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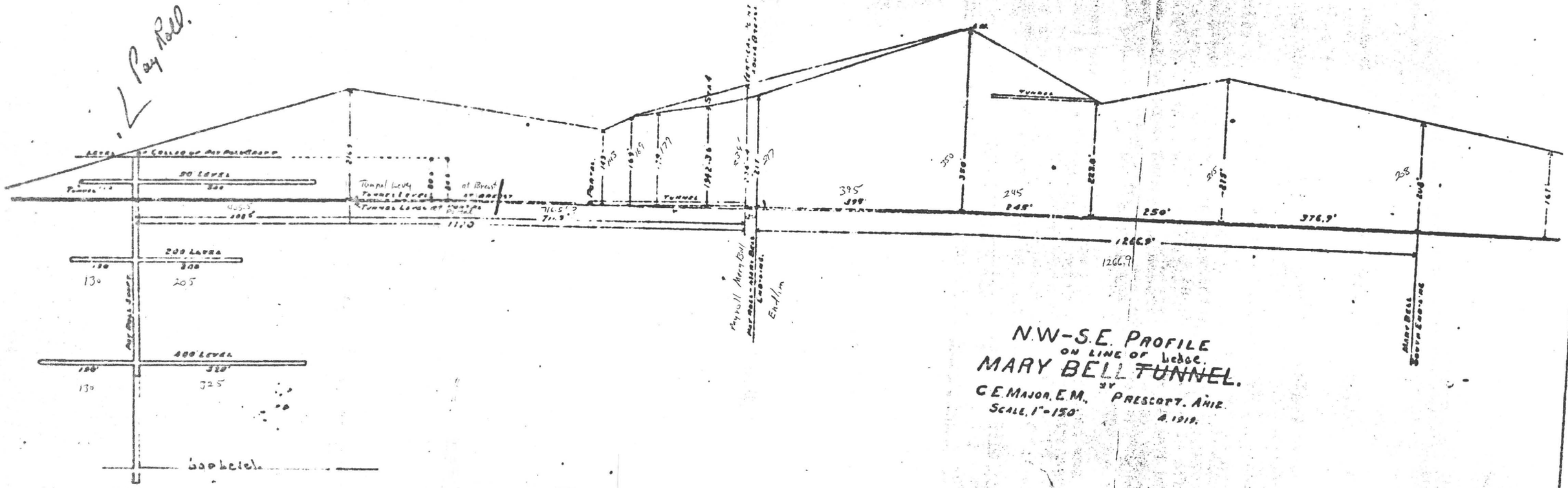
MARY BELL HILL SITE
PAY ROLL
MARY BELL
System of Granite Porphyry Dikes
MAP
OF LINE OF THE PROPOSED
MARY BELL TUNNEL
CHLORIDE, ARIZONA
SHOWING GEOLOGICAL FEATURES ON THE SURFACE
BY
C E MAJOR E M., PRESCOTT ARIZ
MAGNETIC VARIATION USED 15°E
SCALE 1" = 150'



N.W-S.E. PROFILE
ON LINE OF Ledge.
MARY BELL ~~TUNNEL~~.
C.E. MAJOR, E.M., BY PRESCOTT, ARIZ.
SCALE, 1"=150' A. 1919.

M SCOTT STARTS UP PAYROLL MINE

Kingman

homas B. Scott, owner of considere mining property at Chloride, sed through Kingman Tuesday last the big lead camp. He informed editor that he was to start pump- out the Payroll mine at once, and en this is completed it is more than bable that something will start to- rd the development of the mine.

he Payroll was one of the big lead es in the early days of the camp, ore body being picked at the lower depth, and it ws in the winze from the tunnel el. Besides the Payroll Mr. Scott ns the Brighter Days and Lucky y group, far up on the mountain, the Hot Tomale, lying somewhat her than the Payroll. All these ms are ore bearers, the Lucky Boy ving produced a considerable a- unt of highgrade. In a crosscut m the old shaft on the Lucky Boy re was opeed a wide ore body that uld prove of high mill value was in position to produce. This ore ly was only entered by the cross- , no effort having been made to ertain its extent. 9/8/25

DEVELOPMENT WORK MAPPED OUT FOR THE PAYROLL MINE

This property Will Be Put Into Shape For Examination in August 8/1/25

Thomas B. Scott has returned to his home at Long Island, New York, after making arrangements for a large amount of development work on the Payroll mine, at Chloride. The new work consists of the building of a road from the main highway to the Payroll shaft, this work now being under way, the pumping of water from the 400 foot shaft and the repair of the timbers in the shaft and crosscutting of the big vein at the 600, which will be reached from the shaft, and later drifting on the ore bodies. Mr. Scott believes that this work will be completed sometime in August, and then the property will be examined by engineers with the possibility of the mines passing into the hands of large operators. Kingman

The Payroll was developed along the vein to a depth of 400 feet and considerable ore bodies found, especially the old work below the tunnel level, where splendid bodies of lead ore were opened. The shaft was sunk below the vein to a depth of 400 feet which is 600 feet below the vein outcrop, and this new work is to get in to the vein at a new level, where it is expected a big flow of water will be encountered, which may take some time to control. When the vein was cut on the 400 level the flow of water was so great that it raised almost to the surface and took several weeks to control with bailers and large pumps, but eventually the reservoirs were emptied and the work progressed on the development of the mines with little trouble from water. The shaft is now filled with water, but it is expected that no difficulty will be found in expelling it to the bottom and no water trouble will be had until the big vein is again entered, when a large flow is expected to be encountered, which will lbe provided for by the installation of a large pump to handle it.

The Payroll is one of the large veins of the Chloride camp and should be in heavy production as soon as the development is carried along the 600 level through the ore bodies. It carries values in gold, silver, lead and zinc, the zinc showing on the 400 being especially good. Dr. Blackwell is to have charge of the work for Mr. Scott.

SHAFT OF PAYROLL BEING UNWATERED

[redacted]

stay very much.

Kingman 9/11/25

TOM SCOTT VISITS THE PAYROLL MINE

Kingman

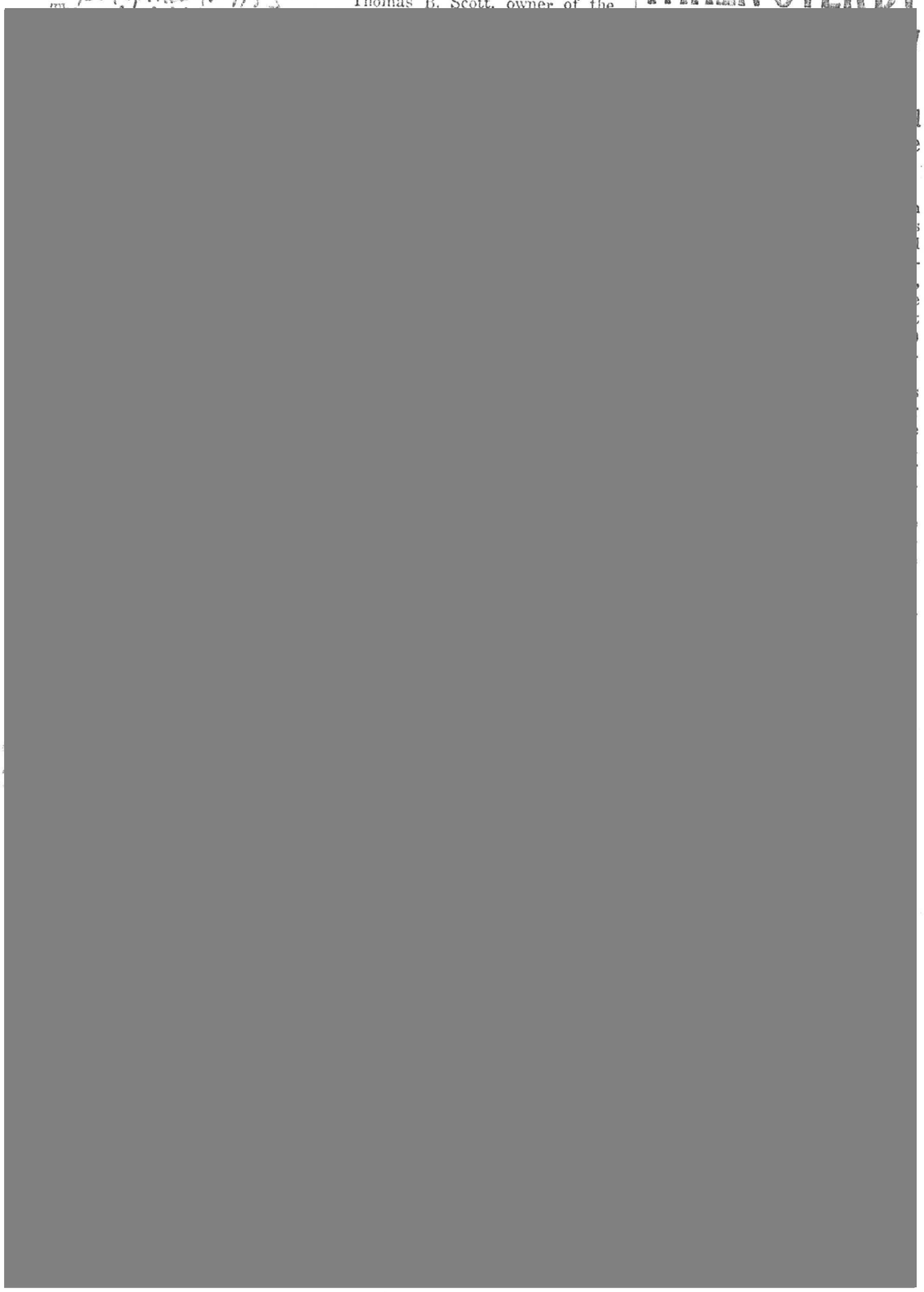
Thomas B. Scott motored over from Los Angeles yesterday and has gone out ao the Payroll mine at Chloride, where he will remain until the crosscut reached the big vein on the 400 level. This work is now under way, the shaft having been unwatered and repairs made preparatory to furthering the lateral work from the bottom. The Payroll is one of the most important of the lead zinc properties of the Wallapai mining district, having a vein system similar to that of the Tennessee, and while it has not been the producer that the latter mine has been it is owing to the fact that its ore bodies are still intact. We believe that with the development of the mine along the 600 level well under way the mine will soon be in big ore.

