger drifted or reopened old workings from a point 150 feet from the south end line to the north end line. The main drift was in the footwall. Frequent crosscuts blocked out the ore for the entire length save for the 850 feet north of the Transfer Shaft. In this distance there was only one cross-cut, which was not sampled and may not have been reopened. As the tunnel itself was not sampled, there is a distance of 1050 feet in which there is no record of values. At both ends of this interval there is good ore in one or both branches of the Main Strand.

From the south end of this level north, the following orebodies are indicated by the assay map:

1. Between 1220 and 1555 South Crosscuts (crosscuts being numbered according to the distance from the Transfer Shaft) there were two irregular lenses in the east or hanging wall strand. The combined horizontal area of the two lenses was 12,000 square feet, and the average grade 0.24 ounces gold and 4/0 ounces silver, or $11.00 per ton. (In this as in all values given in this report, gold is figured at $35. per ounce and silver at 64.5 cents per ounce.)

These southeast orebodies were mined for 50 feet below the level, and were being underhand stoped 20 feet below the levels when they caved. They have not been developed on deeper levels.

2. The ore in the main lode on the 237 level was developed from 205 to 1400 South Crosscuts. There are usually two strands, separated by 20 to 50 feet of lean material. The ore indicated in this area covered 17,000 square feet with an average grade of $8.10 per ton. This ore was partly in place and partly filling of the old Potosi Bonanza stopes. From 250 South to 650 South this ore was top sliced by the Comstock Merger for 40 feet below the 237 level to 20 feet above the level. From 650 to 1100 south it was top sliced from the 237 level up to within 40 feet of the bottom of the old cave-pit or glory hole resulting from earlier operations. Little ore remains save for thin band below the outcrop.

3. South of the 1050 undeveloped gap, in which there should be considerable ore, Nos. 800 and 850 North Crosscuts, close to the Gould and Curry lines, developed 4000 square feet of ore and old fill averaging $10.40 per ton.

365 Foot Level:

On the 365 foot level the Comstock Merger developed the main lode from 100 South to 1220 South. Save for a lean area about 200 feet long, it is all fair ore 20 to 50 feet wide. The total horizontal area of ore indicated by the assay maps is 18,300 square feet, and the average grade of the whole body $6.65 per ton. By leaving out the leaner ore in the center of the lode, the area would be nearly cut in two and the grade raised to $8.00.

No. 1170 South Crosscut, and the south drift from it, were run to develop the rich Southeast orebodies on the 237 levels. Although the crosscut is not quite under the first ore above, the last 15 feet in it assay 0.86 oz. gold and 1.2 oz. silver, or $30.87 per ton. There is no record to show that any more work was done in this rich ore.

The present company has reopened the old workings or driven new ones to a point 1000 feet south of the Transfer Shaft. This work has shown the ore to be at least as good as indicated on the Merger maps. Considerable $10.00 ore has been mined. Half of the ore milled in the past 9 months has come from stopes above this level. Some of the stopes are up above the old 300 foot sub-level, which has also been partly reopened. Winzes have been sunk nearly to the 426 sub-level. While a considerable part of the area of the main lode on and above this level has been mined, much ore remains that will yield a good grade, especially with selective mining.

465 Foot Level:

On this level, none of which has been reopened, the main lode was developed by the Comstock Merger from 460 to 1260 South Crosscuts. The ore indicated by the assay maps is narrower than above, but richer. Usually only the hanging wall strand is rich enough to mine. The area of ore is 8700 square feet, and the average grade 0.22 oz. gold and 5/3 oz. silver, or $11.20 total.

The Comstock Merger maps show no work below the orebody south of the Transfer Shaft developed on and above the 465 foot level. There is nothing to show how much deeper the ore will go.

580 Foot Level:

On the 580 and deeper levels the Comstock Merger work was done north of

the Transfer Shaft, where the old Hale and Norcross Bonanza was mined. The main lode was developed on the 580 level by 13 crosscuts from 115 to 985 feet north of the Transfer Shaft. For this distance the hanging wall strand was from 5 to 30 feet wide, all of fair grade even where crosscuts passed through older caved stopes. From 160 to 316 North a footwall branch was followed north from the hanging wall one, with very good ore up to 15 feet wide. While no ore is shown on the Merger maps between the two branches, recent mining has opened up a very good middle strand in 220 cross-cut. In 935 to 985 North Crosscuts the ore turns to the west and expands to 60 and 40 feet width, but 1025 North Crosscut found only lean material. The total area of ore shown on the maps of this level is 17,100 square feet, average 0.15 oz. gold and 5/0 oz. silver, or $8.50 per ton.