DRIVING CROSSCUT 600 LEVEL PAYROLL

PAYROLL OWNER HERE THIS WEEK

Thomas B. Scott, owner of the

PAYROLL MINE TAKEN OVER BY



LEGAL NOTICES

same, and properly appurtenant thereto, including the ownership and operation of mills, smelters, railroads, tramways, tunnels, ditches, flumes and other property, including the power to lease its mines or lands, or part thereof, to other corporations; to buy, sell or lease mines and mining property of all kinds, and to reduce ores for others upon commission; to engage in trade and transportation of every kind, including road building and carrying; to deal in merchandise and property of every description; to acquire securities of any corporation ,and the property, good-will and securities of any person or corporation; to acquire and dispose of any patents, inventions or copyrights, trade marks and trade names; to guarantee, purchase, pledge or otherwise dispose of any of the securities of any corporation organized under the laws of any state or country; to issue bonds, debentures or obligations of this corporation for any of the objects or purposes thereof, and to secure the same by mortgage, pledge, deed of trust or otherwise; to purchase, hold, sell and transfer the shares of its own capital stock, provided it shall not use its funds or property for the purchase of its own shares of capital stock when such use would cause any impairment of its capital, and provided further that shares of its own capital stock belonging to it shall not be voted upon directly or indirectly.

To have one or more offices to carry on all its operations and business without restrictions of any sort; to acquire, own, mortgage, sell, convey or otherwise dispose of real or personal property of every description in any state of the United States or any foreign country.

To exercise all the powers conferred by the laws of Delaware upon corporations formed under the Act hereinafter referred to, and to do any or all the things hereinbefore set forth, to the same extent as any natural persons might or could do.

The foregoing clauses shall be construed both as objects and powers, and it is hereby expressly provided that the foregoing enumeration of specific powers shall not be held to limit or restrict in any manner the powers of this corporation.

FOURTH: The total authorized capital stock of this corporation is One Million ($1,000,000.00) Dollars, divided into

LEGAL NOTICE

may be from time to time designated by the Board of Directors.

TENTH: This corporation reserves the right to amend, alter, change or repeal any provision contained in this Certificate of Incorporation, in the manner now or hereafter prescribed by statute, and all rights conferred upon stockholders herein are granted subject to this reservation.

WE THE UNDERSIGNED, being each of the original subscribers to the capital stock hereinbefore named, for the purpose of forming a corporation to do business both within and without the State of Delaware, and in pursuance of the General Corporation law of the State of Delaware, being Chapter 65 of the Revised Code of Delaware, and the acts amendatory thereof and supplemental thereto, do make and file this Certificate, hereby declaring and certifying that the facts herein stated are true, and do respectively agree to take the number of shares of stock hereinbefore set forth, and accordingly have hereunto set our hands and seals this 12th day of March, A. D., 1920.

T. L. CROTEAU (Seal)
M. A. BRUCE (Seal)
S. E. DILL (Seal)

In the presence of:
HERBERT E. LATTER

STATE OF DELEWARE)
COUNTY OF NEW CASTLE) ss.

BE IT REMEMBERED that on this 12th day of March, A. D. 1920, personally came before me, Herbert E. Latter, a Notary Public for the State of Delaware, T. L. Croteau, M. A. Bruce and S. E. Dill, parties to the foregoing certificate of incorporation, known to me personally to be such, and severally acknowledged the said certificate to be the act and deed of the signers respectively and that the facts therein stated are truly set forth.

GIVEN under my hand and seal of office the day and year aforesaid.

HERBERT E. LATTER,
Notary Public

Herbert E. Latter, Notary Public, appointed February 25, 1919. State of Delaware. Term two years.

LEGAL NOTICES

STATE OF DELAWARE
Office of Secretary of State

I, EVERETT C. JOHNSON, Secretary of State of the State of Delaware, do hereby certify that the above and foregoing is a true and correct copy of Certificate of Incorporation of the "PAY ROLL CONSOLIDATED MINES COMPANY," as received and filed in this office the thirteenth day of March, A. D. 1920, at 9 o'clock A. M.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal at Dover, this thirteenth day of March in the year of our Lord one thousand nine hundred and twenty.

EVERETT C. JOHNSON,
Secretary of State.

(SEAL)
First Insertion April 3
Last Insertion May 8-20-6t-up

The retimbering and unwatering of the Pay Roll shaft has been completed. Sinking has been resumed. Superintendent Blackwell reports good progress. 1-29-21

The Pay Roll has a day shift of five men at work getting ready for sinking

PAYROLL TO BE WORKED BY EASTERN MEN

The shaft of the Payroll, at Chloride, is being kept free of water until the management maps out its plan of development. This property was recently taken over by a Pittsburgh group of financiers who purposed developing it to a considerable depth below the present level. Owing to the tightness of money in the big eastern money centers the work of financing was not carried on with as much celerity as it was at first thought possible, which accounts for the slowness of the development work.

The Payroll is believed by mining men to be one of the most important base metals mines of this part of the state and with proper development it ought to be brought into a state of productivity that will rival any of the mines in the larger camps. In the early days the mine shipped many hundreds of tons of rich silver-gold ore, but the deep work did not pick up the ore shoots found in the upper levels, wherefore the necessity for development into new ground on the 600. In the winze from the tunnel level the mine showed a big body of ore and this shoot has never been exploited at depth, although some attempt was made to cut into it on the 400. It is to be hoped that matters will be cleared up and that further important work will be soon under way.

EVELOPMENT
UTLINED FOR
PAYROLL MINE

2-5-26

Martin Thorniley, who enter-
pon a ten year lease of the
ll mine last Monday, was a

FRIDAY, FEBRUARY 5, 1926

DEVELOPMENT OUTLINED FOR PAYROLL MINE

(Continued From Page 1)

New Mill At Payroll Mine In Operation

KINGMAN, June 1—With a new

6-7-30

Returned Owner

Kingman 8/1/30

George M. Colvocorresses, min-
ing and metallurgical engineer of

HERSHEY & WHITE
Consulting Engineers
Crocker Building San Francisco, Cal.

GEOLIGICAL REPORT ON MARY BELL GROUP.
by
Oscar H. Hershey

Copy.

San Francisco, California.
April 24th. 1929.

Dr. J. G. Blackwell,
Chloride, Arizona.

Dear Sir:

Yesterday I made an examination of your Mary Bell group of mining claims, situated on the west slope of the Cerbat Range, about 1.5 miles from Chloride, Mohave County, Arizona. I regard the property as constituting an exceptionally attractive prospecting opportunity and hence I will discuss it in considerable detail.

The group consists of the Mary Bell, Tenby, Silver Glance and Silver Glance Fraction quarts mining claims and the Mary Bell mill-site. These claims are held by location and annual assessment work.

The strongest vein traverses the Mary Bell claim on a course about N. 30 W. and dips northeastward 75 to 80. The claim is 1267 feet in length. About 100 feet from the southeast end of the claim the dump of an old hole has a pile of oxidized porous quartz with lead carbonates and remnants of galena, derived from a small footwall band. You have told me that this material was sorted and the best ore shipped during the war. A streak of quartz and yellow dirt 6 to 8 inches thick may be traced southeastward to beyond the end line of the claim. About 50 feet across altered granite possibly seamed with quartz leads to the hanging-wall band of what I am going to call the vein zone. This hanging-wall band is soft, makes a slight depression partly filled with debris and has been little prospected on your claim. From what I can see of it it seems to be more strongly stained by iron and manganese oxides than is the footwall band and I suspect that it has less quartz, but more of an iron-bearing carbonate of intermediate composition, probably ankerite, and more pyrite than the footwall band. The latter outcrops strongly and the development has been practically confined to it. Yet I suspect that the hanging-wall band may be the better.

Several hundred feet from the southeast end line the foot wall quartz outcrops 6 feet wide and is much stained by iron oxide. Here it is 80 feet th the hanging-wall band. The intervening rock is mostly an altered pegmatitic granite, sheeted, dipping northeastward 75. The wall rocks are rather a fine-textured light-colored granite that occupies a large area extending northeast and southwest. Thence to the mouth of the South tunnel, the footwall band is strong and in places there is much porous limonite which may overlie an orebody. At the mouth of the tunnel there is a bold outcrop of iron-stained porous quartz 12 feet wide whose footwall is a small fault gouge that dips northeastward 80 and the hanging-wall dips in the same direction 75, suggesting a widening of the quartz downward. There is another quartz vein about 40 feet southwest of the mouth of the tunnel. This converges upon the main vein and meets it about 260 feet northwest.

Loop vein

The South tunnel, driven from the south side of Mary Bell hill, is about 265 feet long and is mostly in the soft altered granite on the footwall side of the quartz band. At 70 feet in, a crosscut goes 15 feet through the quartz but fails to reach the hanging-wall. There is a little sulphide in places. At 45 feet farther in there is a crosscut to the left that shows vein matter 16 feet wide, dipping northeastward 75, probably the branch vein seen 40 feet southwest from the mouth of the tunnel. It is partly compact fine-textured altered porphyry, but there are porous bands rich in limonite, good indication for ore below the zone of oxidation. About 10 feet farther in the tunnel there is a right-hand crosscut that goes 10 feet through porous, iron-stained quartz with much limonite and a little malachite stain. You have told me that some of this material assays well in gold. The remaining 7 feet of the crosscut is in altered porphyry.

Winze

At 142 to 148 feet from the mouth of the tunnel an inclined winze has been put down 38 feet. It penetrates the sulphide zone and the lower portion shows an ore band 6 feet wide that dips northeastward 75. A sample that you took across 6 feet 8 inches assayed 0.06 oz. gold; 3.2 oz. silver, 3.6% lead, 0.6% copper, 10.5% zinc. My impression is that this represents one of the poorer sections of ore-shoots that may be developed on the claim.

From the winze the tunnel runs 27 feet along the wall of the quartz band to a crosscut 20 feet through fine-grained altered porphyry with a little pyrite. At the end there is a band with some ore sulphides, but at the face there is a porous mass rich in limonite that may overlie a good orebody.

Next the present accessible tunnel has been driven along the hanging-wall side of the quartz band where a sulphide streak develops that in about 45 feet becomes thick enough to be commercial and thence to the face, 45 feet, it may be 1 to 2 feet thick. It dips northeastward 75 to 80. It is 2 feet thick at the face, is rich in dark brown sphalerite and the best band 6 inches thick has considerable galena, a little chalcopyrite and pyrite. About 15 feet back from the face there is a winze 7 feet deep. You took three samples over this winze that averaged by assay 0.12 oz. gold, 10.00 oz. silver, 19% lead and 19% zinc. A sample taken across a 6-inch streak in the winze assayed 1.05 oz. gold, 19.6 oz. silver, 3.0% copper, 25.2% lead, and a small amount of zinc. But this is just part of an 18-inch band that was mined clean and placed on the dump. AA sample from it assayed 0.68 oz. gold, 14.1 oz. silver, 0.4% copper, 34.7% lead and 21.6% zinc, according to a certificate by John Herman. These assays do not represent much tonnage but they demonstrate that the vein has some very good grade ore. Of course, I cannot assume responsibility for any statement of values based on assays in this report, but I see no reason to question them as the material sampled has the appearance of containing the lead and zinc claimed.

This South tunnel is too high to make much showing of ore, but it reveals a lot of oxidized and leached material that is probably underlaid with milling grade ore and where it penetrates the sulphide zone it shows a narrow band of good-grade ore.

The iron-stained porous quartz outcrop runs from the mouth of the tunnel to the top of the ridge where it is about 20 feet wide over the end of the tunnel and 120 feet above it. Here the vein zone is 135 feet wide, chiefly somewhat altered pegmatitic granite. A dark gray gneissic rock appears in the footwall country.

Thence down to the North tunnel near the northwest end line of the claim the outcrop and float of the footwall quartz band are strong. There is dark gray granodiorite on the footwall. The North

tunnel, 140 feet long, has been driven in the gougy soft band on the footwall side of the quartz band which dips northeastward 75 to 80. The gougy material has small pockets of sulphides, one with galena that yielded a small pile of ore on the dump. A 4-foot drill hole in the quartz band showed it oxidized and leached.

Some years ago a tunnel was begun on the Mary Bell mill site and driven across a corner of the Pay Roll claim about 775 feet to the presumed hanging-wall of the Pay Roll-Mary Bell vein. This is now known as the Rankin tunnel and is in good condition except that it ought to have heavier timbers near the mouth and it has caved at the vein. It passes through gneissic granite with pegmatite and aplite dikes and cuts an altered zone that is said to be barren. The face of the tunnel is in Pay Roll ground about 100 feetfrom the Mary Bell end line. In a small side crosscut and short drift to the left of the tunnel the vein is 20 feet wide and its hanging-wall dips northeastward 70. About 6 feet from the hanging-wall there is a dark gray fault gouge several inches thick that dips northeastward 75. Between it and the hanging-wall is the presumed hanging-wall band of quartz, the iron-bearing carbonate and thin bands of sulphides, chiefly sphalerite, some galena, pyrite and chalcopyrite, probably low grade ore. The remainder of the vein is altered gneiss streaked with quartz and carbonate and with scattered bunches of sulphides. A 2 to 4 inch streak of sulphide ore along the footwall dips southwestward 85. It may represent the footwall quartz band in a greatly pinched place. In fact, the entire vein zone is greatly pinched here, probably due to a dike of light-colored rock that is said to trend more eastward than does the vein zone and leaves it going southeast. This dike is soft and has caused the caving in the main tunnel. You have told me that you drove along the footwall streak 98 feet to the end line and 15 feet into the Mary Bell claim and that in a short crosscut you had 2 feet of ore, practically pure sphalerite and galena, and did not go through it. The ore on the dump is chiefly dark brown sphalerite, with some galena, chalcopyrite and pyrite.

The Pay Roll claim covers the vein northwest from the Mary Bell claim. Holes dug on the vein in the first 500 feet in that claim seem to be on the hanging-wall band which is more porous and iron-stained than the footwall band and may have more ore. Kernels of galena are usually present in the material from these holes. This becomes a boldly outcropping iron-stained porous quartz vein 20 feet thick on the top of the ridge and leads to near the Pay Roll main shaft 625 feet deep. A longitudinal section prepared in 1919 by C. E. Major of Prescott, Arizona, shows this shaft 1120 from the face of the Rankin tunnel, a 50 foot level driven 340 feet toward the Mary Bell, a 200-foot level driven 205 feet, and a 400-foot level driven 325 feet in that direction. A leasing company is now driving a 600-foot level toward the Mary Bell and you have told me it is 370 feet long, with the ore nothing better and that the last time you saw it it was 6 feet [illegible] was on the dump a carload of [illegible] level was rich in pyrite and had considerable galena and chalcopyrite, with some sphalerite. You say there is less gold and silver in the Pay Roll mine than in the Mary Bell and give the dike as the dividing line. Perhaps however, the difference is due to the Pay Roll workings being on the hanging-wall band and your workings on the footwall band.

In "Mineral Deposits of the Cerbat Range, Black Mountains and Grand Wash Cliffs", published in 1909 as Bulletin 397 of the United States Geological Survey Publications, Mr. F. C. Schrader describes the Pay Roll as one of the large veins in the Chloride region. He says: "As shown by its persistent croppings it has a horizontal extent of nearly a mile, but is reported to be somewhat broken up at the bottom of the mine. It varies from 6 to nearly

100 feet in thickness, 10 feet being perhaps a fair average, and contains in places a fair grade of concentrating ore. The gangue is mainly quartz, and the vein is in places separated from the wall rock by a thick sheet of argillaceous or talcose gouge.

"Near the mine, as shown in figure 4, the vein is joined by the Redemption Clyde vein, which probably enriches the Pay Roll ore shoots. The ore in the persistent pay shoots consists of lead carbonates and galena, with some pyrite and chalcopyrite; it contains both gold and silver. The total production of the mine was not learned, but it is reported to include many carloads of rich shipping ore that run about $80 a ton, mostly in gold, derived principally from the surface workings, excellent values being found in the south shaft. So far as can be judged at present the deposit is a good-sized body of low grade ore".

That was written at a time that the zinc content of the Chloride veins was a detriment instead of an asset. The leasing company that is now developing the Pay Roll 600-foot level is erecting a 50-ton selective flotation plant. My guess is that they ought to have at least a 100-ton per day plant.

In the gulch beyond the main shaft, the vein seems to end abruptly, Schrader says by being cut off on the northwest by a raised fault block of black hornblende sghist, or is sharply bent down the gulch as you think.

Returning now to your property: The Silver Glance tunnel has been driven about 100 feet on a band of porous, honey-combed quartz 6 inches to 3 feet thick in a zone of altered and quartz-seamed rock (granite apparently) at least 25 feet wide. At one place the quartz had galena and lead carbonate and you took a sample that assayed 2.1 ozs. gold, 14 ozs. silver, and 54.2% lead. There is very little of such material in sight, but at depth the vein might be found to have a large body of low-grade milling ore. The vein stands nearly vertical with a slight tendency to dip southwestward. At a cut on the vein S. 60 E. from the tunnel the vein zone is 6 feet wide. Farther southeast a shallow shaft has seams rich in fine-grained or so-called steel galena, in the wide mineralized zone. Traces of the vein continue southeast to the end of the claim, than the vein is relatively weak in the Tenby claim.

The Tenby vein is supposed to pass obliquely from the Silver Glance to the Pay Roll vein. Where first seen it strikes N. 60 W. and has a tendency to dip steeply northeastward, in places nearly vertical. The vein material is very porous, coarsely crystallized quartz, rich in limonite and lead carbonate, with kernels of galena and traces of chalcopyrite remaining in places. This occurs in one or two places in two small veins. They will go down into narrow streaks rich in sulphides, probably chiefly pyrite and chalcopyrite with considerable galena, and may carry good gold and silver values.

Going southeastward in the Tenby claim there is considerable float of quartz with lead, copper and iron stains. Then in a cut the vein is [illegible] a foot wide and dips northeastward 75, cutting gray granodiorite. In a tunnel in a small gulch the Tenby vein, 6 inches wide, and standing vertival, is supposed to reach the Silver Glance vein, dipping southwestward 80. The latter is narrow and continues S. 40 E. across the gulch and in a cut and small tunnel it has 1 to 2 feet of quartz and limonite banded ground that will go down into lead-silver ore. It dips southwestward 80. This is supposed to be the Tenby vein and to become the Redemption vein on the adjoining property. No more work has been done on the vein in your ground but you say it improves in size in that direction.

Schrader says the Redemption Clyde vein in the Redemption mine strikes N. 60 W. and dips 85 northeast and is known to have an extent on the surface equal to the length of at least four claims. The vein is about 4 feet thick and the ore shoot about 18 thick. The ore contains chalcopyrite in quartz and carries about

8 per cent of copper, 1 to 2 ounces of silver to the ton, and some gold. The production amounts to 200 tons of ore".

I suspect the vein of being better in the Tenby claim but because of its small size I do not recommend immediate further development of it. The same recommendation applies to the Silver Glance vein.

The big chance in the property is in the Pay Roll-Mary Bell vein. I am surprised that it has remained so nearly undeveloped to this late date. However, an important portion of its metal content is zinc and until recent times mining operators were not anxious to develop the zincy ores in the Chloride district. Now things are different and you ought to have no difficulty either in selling the property if you will give long time for development or in financing exploration on some other basis.

It appears to be a very easy prospecting proposition. A railroad is within one mile and a power-line within 3000 feet. I would carry a power-line to the mouth of the Rankin tunnel, install the necessary machinery, strengthen the timbering in the outer part of the tunnel, clean up and timber the caved ground at the vein and then drive your drift on the footwall quartz band the entire length of the Mary Bell claim, about 1300 feet. The Major longitudinal section indicates that this drift would pass 217 feet below the North tunnel and 223 feet below the South tunnel. It will be deep enough to develop entirely in the sulphide zone. I would drive a few crosscuts to the hanging-wall hand and if it appeared encouraging I would drive along it. Say at most 3500 feet of driving on the Rankin tunnel level would thoroughly explore the vein zone in the Mary Bell claim. If that will not yield a large tonnage of milling grade ore and a series of small bodies of good grade ore such as is in the South tunnel I will be very greatly surprised.

The cross-section of ore-shoots determined on the Rankin tunnel level, the ore can be expected to extend very deep. Ore in the neighboring Tennessee mine has been developed to a depth of 1400 feet or more. The geology is favorable to commercial ore extending much deeper in the district. Thus the possibilities at the Mary Bell run into rather large figures, though it would be foolish for me to attempt to be more specific.

At some later date, with a mill in operation to pay for the work, the Rankin tunnel can be driven ahead into the Mary Bell ground and then turned northeast and driven to the Tenby vein, a distance of probably 450 feet. An additional 450 feet will take it to the Silver Glance vein in the Silver Glance claim. Both veins may be cut about 400 feet deep. Considerable driving on them would bring this prospecting campaign to an aggregate of 3000 feet of work. Thus 6500 feet of driving on the Rankin tunnel level may be required to prospect the property as it deserves prospecting but I contemplate only work on the Pay Roll-Mary Bell vein as a requisite to determining the value of the property.

Deep development will probably solve the water problem as suggested by Schrader. Climatic conditions are favorable to continuous and relatively cheap operation. Nearnes to the railroad solves the problem of transportation. Nearnes to Chloride precludes the necessity of constructing bunk and boarding houses. The only question that remains somewhat in doubt is that of disposing of the zinc concentrate at a profit. That is a problem that will have to be solved for the district as a whole, but there is so much zinc-lead ore in the district that I am satisfied that by the time the Mary Bell has been properly developed, and equipped with a selective flotation plant, a market for the zinc concentrate will be in sight.

Respectfully submitted,

Oscar H. Hershey.