The Arizona Comstock has reopened the 580 level to 650 North Crosscut. Considerable stoping has been done. The hanging wall strand has been mined 5 to 20 feet wide from 290 to 330 north, 10 feet high, and from 420 to 540 north, 10 to 60 feet high, with ore running about $9.00 per ton at present prices. On both sides of 220 North Crosscut the middle strand has been mined 5 to 30 feet wide and 30 to 70 feet long for 90 feet above the level. Stopes in the same area on the hanging and footwall strands are not so high. The grade has varied from $7.00 to $15.00 per ton. While old timbers were encountered in the bottom few floors, the top 40 feet in the stope are in new ground that apparently was never mined. There is no record of the development or mining from here to the surface. In the top of the stope the ore has narrowed to 5 feet or less as it has in places below, but there is some $ 100 ore. It seems likely that the ore will widen again higher up. The undeveloped area from the 580 level to the surface in this section north of the Transfer Shaft is perhaps the most promising one in the mine.

732 and 882 Foot Levels:

The 732 level was developed by the Comstock Merger from 70 to 870 feet north of the Transfer Shaft. Because of the flattening dip of the main strand is here 400 feet east of the shaft. This level has not been reopened. The maps indicate ore 600 feet long and 11 feet wide averaging about $11.30 per ton.

The 882 level, also not reopened, was developed in a sharp curve from a point 175 feet due south of the Transfer Shaft to a point 550 feet northeast of the shaft, or 800 feet around the curve. Most of this length was very lean. An area near the south end 270 feet long by 20 feet wide averaged about $10.00 per ton, and there was some $4.00 to $6.00 ore further north. It is not safe to estimate ore below the 732 level, though the south body on the 882 may justify reopening the level later on.

Recent Stopes Check Merger Assays:

The value of the mine is based largely on Comstock Merger assay maps. Much of the Merger work has not been reopened, and where drifts are open close timbering and spiling often make sampling impossible. Fortunately mining in the past 8 months has proved that Merger assays can be accepted with a small degree of correction. This is shown by the following figures, in which values are computed according to the varying metal prices, as in the Company accounts.

Ore Mines Oct. 1, 1933 - Mar. 31, 1934	17,989 tons, av. $8.03 per ton	
Ore Milled Oct. 1, 1933 - Mar. 31, 1934	17,656 tons, av. $7.42 per ton	
Content of Mill Heads		$134,516
Content of Tailings		$ 37,613
Estimated Content of Concentrates		$ 96,845
Actual content of concentrates, from Selber Smelter returns		$95,160
Discrepancy due to tie-up in Mill		$ 1.743

The actual tie-up in a 100 ton mill is probably much greater than this. While the smelter check is not accurate, due to the varying lapse of time between the date of milling and the date of shipping concentrates from the corresponding ore, the figures prove that the mill head assay is too low if anything. It is safe to reduce the mine car samples by 7.5%, corresponding with the difference between the $8.03 mine grade and the $7.42 mill grade.

The comparison of Arizona Comstock mine car samples with Comstock Merger assay maps is less exact, as the stopes extend far above the drifts that were sampled. Naturally some stopes have averaged more than the maps indicated, and some less. The average of the grade of ten principal stopes has been $7.44 per ton, and the average of the Merger samples in Crosscuts in the same areas is $7.16 per ton, all figured with present metal prices. Considering the small amount of mining, this is a remarkably close check.

In the estimate given below the Merger average values have been reduced by 5% to give the accepted grade.