Mine Payroll

Year	Cu lbs	Ag oz.	Au oz.	Pb lbs	Zn lbs	Short Tons
1900						
1901						
1902						
1903						
1904						
1905						
1906	11419	313	11	0	0	4/2
1907						
1908						
1909						
1910						
1911						
1912						
1913						
1914						
1915						
1916						
1917	0	908	61	12828	77778	500
1918						
1919						
1920						
1921						
1922						
1923						
1924						
1925						
1926						
1927	0 230	320 74	64 5	8000 40	26300 0	200 103
1928						
1929	1457	2782	68	19100	38058	1300
1930						

Mine Payroll

Year						
1931						
1932						
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1960						
1961						

George M. Colvocoresses
Mining and Metallurgical Engineer
1108 Luhrs Tower
Phoenix, Arizona

August 5, 1930.

Olin, Clark & Phelps,
149 Broadway
New York, N. Y. Attn: Mr. Murphy.

Gentlemen:

REPORT ON PAY ROLL MINE

Pursuant to your letter of instructions, dated New York, June 25th, 1930, I have examined and sampled the PAY ROLL MINE, near Chloride, Mohave County, Arizona, property of the Thomas B. Scott Estate, and herewith beg to submit my report in duplicate, together with blue-print of assay map and tabulated analysis of samples.

PROCEDURE

The field work on which this report is based was conducted from July 17th to 24th, inclusive, when I was assisted by George J. Harbauer, a Mining Engineer of long experience, and by two miners who cut, cobbed and quartered the samples under our direction. The analysis of samples was made by H. C. Smoot, Custom Assayer, of Prescott, Arizona, whose work is accurate and reliable.

Every assistance and courtesy was extended us by your representative, Dr. Blackwell, to whom I am indebted for much information regarding the history of the mine and surrounding properties.

On the fourth level (600' level) we ran a survey with a Brunton Transit. The map of the other levels was traced from a blue-print furnished us by Dr. Blackwell and said to have been taken from a mining survey. In some details this print did not appear to be altogether accurate but the discrep-

sults or conclusions.

All underground samples were chipped with moils representing roughly a 2" groove across the width of ore. In the better portions of the vein these grooves were made at 10' intervals, elsewhere at 20' intervals. No samples were taken in material which appeared to be waste or almost barren of commercial minerals, and some portions of the mine were inaccessible due to caving of the old workings. Also it should be noted that the vein or stringers of ore at times appeared to run off into the walls of the drifts, so that sampling ore at these points was not feasible, but I believe that our sampling was sufficiently thorough and complete for all practical purposes.

PROPERTY AND LOCATION

There are two patented mining claims, namely, Pay Roll and Black Prince, aggregating forty acres. These are located on the southwest slope of Rainbow Mountain, in the Cerbat Range, Mohave County, Arizona, and near the head of Pay Roll Gulch. They are one and one-half miles northeast from the town of Chloride, and 1.9 mile by auto road, which is in fair condition. The elevation of the collar of the shaft is about 4400' above sea level, that is, 400' above the town of Chloride. Chloride is twenty miles from Kingman by road, and is served by a branch of the Santa Fe Railway on which a train runs once a week, the main line passes through Kingman.

The climate is very dry with average annual rainfall about 6", and it is hot in summer but pleasant during the balance of the year and surface work can be carried

on continuously. The country is rough, rocky and barren with little regetation, so that it might be classed as "near desert".

GEOLOGY

The formation of this district is pre-Cambrian granite and hornblende schist with intrusive dikes of pegmatite, diorite and aplite. The veins may be classed as intrusive vein-dikes of granite porphyry or pegmatite, and since the original surface has been eroded for a great distance, it is assumed that the minerals were deposited from gases or highly heated waters at considerable depth below the original surface, and that they probably extend to horizons much below those which have been worked to date.

The Pay Roll is one of three large parallel veins striking NW and SE and lying to the east of the town of Chloride. It can be traced on the surface for over two miles and has been made the basis of mining operations at various points, as will be noted later.

The vein is nearly vertical, dipping slightly to the NE, the strike averaging N-30°-W. The footwall country shows considerable schist mixed with the granite. The hangingwall is practically all granite. Along the footwall of the vein there is a gouge of talcose material which seems to separate the ore from the wall rock. On the hangingwall of the ore there is a band of dike rock which has been classed as aplite or alaskite, and beyond this is found shattered and largely barren quartz with narrow seams of ore gradually shading into the granite proper.

Oxidation has taken place in the vein to a considerabel distance below the surface, extending in parts of the mine down to the 400' level. The valuable minerals in

the oxidized portion are principally lead carbonate, zinc carbonate and iron oxide. In spots they are substantially enriched by gold and silver residual no doubt from the eroded upper portions of the original vein. In the lower and unoxidized portions the minerals are principally zinc blende (sulphide), galena (lead sulphide), chalcopyrite (copper iron sulphide) associated with iron sulphide. Along the second and third levels substantial quantities of the gouge material along the footwall have slipped down into the drifts and in places have made it difficult to pass thru into the workings beyond.

HISTORY

Discoveries of ore in this district date from the early 1860's when prospectors and miners, working east from California, found high grade surface gold ores near Catman. In the 1870's mining was quite active, silver ores also received attention, and the base metals came into prominence after the main line of railroad was constructed thru this country in 1882.

The Pay Roll Claim was located in 1887 and some high grade ore was mined and shipped from points near the surface. It is said that much of this material had a gold value of $80, or thereabouts, per ton, but no reliable records appear to have been kept, not is it now possible to determine from exactly what points the ore was taken, although apparently most of it came from small pockets in the oxidized portion of the main Pay Roll vein where gold and silver would have had an opportunity to concentrate.

The main shaft at the Pay Roll was sunk to a depth of over 200' prior to 1906, and two other shafts had been put down in the vein as noted on the map. It does not

a ppear that any large quantity of ore had then been taken from these shafts or from any workings excepting those near the surface.

After Mr. Scott acquired this property, in about 1910, he deepened the main shaft, which is in the footwall of the vein, to 400', crosscut to the vein and extended the drifts on this level.

About 1916 the mine was leased to a man named Martin, who shipped some ore from the 200' and 400' levels, but apparently this proved too low grade to warrant continued operations.

In 1924 the Pay Roll Consolidated Company took a lease on the property and sunk the shaft to the 600' level, after which Mr. Scott resumed control and ran the crosscut on the 600' to the intersection of the vein. The last work done (1927-29) was by the Pay Roll Mines, Inc., operating under a lease and bond, and consisted principally in extending the 600' drift along the vein to its present limits as shown on the map. A little ore was mined from the stopes on the 400' and 600' and from the drifts, raises and winzes, and some was shipped crude, the balance sent to the concentrating mill which was built in 1929.

OTHER WORKINGS ON PAY ROLL VEIN

Aside from the shafts mentioned, there are several trenches and shallow pits along the surface of the Pay Roll Claim developing the outcrop of the vein and showing in places oxidized ore. Apparently several other pits were sunk but have now been covered by waste dumps. The Black Prince Claim, which lies to the northwest, does not show any promising outcrops and has not been developed to any substantial extent.

To the southeast of the Pay Roll Claim is located the Mary Belle, owned by Dr. Blackwell, who has also worked near to the north end of the Pay Roll where some lead ore was found near the surface, but apparently did not extend to any depth.

On the Mary Belle Claim there are two tunnels driven in opposite converging directions from the slopes of a ridge which runs at right angles to the Pay Roll vein. The tunnels are in the vein but quite close to the surface, and from both of them a little high grade ore has been taken. Here the vein is fairly strong but either narrow or split up into several stringers. The values are higher in lead than on the Pay Roll Claim, and also said to be richer in gold and silver.

The Rankin Tunnel starts on the Mary Belle millsite and runs due east 775' from the portal to a point where it cuts the Pay Roll vein with a back of 210'. From this point a drift was run along the vein for about 100', but this is now caved and could not be visited. Where the vein was originally cut by the Rankin Tunnel it shows stringers of lead and zinc ore scattered through quartz and does not appear to be commercial.

All of these workings are within a comparatively short distance of the surface and the ore shows considerable oxidization. They give some encouragement toward further development at depth provided that similar development in the Pay Roll Mine itself should give satisfactory results.

About a mile southeast from the Mary Belle are the workings of the Mayflower Mine from which some good ore has been taken from pockets but where no continuous pay ore

bodies have yet been found. I did not visit this property which has been idle for some time and where I understand that most of the workings are inaccessible.

At a short distance northwest of the main Pay Roll shaft the vein intersects Pay Roll Gulch which appears to be a line of faulting and to cut off the vein altogether. Surface indications lead one to assume that the vein has been thrown a considerable distance to the southwest and the outcrop of a similar vein on the North Georgia property is very probably a continuation of the Pay Roll, although this could not be positively determined from data now available.

It is my opinion that, while the entire Pay Roll vein may be classed as an ore-bearing zone, commercial values are confined to comparatively short and nearly vertical shoots or lenses such as the one developed near the main shaft and the more important shoot at the southeast end of the 600' level. A similar shoot is developed on the Mary Belle and undoubtedly there are many others along the strike of the vein, but their exact location is not indicated by the outcrop and they could only be proved by systematic drifting at a deep level where the oxidization would have disappeared. This would obviously involve a very heavy expenditure which at the present time does not seem justified.

MINE LAYOUT AND EQUIPMENT

The mine is developed by one vertical two-compartment shaft, each compartment being 4' 6" inside timbers with sets of 8 x 10s, spaced 6' apart, and generally lagged solid. There are four levels located respectively at 50', 200', 400' and 600' below the collar of the shaft. The sump extends 25'

below the fourth level.

Two other shafts were sunk in the vein many years ago; one is about 100' east of the main shaft and connects with this through an intermediate level and a raise from the 50' level. This connection is now impassable, although it serves to some extent for ventilation. The second shaft, at a considerably higher elevation, is about 300' to the SE and cannot be descended at the present time. It is not connected with any of the other underground workings. All the above can be best understood by reference to the Blue-print attached.

The equipment in the main shaft consists of a good headframe with sheave-wheel and cable, to which is attached a 14 cu. ft. mining bucket which can be replaced as desired by a 200 gallon baling bucket. At one time a cage was provided but it is said that the hoist was not sufficiently powerful to lift this, together with a loaded ore car, from the fourth level. The mine makes some 3500 to 4000 gallons of water per day, which is baled out to below the fourth level by daily operation of the hoist and baler for about two hours.

The power-house is built of frame timber covered with corrugated iron. There is one 40 H.P. Fairbanks-Morse oil hoisting engine, one 60 H.P. Fairbanks-Morse engine driving a Chicago-Pneumatic 12 x 10 compressor. At the collar of the shaft there is a 4 H.P. Novo oil engine driving a blower for ventilation underground and a centrifugal pump to put water into the tanks. South of the shaft is located a framing shed and blacksmith shop equipped with a forge, hand-driven blower, and Waugh drill sharpener. There is on hand a #5 Comeron sinking pump, also several drills and a considerable quantity of drill steel and fittings.

Other buildings comprise a change-room with shower bath, two small store houses, and across Pay Roll Gulch a combined office building and dwelling house with four comfortable rooms and porch. Buildings and equipment are in good shape excepting the power house which needs some repair. The hoisting engine is of an old type and said to be wasteful of fuel, and, if operations were to be resumed, the engines would probably need a thorough overhauling, re-babbitting of bearings and some other repair work.

CONCENTRATING MILL

The mill, built in 1929 by the Pay Roll Mines, Inc., has a capacity of 50 tons of ore per day. It is located 200' south of the main shaft to which it is connected by a narrow gauge mine track. The crude ore bin and coarse-crushing-plant are on the Pay Roll Clain, the line of which cuts across the belt conveyor which is an offset from the coarse-crushing plant to the main-building. The main-building is on the Millsite Claim belonging to the Pay Roll Mines, Inc., but now encumbered, together with all its equipment, by various liens filed by creditors of the Pay Roll Mines, Inc.

The mill buildings are of frame timber covered with corrugated iron and are well constructed and in excellent shape. The mechanical design of the mill is good and the flow-sheet and treatment of the ore are correct from the metallurgical standpoint involving the separate production of a lead and a zinc concentrate through the application of selective-flotation. In a larger mill it might prove advantageous to make a third product, namely, a copper-iron concentrate, but this would not be economical in such a small plant and, judging from the assays of the concentrates, the copper and gold values in the ore are principally contained in the lead concentrate, which is advantageous from a financial standpoint.

The machinery in the mill was mostly purchased new and is in good condition. Some of it was not skillfully erected but adjustments could be made without difficulty or great expense. The principal items of equipment are as follows:

(A) - In Coarse-Crushing Plant

1 - crude ore bin with capacity of 50 tons, covered by a grizzly.

1 - 7" x 10" Hendrie & Bolthoff jaw crusher

1 - 5" x 9" Joshua Hendy jaw crusher

1 - 25 H.P. motor

The conveyor from the coarse-crushing-plant to the main building is housed in a substantial shed and consists of a conveying belt 20" wide and 120' long, equipped with runners and idlers and driven by a 5 H.P. motor.

(B) - In Main Mill Building

Storage bin for fine ore
(crushed to pass 1" ring)
Capacity 50 tons.

Automatic feeder and ball mill 5' x 4'
(no name plate)(Above driven by belt from 50 H.P. Motor)

Dorr Duplex Classifier 16' x 5'
The above driven by a belt from the same 50 H.P. Motor.

Mineral Separation Company Flotation Machine
(sub-aeration type)
12 cells, each 30" x 44"
Equipped with Link Belt silent chain drive also Roots blower
This machine built by Joshua Hendy Iron Wks.

40 H.P. Motor to drive flotation machine

1 - 20' diameter thickener tank with Dorr mechanism and small motor

1 - 10' thickenor tank with Dorr mechanism and small motor.

1 - Wilfley Table used as a pilot.

2 - Dorrco pumps for the thickened pulp feeding the filters

1 - Oliver filter 50" x 36" for zinc concentrates.

1 - Filter (no name plate) 28" x 24" for lead concentrates.

2 - concentrate bins, respectively for lead and zinc concentrates. Each with capacity of about 30 tons.

NOTE:- (In the zinc concentrate bin there are approximately twenty tons which may be fairly represented by my sample, showing Gold - .12 ozs. per ton; silver - 5.6 ozs.; copper - 1%; lead - 2.5%; zinc 35%.

In the lead concentrate bin there was only a small amount of material which according to my sample contains; Gold - 1.41 ozs. per ton; silver - 63 ozs. per ton; copper - 11.6%; lead - 30.2%; zinc - 5.2%.

Should the concentrating mill be acquired by your clients it is recommended that both lead and zinc concentrates be sold and also any pay material that could be cleaned up in the thickener tanks and other protions of the mill.)

All motors in the mill are A.C., 60 cycle, 3-phase, 440 volts.

About 100' west of the mill is located a transformer house with transformers for reducing the primary current, which comes in at 44,000 volts, to that of the mill circuit, i.e. 440 volts. I was told that these transformers are the property of the Pay Roll Mines, Inc., but am not certain on this point.

The power line of the Desert Power and Light Company terminates in the transformer house mentioned and I understand that power was sold to the Mining Company at 2.75¢ per KW Hour. Undoubtedly this rate could be improved upon if regular operations were undertaken and a good load factor maintained. Under such conditions it might be advantageous to consider scrapping the gas engines in the power-house at the mine and utilizing electric current for the operation of all the mining machinery as this would result in a substantial operating economy.

RELATION OF MILL TO MINE

It is obvious that the mine in its present partially developed condition does not and never has justified the erection of a concentrator since steady operations of the mill could not be forecast until say 30,000 tons of ore were definitely assured and the mine workings properly advanced to permit the economical production of 50 tons per day.

Since, however, the mill has been erected and is actually on the property, the instant question is to decide whether this is worth acquiring at a comparatively low price on the chance of its proving of much greater value to any parties who might operate the mine in the future, or whether the owners of the mine should merely stand on their rights and allow the holders of the liens to remove and sell the buildings and equipment. I am informed that the total of the liens other than your own now filed against the Pay Roll Mines, Inc., and the property on their Millsite Claim amounts to $6,447.76. These liens could probably be purchased for cash with a discount of about 25%, and there seems to be little chance that the Pay Roll Mines, Inc., will be in a position to redeem this property, and to do so they would have to pay the full amount of the liens, plus accrued interest and costs. I should judge that the mill building and machinery actually cost over $30,000, and it should be worth from $12,000 to $15,000 to any company in need of a similar mill, but in the event that no such purchaser could be found and that operations are not resumed at the Pay Roll, it might have to be sold to secondhand machinery houses, in which case the net price that might be realized would probably not exceed $6,000 or $7,000, considering the great surplus of secondhand machinery which is now on the market.

QUANTITY AND QUALITY OF ORE

The blue-print attached shows the plan and section of the Pay Roll Mine and also the location by number of the samples taken in the course of my examination. The tabulation of assays gives the respective width and analysis of each of these samples. No analysis for copper was made on samples taken in the upper levels where this metal was noted only in negligible quantity, and the percentage of both lead and copper in the samples from the lower level is disappointing. The character and width of the vein varies to a considerable extent in different parts of the mine and in sampling we aimed to cover only the width of pay ore which should be mined as clean as possible in order to keep up the grade. In places where the ore is wide - for example in the southeast end of the fourth level - a certain amount of sorting could be advantageously done, decreasing the tonnage by probably 25% and increasing the average grade of the material mined by from 15% to 20%.

I have not placed any value upon the various samples for the reason that the prices of all the metals contained (excepting gold) have varied so widely during the last few months and are now at such an abnormally low level that any such valuation might become wholly meaningless within the course of the next few months. As an example, consider the ore developed along the southeast section of the 4th level, represented by samples #7 to #35, inclusive. This oreshoot has a length of 360' and an average width of about 5', the maximum width being in excess of 10' at the winze, but decreasing to the northwest. The grade of this ore is:

Gold	-	.1 oz. per ton
Silver	-	3.0 ozs. " "
Copper	-	.4%
Lead	-	.84%
Zinc	-	7.6%

For comparison with this average I took a sample of the ore in the mine bin which was said to have been taken largely from this section of the mine, the analysis of which was as follows:

Gold	-	.08 oz. per ton
Silver	-	3.40 ozs. " "
Copper	-	.7%
Lead	-	2.3%
Zinc	-	6.1%

The metal contents being slightly above the average of the mine samples above quoted.

Now the gross value of the ore which might be mined from this section of the fourth level without sorting is $11.00 per ton, based on present metal prices, whereas it would have been $16.45 per ton in July, 1929. These figures are merely quoted for purposes of comparison since the gross value of any ore means but little to the producer and real importance attaches only to the net value which must be figured out by very complicated calculations.

Considering that the Pay Roll ore, (except in a few scattered pockets), is not sufficiently rich to be shipped crude to a smelter, calculations must be made on the basis of concentrating the ore and shipping the two classes of concentrates produced with due allowance for tailing and other losses in concentration, for the fact that some of the precious metals will be contained in the zinc concentrates where they have little or no value, that some of the zinc will be contained in the lead concentrates, and some of the lead in the zinc concentrates, and that the concentrates must stand the cost of trucking, railroad freight, treatment, refining and marketing charges, and smelter deductions and penalties. Considering then the character of the concentrates produced in the Pay Roll mill, as indicated roughly by the samples taken and making due allowance as above, it is apparent that the net value of the

ore of the east end of the fourth level is about $6.40 per ton on the basis of present metal prices and would have been about $9.50 on the basis of the prices which prevailed a year ago.

The best grade of ore in the mine was found on the third level and in the stope above it (samples #36 to #45, inclusive), but the width of this ore was only about 2', the length of the shoot being figured at 150'. The net value of this material is at present $15.00 per ton, and would have been $22.50 per ton a year ago.

To figure the operating costs I estimate the expense of normal development and mining, considering the average width and character of the vein, at $4.50 per ton, and the cost of milling at $2.50, with general expense, overhead and supervision estimated at $1.00, aggregating a total operating cost of $8.00 per ton of ore, which figure should be increased to about $9.00 per ton, if sorting were carried out as suggested. It therefore appears that under present conditions, or even under those which prevailed a year ago, only the ore in the vicinity of the stope on the 3rd level could be mined and milled with profit, but, since the tonnage available at this point is entirely problematic and the width of the vein so narrow as to increase the average mining cost, it would not be advisable to make any optimistic forecast regarding the possibility of handling even this ore with advantage.

Considering then the actual present condition of the mine, I should say that on the two upper levels there is no pay ore developed except at one or two points where small pockets or chimneys occur and where the gold or lead values are sufficiently good, as at the location of sample #43 and #38, to make it possible for small operations to be conducted with advantage, preferably by lessees.

On the third level there is a small shoot of ore which justifies some further development particularly the upward extension of the raise which was inaccessible for sampling, and it is possible that some ore might be profitably taken from this point provided sufficient additional ore could be developed in other sections of the mine to permit the operation of the concentrator.

The south end of the third level is too low grade to be commercial but a further extension of the drift is justified on the chance of developing a somewhat better grade of material and for the purpose of extending at least to the point where the raise from the fourth level would intersect the third level drift.