Ore Estimate:

It is impossible to make any accurate estimate of ore remaining in the Arizona Comstock property. As there are no stope maps, there is no way to tell when old stopes will be encountered that will either reduce the tonnage or make ore unavailable because of caving. In the two most promising areas,- that above and below the southeast orebodies on the 237 level and that above the 580 level in the north-central portion of the mine, there is no record of any development save the one level in each area. The following estimate of possible ore simply indicates the amount and grade of ore that may reasonably be hoped for. There seems to be no question but that the total tonnage and grade will approach or possibly exceed these figures. There will, however, be large over-runs in some areas and under-runs in others.

All values are figured with gold at $35.00 per ounce and silver at 64.5 cents per ounce. About 65% of the total values are in gold.

Estimate of Possible Ore --- Arizona Comstock Corp.

Surface Ore, under open pit and north extension of outcrop, 1000 by 50 by 50 feet, giving (at 15 cu. ft. per ton) .... 160,000 tons av. $5.00 per ton

237 ft. Level, Southeast Orebodies, 15,000 square feet x 100 ft. vertically ..... 100,000 tons av. $10.00 per ton

237 ft. Level, Center and North End, indicated by very slight evidence 1000 ft. x 30 ft. x 100 ft. vertically, or ... 200,000 tons av. $7.60 per ton

365 ft. Level, South Orebody, badly cut up by old stopes, but probably ore totaling 500 x 30 x 100 ft. remains, or . 120,000 tons av. $7.50 per ton

365 ft. Level, North Orebody, entirely undeveloped, as on 237 level but from deeper work it seems likely that the ore will be 1000 x 30 x 120 ft., or ..... 240,000 tons av. $7.50 per ton

465 ft. Level, South Orebody, partly mined above 426 sub-level so allow 1000 x 13 x 75 feet, or ..... 60,000 tons av. $10.50 per ton

465 ft. Level, North Orebody, absolutely undeveloped save for the top of 240 N. stope above the 580 level. That level indicates ore on the 465 may be 1000 x 30 x 120 ft., or ..... 240,000 tons av. $7.50 per ton

580 ft. Level, South Orebody, absolutely undeveloped, but 465 South Orebody will extend at least part of the way down. So allow 1000 x 12 x 75 ft., or ..... 60,000 tons av. $10.50 per ton.

580 ft. Level, North Orebody, shown by Merger maps to have 17,100 square ft. area. Allowing for ore mined, there should be 15,000 sq. ft. x 100 ft., or ..... 100,000 tons av. $8.10 per ton.

732 ft. Level, North Orebody, shown by Merger maps to have 6600 sq. ft. area. With 140 ft. vertically, the possible tonnage is, ... 120,000 tons av. $9.50 per ton.

Total Possible Ore above 732 ft. level..... 1,400,000 tons av. $7.90 per ton.

About 15,000 feet of development, over half of which will consist of re-opening old levels, will be necessary to confirm this estimate of possible ore and to make it available for mining. About 4,000 feet of development must be done before safe and economical mining at the rate of 350 tons per day is possible.

Mining Method and Costs:

Owing to the heavy ground, all stopes must be timbered with square sets. They should be mined in moderate sized sections and filled. This has often not been done in the past, and is not being done now, for the reason that there are not two open main levels in the same orebody in any part of the mine. Unless provision is quickly made for filling stopes, serious caves are bound to occur.

As timber is cheap, the cost of square set mining is reasonable. In March 1934 the total mining cost, including a proper proportion of all overhead, and exploration, the cost of actual mining at the rate of 100 tons per day was $2.63 per ton. After more levels are opened up so that filling is possible from development in waste and from raises to surface, the cost of mining, filling and development at the rate of 350 tons per day will be about $3.00 per ton.

The 160,000 tons of surface ore can be mined by small power shovel and trucked to the mill for a contract price of 50 cents per ton. The contract cost of handling waste in the pit is 50 cents per cubic yard. As the ratio will not exceed a yard of waste to the ton of ore the total mining cost of surface ore should be $1.00 per ton.

The average mining cost of surface and underground ore is therefore estimated at $2.75 per ton.

Milling:

The present 100 ton mill consists of a 175 ton coarse ore bin; 10 x 20 jaw crusher; #25 Kennedy gyratory crusher; 175 ton fine ore bin; 64.5 Marcy ball mill inclosed circuit with a 19 ft. Dorr Classifier; Fahrenwald Unit flotation cell and trap, condition tank; 8 Fahrenwald flotation cells; concentrate thickener; 4 ft. Oliver filter and necessary belts, launders and feeders.

New machinery, which will bring the capacity up to 350 or 400 tons per day, is on the ground and will be ready to run within a month. It consists of a 425 ton coarse ore bin, #37 Kennedy gyratory, and an 8 ft. Hardinge ball mill in closed circuit with a 5' x 23'5" Dorr classifier. No additional flotation equipment is thought to be needed.

The plant for cyaniding tailings with agitation, with 350 to 400 tons estimated capacity, has been brought from Rochester, and foundations are being

poured. Considering the very low cost of this old mill, it seems to be in fair shape. The cost ready to run is estimated as under $30,000, and should be running within three months.

With flotation alone, the recovery is poor. Tails have averaged about $2.50 per ton, with present metal prices. The gold recovery has been 72 to 85% and the silver recovery 58 to 65%, and the total recovery 66.8 to 80.5%, averaging 73%. From 59 to 63% of the recovered value is in gold. The ratio of concentration varies from 50 to 1 to 95 to 1, and the grade of concentrates from $335 to $572 per ton. As would be expected, the recovery varies inversely with the grade of concentrates. When tailings are cyanided, it will pay to make a very high grade concentrate, reducing the cost of shipping and the smelter costs and losses.

The total cost of beneficiating concentrates, including freight, smelting rate, and deductions, has averaged 13% of the gross content of the concentrates. Of this cost, freight amounts to about $10.00 per ton; the fixed smelting charge $7.50 per ton; and the deductions for losses make up most of the balance. The contract with the Selby plant of the A. S. and R. Company is a poor one. Preliminary tests show no great benefit from cyaniding concentrates.

Cyanide tests on flotation tailings by the Merrill Company, of San Francisco, show that the gold can practically all be recovered, and the silver content can be reduced from 1.8 to 0.4 oz., leaving a final tailings loss of 30 cents per ton. The new cyanide plant should recover all save 40 cents per ton at most. As it will soon be in operation, the results of future operations are figured after cyaniding.

The March milling cost, including 25 cents overhead, was $1.42 per ton. Without overhead and with the new grinding unit running, it should not exceed 75 cents per ton. This should have added to it 50 cents per ton for cyaniding, of $1.25 in all.

PROBABLE COSTS AND PROFIT:

In March the Arizona Comstock operations showed an operating profit of about $2300. New construction cost much more than this amount. When the new unit of the mill is in operation, with the increased tonnage coming from the open pit, the operating profit will be greater. However, it will require about 4 months time and $100,000 in new money for underground development, the completion of the mill and cyanide plant, and working capital before the operation can be a real success. Even then the management must be in excellent order to make a satisfactory profit. Granted such management and the 4 months construction and development campaign, operations on a 350 ton basis should give about the following results:

$7.90
$2.77
$10.67 worksheet value at $35/oz

Mine: 350 tons per day of ore assaying	$7.90 per ton
Recover in Mill and Cyanide Plant $5.50 per ton of ore in concs. and.....	$2.00 per ton in bullion
Net after smelter and mint charges and deduct. $4.75 per ton of ore from concs. and $1.95 per ton from bullion, or in all	$6.70 per ton of ore
Costs: Mining and development.....	$2.75 per ton of ore
Milling and cyan.....	$1.25 per ton of ore
Overhead, including replacements but no write-offs of mine or plant value.....	$0.70 per ton of ore
Total Cost.....	$4 .70 per ton of ore
PROFIT.....	$2.00 per ton of ore

The profit on the 120,000 tons treated per year would then be $240,000 and the life 11 or 12 years. As the ore is not blocked out and unusually good management will be required to achieve these costs, the above profit is the maximum that can be hoped for unless an unexpected bonanza is discovered.