The showing on the fourth level is the most interesting in the mine, for, while the grade is not sufficiently good to permit profitable mining, there are indications that the ore is both widening and improving in grade with depth and the values in copper and zinc appear to be increasing. This showing justifies development, preferably the sinking of the winze for an additional 100' and farther if the expected improvement is then apparent. It is my opinion that the further value of the property will depend almost entirely upon the results of this development and no definite estimate regarding this value can be made at the present time. It will be noted that this ore-shoot is fairly continuous for a length of 360', having an average width of 5' and being 10' wide in the vicinity of the winze, therefore, the winze itself could be sunk entirely in ore. The quantity of ore which might be developed in this shoot figures at 200 tons per vertical foot, so that there is a probability of proving up 20,000 tons by deepening the winze 100' and running a drift for the length of the ore at this level, or double this tonnage by going down 200' and repeating the

drifting, always assuming that conditions do not change adversely while such work is in progress. Obviously it would be of no advantage to develop a large tonnage of non-commercial ore, but I am strongly of the opinion that the mine workings are just beginning to enter the pay zone and that during the next 100' the ore value will substantially improve. Should this prove not to be the case, the work could be stopped at any time that such action appeared justified.

DEVELOPMENT WORK RECOMMENDED AND ESTIMATED COST

Should the owners of the property or other parties decide to proceed with operations at the Pay Roll Mine, the following work is recommended both for the purpose or complying with the State Mining Laws in reference to escapement ways and with the object of developing additional ore reserves.

Overhauling mine plant and building, and minor repairs. Estimated cost.....	$ 675.00
Estending 400' level about 50' southeast and cleaning out drift. Estimated cost.....	1,000.00
Completing raise from 600' to 400' level. Distance 105'. Estimated cost.....	1,575.00
Completing raise from 400' to 200' level. Distance 100' Estimated cost.....	1,500.00
Driving raise from 200' to 50' level Distance 150'. Estimated cost....	2,250.00
Cleaning raise from 50' level to intermediate level and intermediate level to old shaft. Retimbering the above and providing same with proper ladders. Estimated cost.....	1,000.00
Deepening winze at east end of 600' level for 100' Estimated cost.....	5,000.00

Crosscuts on 600' level.....	$ 500.00
Crosscuts and drifts from winze 100' below 600' level.....	2,000.00
Deepening winze an additional 100' and crosscuts and drifts at bottom.....	8,000.00
Overhead, engineering and incidentals.....	1,500.00
TOTAL.....	$25,000.00

This development work might reasonably be expected to bring the positive and probable ore reserves of the mine to from 40,000 to 50,000 tons in which event, assuming that the grade of the newly developed ore improves as expected, stoping and milling operations would be justified with a resultant profit dependent on the average grade of material produced and the market prices of the metals, - neither of which factors can be forecast at present.

CONCLUSION

The Pay Roll Mine in its present condition must be considered as only a partially developed property with practically no reserve of commercial ore that can be classed as either positive or highly probable. The general conditions indicate that the upper workings of the mine are in a portion of the vein which was never highly mineralized or where oxidation and leaching have robbed the vein of its original values, excepting those in gold and silver which have been increased by concentration at certain specific points. The geology of the deposit and the showings in the lower levels of the mine indicate that the true ore zone is being approached and encourage the belief that a more substantial mineralization

and higher values, particularly in copper and zinc, will be found at greater depth. The showings at the southeast end of the fourth level should be made the basis of additional development in depth and this development appears justified and is recommended subject to an improvement in the metal markets and particularly the price of zinc which constitutes the principal content of the ore and is likely to increase as greater depth is gained.

(Signed) G. M. Colvocoresses

TWELVE FEET OF RICH ORE IN PAYROLL

June 1, 1916.

[From Chloride Section Daily Miner.]

The round of holes on the afternoon shift Monday broke into the vein on the Payroll mine. This was in the crosscut from the bottom of the 400-foot shaft, which cut the vein at approximately the 600-foot level. The ore encountered carries heavily in zinc and lead, there being little gangue present.

The Payroll mine is now in the hands of Thomas B. Scott, who is also owner of the Lucky Boy group, one of the large producing properties of the camp. Believing that the Payroll offered great possibilities, Mr. Scott took it over from Mrs. Mary Osborn and Judge J. J. Hawkins. Since acquiring the property Mr. Scott has equipped it and began the sinking of the shaft below the 200-foot level. At a depth of 400 feet a crosscut was run toward the vein and it was in this crosscut that the ore has been revealed. On the level above the vein was 20 feet wide, and it is expected that a greater width will be shown on the 400-foot level.

The Payroll is one of the big lead veins of the camp. It has also produced considerable gold bearing ore. Hundreds of tons of heavy lead ore were shipped to the smelters in the early life of the camp, but the larger ore bodies were left intact. The mine has a large tonnage of ore in sight already.

The crosscut from the shaft on the 400-foot level of the Payroll has entered 12 feet of splendid ore. Although no assays have yet been had on the ore, it is known to contain a great amount of metal, principally zinc. It also carries values in lead, silver and gold.

It is the expectation that the vein will be found as large as on the 200-foot level, but unlike the ore above, it has values that will make the Payroll a running mate for the Tennessee.

Payroll Unwatered.

The Payroll mine, at Chloride, has been unwatered and miners are now at work clearing the crosscuts and drifts of muck. It will be several days before the mine is ready to begin active development on the deep level. It is probable that the work will be undertaken will be the connecting of the winze from the tunnel level with the crosscut on the 400. In this winze a splendid showing of ore was exposed, but this work was discontinued when the new shaft was started and no effort was ever made to connect the old and new work through this shaft. The Payroll is one of the big veins of the Chloride section and ought to become a large producer of rich lead ore.

When the MINER editor came to the county the Payroll, then known as the Oriental, was producing ore under lease and for many years afterward made regular shipments to the smelters. The ore carries good values in gold and silver, as well as lead. Aug - 1915

Fred H. Stull, who has had charge of the Lucky Boy group for so many years, is in charge of the property and is getting good results.

GUGGENHEIMS TAKE OVER PAYROLL MINE

With the recent sampling of the Payroll and the subsequent visit of Julius Krutschnitt, Jr., there seems to be a move on the part of the Guggenheim interests to acquire more property in the Chloride district. At one time this company was pronouncedly for silver, but of late it is strongly leaning toward lead, and it is believed that its coming into Chloride portends extensive development in search of big producers of that metal.

With the acquisition of the Elkhart and the prospective purchase of the Payroll, the A. S. & R. will have heavy holdings in this district. It is said that overtures have been made to others in the district and there is little doubt in the minds of mining men here that their investments in Chloride are just beginning.

With the substantiation of what at present is only conjecture, no better news can possibly be sent abroad. It is a well known fact that many mining men of means follow where the Guggenheims lead, and their entry into a country is the strongest argument that can be used to establish meritorious propositions in the minds of other investors.

Renewed interest centers in the Payroll since the property has been taken over by McDonald & Knight. This is one of the big treasure vaults that is helping to put Chloride more prominently on the mining map. It is expected work will be resumed on the shaft, which is now down 400 feet, about March 15. The new owners are planning erection of a 50-ton mill.

PAYROLL MINE IS LEASED TO MARTIN PEOPLE

MAY 1 1917

The famous Payroll mine has been leased for ten years to L. F. Martin and associates of Calexico. Word to that effect was received Saturday by E. Martin Thorniley, a mining engineer who sampled the property for Mr. Martin. Some little delay was occasioned owing to the fact that Mr. Thorniley advised, as consulting engineer, that the privilege should be granted that at least 10,000 tons should be treated prior to finally deciding upon the particular type of mill to be erected on the property. The new principals are bound to erect a mill, but have thrown out this safeguard that there may be no mistake made in the installation of the correct type of plant.

The Copley-Williams company is interested in the deal, having brought the proposition to the attention of Mr. Martin and Mr. Thorniley.

A full complement of mining machinery is being ordered, consisting of adequate compressor and pumping equipment and Leyner drills. The shaft will be put in condition to accomodate guides for cage, etc. New type of mine cars have also been ordered.

PAYROLL MILL
UNDER WAY

PAYROLL MILL
NOW NEARING

r Year Kingman, Ari

PAYROLL MILL SOON RUNNING

7/1/29

MILL WILL BE BUILT AT THE PAYROLL MINE

50 TON MILL TO BE BUILT BY PAYROLL MINE

PAYROLL MINE MAY REOPEN; FUTURE GOOD

Kingman

A short time ago George M. Colvocoresses, the well known smelter and mining man, made an examination of the Payroll and other mining property of the Thomas B. Scott estate, the property being situate at Chloride. The Payroll, one of the most important of the mines of the Scotts, has a shaft to a depth of 600 feet on it and considerable lateral work done from some of the levels. With proper handling and sufficient funds to carry on the development, the mine should be made one of the important producers of the district. It has a large vein, the values being in gold, silver, copper, lead and zinc, the lead and zinc being the most important part of the metallic content.

Some time ago a bond and lease was taken on the mines by a Los Angeles company, a mill installed, but apparently the company was unable to get on a financial basis to allow opening the mine to produce sufficient ore for the mill. In consequence the option lapsed and now the estate is looking into the whys of the failure and the condition of the mine.

—O—

PAYROLL MILL MAKING GOOD ORE PRODUCT

The new mill of the Payroll is now in operation and the first 24 hours work showed a splendid saving of values and carried the capacity of the plant up to 50 tons, the product being clear zinc and a combination concentrate of copper-lead, these two metals being in equal percentage. The management is greatly pleased with the initial run and expect to increase milling capacity to approximately 75 tons daily.

The mill ore is being drawn from the 600 level, where a shoot of ore ranging from six to seven feet in width has been entered, this ore carrying important values in lead, zinc and copper, as well as goodly values in gold and silver. Development is being carried on in this ore and it is from the drift that sufficient tonnage is being obtained to keep the mill well supplied with its necessities. Smilie Jones has been in charge of the mill and mine as consulting engineer and it is due to his expert knowledge of selective flotation that the mill has been the success that it is. The mine also has important ore bodies on other levels.

Mr. Jones, who has been at the head of construction affairs of the Payroll mill is also acting in the same capacity with the Monarch Lead, which is installing a big mill on its Tennessee property. Details of construction are in the

SHIPPING FROM PAYROLL MINE

Kingman

Duval Hampton, president of the Payroll Mines, Inc., passed through Kingman Tuesday on his way to Los Angeles, where he will meet his associates in the mines. He reports that ore is going out from the 400 and 600 levels of the mine to the Chloride mill and that as soon as some of the drifts have been mucked out and put in shape further increase in tonnage will be sent to mill. The adit drift, which enters the vein at about 50 feet below the outcrop, is being cleared of caves and waste and will soon be shipping ore to mill. From this drift a considerable tonnage of gold ore, running $50 to the ton, was shipped to the smelters. In the opening of a drainage cut around the hoist house, a few days ago, a shoot of heavy lead ore was found, which later may be explored.

The company management believes that with further development the Payroll will be one of the important producers of the Chloride camp.

MILLING PLANT FOR THE PAYROLL

Kingman

Mr. Hampton and associates have been in Los Angeles the past two weeks arranging for the purchase of a milling plant for the Payroll mine. It is the intention of the management to build a plant on the property and gradually work out the ore bodies to the 600 level, the ore bodies showing importantly on the two levels, the 400 and 600, while the old workings from the surface openings showing good mill stuff. The mine is one of the best looking propositions in the Chloride camp, aside from the Tennessee.

—O—

Payroll Mines Get New Thickener Plant

CHLORIDE, April 6.—A new thickener plant is being installed at the Payroll Mines, Inc., at Chloride, it was announced recently by Leo Campbell, vice president and manager of the corporation. It is expected that the plant will be put into operation within the next month. The property is producing ores containing lead, zinc, gold and silver.

—O—

PAYROLL MILL PROGRESSING

Kingman

The mill of the Payroll mine, at Chloride, is being assembled and within a short time it is expected to be in commission. The plant is to be of the selective flotation type, for the handling of the complex ores from the property, these ores carrying values in gold, silver, lead and zinc. Foundations for the plant have been cast, houses built and office ready for use.

The shaft of the Payroll is at a depth of 600 feet on the vein, crosscuts having been driven into the ore body, and a sufficient tonnage of excellent grade opened for a long run of the mill. Water has been developed to support the water from the mine in the handling of the mill.

—O—

The Payroll mine is again in operation. This time it is under a 10-years' lease to L. F. Martin, of Calexico. The south drift on the 400-ft. level will be extended 250 ft. farther. Good milling-ore has been opened up in this drift.

The Payroll mine outputted a large tonnage of very good ore in the days gone by, a number of carloads from the tunnel adit running $50 in gold. Other parts of the mine produced largely of heavy galena ore. The vein is very large and ought to become a big producer.

Payroll Mine Will Soon Be in Limelight

Phoenix Ariz. Dec 25, 1917

That the old Payroll property will soon be in the "limelight" again is the opinion of many prominent mining men of Arizona. Col. Rankin, promoter of the property, arrived in Chloride only a few days ago and unfolded plans for the sinking of the shaft another 200 feet and of driving the tunnel into the mountain one and one-half miles.

The tunnel is now some 800 feet in length, but work was stopped some months ago for reasons best known to the promoters. T. B. Scott of New York is associated in this wonderful project and it was stated by Col. Rankin when he arrived from the east a few days ago, that Scott had acquired $100,000 to complete the project.

Two men were put at work at the Payroll Tuesday to clean up and get things in shape for a gang of men to start working. Tools that were in charge of former Superintendent Henning have been hauled up to the tunnel and it is said that Dr. Blackwell has been placed in charge of the work that is to be done on the Rankin properties and also will assume the duties of superintendent of tunnel construction.

Pennsylvanian Visits Mohave County Mines

Mr. and Mrs. H. E. McLain, of Pittsburgh, arrived in Kingman a few days agoand are looking over the mineral sections of Wallapai mining district. Mr. McLain is the president of the Payroll Consolidated Mines company, which corporation has a long time lease on the Payroll mine, at Chloride. This is his first visit to Kingman and is much pleased with conditions. He is a large shareholder in the Kingman Consolidated Mines company, formerly the Arizona Butte, and Thursday last paid a visit to the property. We understand that he was well satisfied with the development of the property and the ore showings in the old workings. With his associates he has taken part in the financing of this property and at the present time enough money is in the treasury to continue the development campaign for a period of more than a year. During the stay of Mr. and Mrs. McLain in Kingman they were the guests of Edward Copley, Mr. Copley having interested the Pennsylvanians in Mohave county mining properties.

NEW CORPORATION TAKING OVER THE OLD PAYROLL MINE

Kingman 1/3/28

A corporation to take over the Pay Roll Mine, at Chloride, has just been organized under the laws of the state of Delaware, with a capitalization of two million fifty cent shares. Pittsburg, Pa., people are at the back of the enterprise and we believe that they will surely put it on a successfull footing.

The Pay Roll mine was one of the early lead-silver producing properties of the Wallapai mining district, and has been developed to a depth of 600 feet. A tunnel was carried in on the vein from a point near the Marybelle claim, several hundred feet and a good body of ore opened. Near the portal of this tunnel a fine body of ore running $50 in gold, besides other metals, was opened, several carloads being shipped to the smelters by the late Patsy F. Collins and others. Later the property was taken over by Colin Timmons and Ferd Nellis for eastern people and the shaft sunk outside of the vein to a depth of 200 feet. These men had opened a fine body of ore below the tunnel level in a winze, but on the deep level did not get into the ore body. Later this shaft was continued to the 40 level, which is 500 feet below the apex of the vein. With greater development we believe that the property will be a big producer.

LOOKS OVER WORK ON PAYROLL MINE

Kingman 12/25/20

Last week Thomas B. Scott, of New York, owner of important mining property at Chloride, visited that camp and looked over the work that is being carried on at the Payroll. The shaft had recently been cleaned out and retimbered and the work of sinking to a new level is under way. It is expected that this shaft will be carried down to 800 feet and from that point the Payroll and nearby veins will be opened.

The Payroll was opened on the 400 level by Colin Timons, who was operating the property for Colorado interests, but because he falied to open as good an ore body as that found on the adit level above he advised the shutting down of the property. No effort was made to connect up the levels and open an ore body, although a winze had been carried down about 60 feet from the adit level and splendid ore developed. Had this work been carried to conclusion we believe the property would never have been allowed to lie idle the past several years. The Payroll has a large vein and is well situated in the big mineral belt. The men now in charge of the mine has the backing of a good Pennsylvania crowd that intends to get results as rapidly as possible.

J. C. Rankin announces that the shaft of the Payroll mine is to be re-timbered to the 200-ft. level, the timbering below that point being in good condition. The shaft is to be sunk to the 600-ft. level and the upper levels developed further.

GUGGENHEIMS TO TAKE OVER THE PAYROLL

With the recent sampling of the Payroll and the subsequent visit of Julius Krutschnitt, Jr., there seems to be a move on the part of the Guggenheim interests to acquire more property in the district. At one time this company was pronouncedly for silver, but of late it is strongly leaning toward lead, and it is believed that its coming into Chloride portends extensive development in search of big producers of that metal.

With the acquisition of the Elkhart and the prospective purchase of the Payroll, the A. S. & R. will have heavy holdings in this district. It is said that overtures have been made to others in the district and there is little doubt in the minds of mining men here that their investments in Chloride are just beginning.

With the substantiation of what at present is only conjecture, no better news can possibly be sent abroad. It is a well known fact that many mining men of means follow where the Guggenheims lead, and their entry into a country is the strongest argument that can be used to establish meritorious propositions in the minds of other investors.

PAYROLL CAGES AND MINE CARS ARRIVE AND ARE TO BE PLACED

JUN 2 1917

The cages for the shaft on the Payroll, together with the mine cars, have arrived and last Wednesday were taken to the mine. The cages and cars will be placed in commission at once and three shifts will be put to work taking out the ore in the rich mine.

COL. RANKIN TAKES TEN YEAR LEASE ON PAYROLL

Col. J. C. Rankin, who has been making Chloride his home the past year or more, has taken a ten year lease on the Payroll and Marybelle mines. A big bore tunnel is now being driven into the Payroll ground that will tap the ore body at depth and enable the extraction of ore without the expense of handling the big body of water that was struck at the 400 in the Payroll. The upper tunnel was driven on the vein and was in ore for a long distance. It was to tap this ore body that the present shaft was sunk and the crosscut run. The crosscut reached the vein in a bad break and the people having the mine under option discontinued work. Under the ownership of T. P. Scott a fine body of lead-zinc ore was opened.

With a deep opening in the vein the property ought to become one of the largest shippers in the county. The ore is good and properly handled the mine should be a winner. Col. Rankin has had wide experience in the handling of mines and mills and we expect big results from his management.

PAYROLL SHIPS 35 TONS A DAY

AUG 25 1917

The Payroll continues shipments to the Needles mill at the rate of nearly 35 tons per day. Tom Ramsey is doing the hauling from the mine to a point on the railroad just below the Rainbow tramway orebins, where the cars are "spotted" by the railroad.

Development at the mine continues to open up an abundance of ore, assuring steady shipments to the mill.

SURVEY IS MADE FOR RAILROAD SPUR TO PAYROLL SHAFT

For the past week engineers of the Santa Fe have been in Chloride surveying and making estimates of a spur to the Payroll mine. The work was undertaken at the request of T. D. Scott, owner of the mine, who wishes to have the product of the mine loaded directly on the cars.

From remarks dropped by the engineers, the grade will be in the neighborhood of 4 per cent and will take some heavy work to accomplish the project. It is understood that Mr. Scott is determined to have the road reach his mine, and much speculation is made over the result of the estimate when it reaches his hands.

PAYROLL MINE TO SINK 300 FEET DEEPER

Thomas B. Scott came in from Los Angeles yesterday evening and went to Chloride this morning to look after his large mining affairs. He reports that all arrangements have been made to begin the sinking of the shaft on the Payroll mine from the 200 level to the 500 level, whence the big vein will be cut. The managament has cut into the vein on the 200, where some splendid ore was found. It was the cutting of this ore, as well as the big ore bodies on the tunnel level, that convinced the management of the necessity of deep mining.

The sinking of the shaft to the 500 level will bring the workings to 700 feet below the outcrop of the vein. The vein in the property is one of the best defined in the Chloride section and has produced an immense amount of ore in past years. With the property opened to the 700 level it should soon be among the largest producers of the camp.

Pay Roll, at Chloride, has been sold to Mr. Scott, who has been operating the same for the last six months, and has opened up a big body of good milling zinc ore.

Pay Roll, at Chloride, has been sold to Mr. Scott, who has been operating the same for the last six months, and has opened up a big body of good milling zinc ore.

PAYROLL MINE HAS NEW FIND ON 400 LEVEL

June 6-1916

The round of holes on the afternoon shift Monday broke into the vein on the Payroll mine. This was in the crosscut from the bottom of the 400-foot shaft, which cut the vein at approximately the 600-foot level. The ore encountered carries heavily in zinc and lead, there being little gangue present.

The Payroll mine is now in the hands of Thomas B. Scott, who is also owner of the Lucky Boy group, one of the large producing properties of the camp. Believing that the Payroll offered great possibilities, Mr. Scott took it over from Mrs. Mary Osborn and Judge J. J. Hawkins. Since acquiring the property Mr. Scott has equipped it and began the sinking of the shaft below the 200-foot level. At a depth of 400 feet a crosscut was run toward the vein and it was in this crosscut that the ore has been revealed. On the level above the vein was 20 feet wide, and it is expected that a greater width will be shown on the 400-foot level.