Ira B. Jarolemon

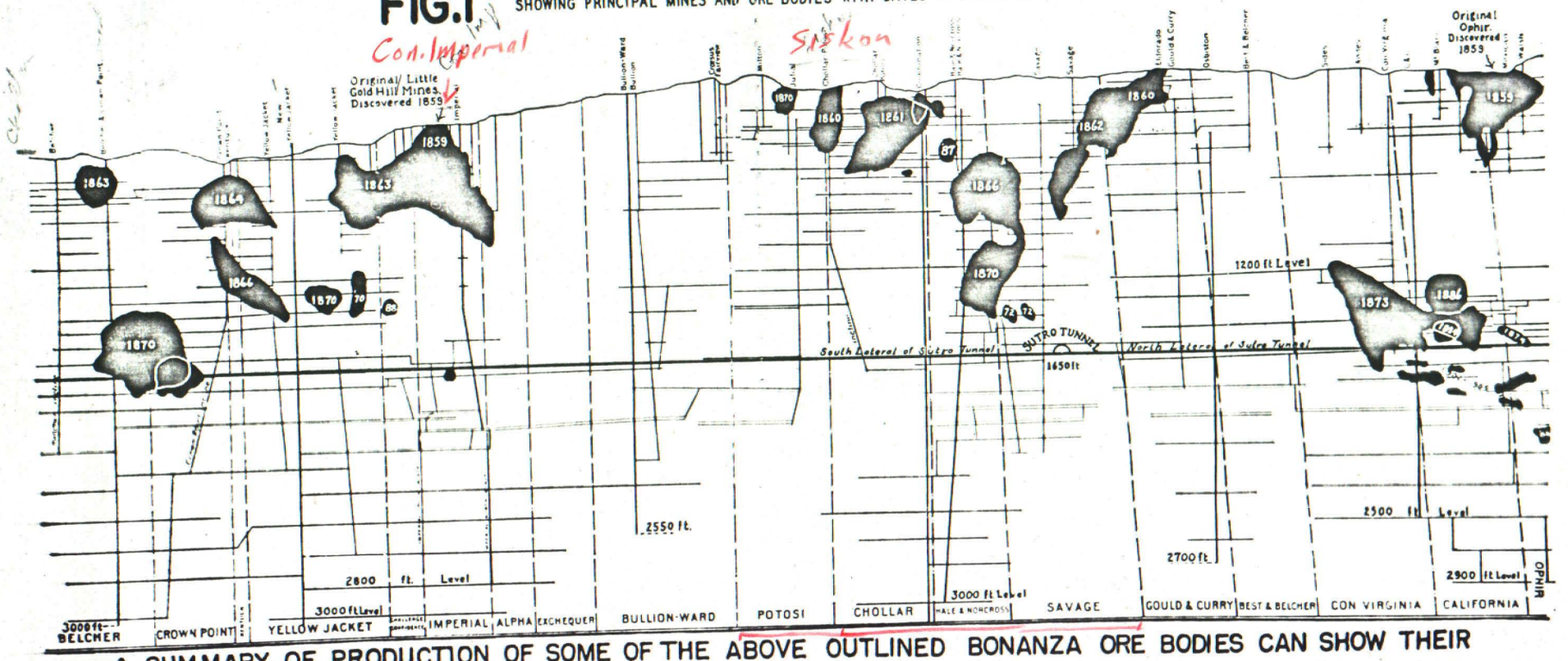
San Francisco, Calif.
April 28, 1934.

Page 7 states the #1,400,000 tons averaging $7.90 as shown on page 8, is represented by 65% gold and 35% silver. Therefore as silver was then 64½¢/oz., then the value of the silver at $1.29/oz is exactly twice as much.

35% x $7.90 = $2.76
70% x $7.90 = $5.53
Increase $2.77 + $7.90 = $10.67 per ton,

FIG.I VERTICAL SECTION OF THE COMSTOCK LODE

SHOWING PRINCIPAL MINES AND ORE BODIES WITH DATES OF DISCOVERY



A SUMMARY OF PRODUCTION OF SOME OF THE ABOVE OUTLINED BONANZA ORE BODIES CAN SHOW THEIR IMPORTANCE:- $116 MILLION CON. VIRGINIA & CALIFORNIA (BIG BONANZA); $12.5 OPHIR; $26 MILLION GOLD HILL; $64 MILLION CROWN POINT & BELCHER (1870); $4.5 MILLION FROM THE 94 FOOT KENTUCK FOR ITS SHARE OF THE 1864 AND 1866 ORE BODIES.