The Payroll is one of the big lead veins of the camp. It has also produced considerable gold bearing ore. Hundreds of tons of heavy lead ore were shipped to the smelters in the early life of the camp, but the larger ore bodies were left intact. The mine has a large tonnage of ore in sight already.

TWELVE FEET OF RICH ORE IN PAYROLL

June 8-1916

The crosscut from the shaft on the 400-foot level of the Payroll has entered 12 feet of splendid ore. Although no assays have yet been had on the ore, it is known to contain a great amount of metal, principally zinc. It also carries values in lead, silver and gold.

It is the expectation that the vein will be found as large as on the 200-foot level, but unlike the ore above, it has values that will make the Payroll a running mate for the Tennessee.

Mohave Mineral Wealth: The starting up of the Payroll Monday brings good cheer to Chloride as Payroll is one of the large things of camp. Now if Midnight would fall into competent hands, May would be a red letter month for Chloride. With water growing daily in Midnight perhaps the coming big caves will show the interested ones where the deeper bodies of ore lie.

SURVEY IS MADE FOR RAILROAD SPUR TO PAYROLL SHAFT

[From Chloride Section Daily Miner.]

For the past week engineers of the Santa Fe have been in Chloride surveying and making estimates of a spur to the Payroll mine. The work was undertaken at the request of T. D. Scott, owner of the mine, who wishes to have the product of the mine loaded directly on the cars.

From remarks dropped by the engineers, the grade will be in the neighborhood of 4 per cent and will take some heavy work to accomplish the project. It is understood that Mr. Scott is determined to have the road reach his mine, and much speculation is made over the result of the estimate when it reaches his hands.

A branch railway, built in 1899 to connect Chloride with the Santa Fe, was recently dismantled.

These mountains consist largely of pre-Cambrian schist, gneiss, and granite, intruded by granite-porphyry and lamprophyric dikes, and overlain in places by Tertiary volcanic rocks.

The principal mineral deposits are in the west-central segment of the range, in the Chloride, Mineral Park, Cerbat, and Stockton localities, which are collectively termed the Wallapai or Hualpai district. The deposits are mesothermal veins of prevailing northwestward strike and steep dip. Their gangue[144] is quartz, in many places shattered and recemented by later calcite. The primary minerals include pyrite, chalcopyrite, arsenopyrite, galena, sphalerite, tennantite, proustite, and pearceite. Locally, gold occurs in the sulphide zone. In the oxidized zone are native silver, horn silver, ruby silver, oxidized lead minerals, and locally, native gold. Rich bodies of silver ore with some gold were found in the oxidized zone, but sphalerite seems to be the principal constituent of the sulphide zone. The water level is generally above depths of 400 feet. Silver and lead predominate in the Chloride, Mineral Park, and Stockton localities, and gold and silver in the vicinity of Cerbat camp.

The Cerbat Mountains have made a large production in silver, lead, zinc, and gold. Only those deposits that have been valuable chiefly for gold are considered in this report.

CHLORIDE VICINITY

PAY ROLL MINE[145]

The Pay Roll mine is about 1½ miles east of Chloride, near the middle of the western slope of the range. This deposit was located in 1887 and, prior to 1907, was opened by shafts 225, 100, and 60 feet deep, with 400 feet of workings and 600 feet of tunnels. The production was reported to include many carloads of shipping ore that ran about $80 per ton, mostly in gold, and was derived principally from the surface workings. Some development work was carried on intermittently from 1916 to 1929, and a small production of ore containing zinc, lead, silver, and gold was reported in 1917. In 1929, the Pay Roll Mines, Inc., treated about 1,400 tons of complex copper-lead-zinc ore in their new 50-ton flotation plant, but ceased operations late in the year.

The mine is on the Pay Roll vein, which strikes N. 30° W., dips steeply northeastward, and occurs in schist. This vein ranges from 6 to 100 feet, with an average of about 10 feet, in thickness and is traceable on the surface for nearly a mile. Its gangue is mainly quartz. The ore minerals are lead carbonate, galena, pyrite, and chalcopyrite, with both gold and silver.

[144] Description abstracted from Schrader, F. C., U. S. Geol. Survey Bull. 397, 1909.

[145] Largely abstracted from Schrader, work cited, pp. 62-63.

COPPER AGE IN HIGH GRADE AT 700 FEET

WORK IS BEING RUSHED ON THE MILL

New Ore Discovery Creates Great Excitement in Mining Camp

AUG 17 .017

Another big strike was made Tuesday in the Mary Bell, ow being worked by expert Nevada leasers. The entire ace of the tunnel, which is about 260 feet in, is in ore, bout 24 inches of it being apparently a high grade ship- ing ore, the balance a highly mineralized ore with a eavy yellow-iron content. This yellow iron very fre- ıently carries high gold values. Assays are being made ıt will not be announced until too late for this issue of ıe HERALD.

The leasers have nearly a carload of shipping ore led on the dump. Two piles, one containing the zinc ore ıd the other the lead-silver ore, have been made. As on as there is enough in either pile for a carload it will shipped. At the present rate of extraction and with ıe present showing this should be accomplished in a short ne.

ONE ORE STREAK ASSAYS $125 TO THE TON, WI ENTIRE BREAST OF DRIFT IN GOOD SHIP- PING ORE.

With two feet of ore in one streak assaying $125 per ton in gold, silver and lead and with the entire breast of the drift in shipping ore, the Mary Bell looms up as the big event of the week in Chloride mining circles.

Saturday drill holes were put into the waste in order to strip the ore for clean breakage. The break revealed another good shoot of lead ore. Sunday the remaining waste was again shot away, when still another shoot of lead ore appeared, the present showing filling the breast of the drift with ore, as above indicated.

The leasers already have a carload of ore on the dump, but as half of it consists of highgrade zinc ore no shipment will be made until there is enough gotten out for a full car of this zinc ore and a carload of the gold-silver-lead ore. With this showing in sight Monday morning this happy event should occur in less than a week. The drift is now in about 260 feet. A raise and a winze are soon to be started, as it wouuld not be possible to begin such work at a more advantageous point.

The owners of the lease are building a road from the tunnel mouth to connect with the X-Ray road just over the hill, a distance of about half a mile. This was made necessary at this time as otherwise the ore would have to be packed on animals.

Chloride.

DEEP TUNNEL TO TAP MARYBELLE MINE IS NOW IN 500 FEET

[redacted]

Kingman, Arizona, August 5, 1940.

To: J. S. Coupal, Director,

From: Elgin B. Holt, Field Engineer,

Subject: Mary Bell Mine - Owner: J. G. Blackwell, Chloride, Ariz.

Some time ago, Dr. J. G. Blackwell, of Chloride, Arizona, asked me to visit and look over this property, with a view to trying to help him place the property with people who would go ahead and develop it in a large way.

Last week I gave the mine the once over, in company with owner; and herewith is inclosed my report concerning it.

Dr. Blackwell states that he had already mailed you a complete report concerning this property by Oscar H. Hershey, dated April 24, 1939. So you should have this report in your files. I was also furnished a copy of this report.

As you will note, the Mary Bell vein is large and runs over a sharp ridge. Two tunnels are driven on this vein, one on South side, known as the South Tunnel and the other on the North side, known as the North Tunnel. Both of these tunnels are in ore, which is partly oxidized and part sulphide material. Also, the Ranking Tunnel - a cross-cut tunnel - cuts this same vein in ore according to Blackwell. However, this latter tunnel is caved and I could not get into it. The main thing necessary to be done is to sink to greater depth on this vein in order to get into straight sulphide ore, now showing in streaks in the upper tunnels mentioned.

Again, you will note that the Pay Roll mine, or mining claims cover the north extension of the Mary Bell vein; and that the Pay Roll mine is developed to a depth of 600 feet. Dr. Blackwell showed me an assay map of this property by Calvocoressos, with assay results outlined in my report.

All in all, I believe if these two mines could be developed in a large way and then equipped with a mill of goodly capacity, that a profitable operation would result. The main thing is that these mines are located near the Tenessee, the record of which is well known.

Good mines like company, so these properties by all means warrant a careful investigation by anyone looking for meritorious partly developed mines on which to spend some money, with a view to opening up a lot of mill tonnage.

Hence, I am passing this matter on to you, suggesting that you do what you can in the way of finding a buyer for the properties.

E. B. H.

Write owner.

LL

Pay Roll Mine

Bull. 397 p. 62
Bull. 978E p. 157

01 p. 9

ull. 137 p. 110

Report by Hershey & White,
H. Hershey), dated 4-24-29
ary Bell Group" file

Eagle-Picher Confidential files "P" also
see Mohave County Summary "M"

Kingman Mining Project - 1 claim map

New Jersey Mine (file)

Arizona Mining Journal August 1920, p. 13 and 31

ABM Bull. 140 p. 95

Mines Handbook Vol. XIII P. 374

Malach, R., Mohave County Mines 1977 p. 27

Evaluation of Mineral Resources of Hualapai Indians VOL. 1, 1964, P. 195-197

MILS Sheet sequence number 0040150703

Geology of the Chloride Quad. by Blakemore E. Thomas, p. 416, Geology File
1953

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine MARY BELL GROUP Date July 30, 1940.

District Wallapai, Mohave County, Ariz. Engineer Elgin B. Holt

Subject:

SYNOPSIS REPORT

OWNER: J. G. Blackwell, Chloride, Arizona.

METALS: Gold, silver, lead zinc, copper.

LOCATION: Property located 2 miles East of Chloride, Arizona, and about ½ mile Easterly from the Tennessee-Schuylkill mine.

AREA: Property consists of 4 mining claims and one mill site.

GEOLOGY: Country rocks consists of granite-gneiss complex of pre-Cambrian age.

VEINS: Five veins, from 2 to 10 feet wide traverse property. The main vein, consisting of iron stained porous quartz, shows to be about 20 feet wide at the end of South Tunnel; but the ore vein along which the tunnel was driven lies along the foot wall of this vein. At the top of the ridge the vein zone, consisting of altered pegmatite granite, is about 135 feet wide. This vein then runs down the north side of ridge to North Tunnel.

DEVELOPMENT WORK consists of the South Tunnel, driven North 30 degrees West on the foot wall vein a distance of 330 feet; the North Tunnel, driven South 30 degrees East 222 feet along the said foot wall vein, at the same elevation as the South Tunnel; and the Rankin cross-cut tunnel was started at foot of hill and was driven South 89 degrees 30' East 775 feet, or to a point where it cuts the main vein 98.17 feet North 30 degrees West from the portal of North Tunnel and 217 feet deeper than that tunnel. Thence a drift was run on the foot wall vein South 30 degrees East 115 feet in ore. The face of this drift is in ore 5 feet wide carrying goodly zinc-lead values; but assay values not now available. The Rankin Tunnel is now caved and inaccessible.

ORE - ASSAYS: In the back half of the South Tunnel there are bands of sphalerite up to 6 inches wide, associated with galena, chalcopyrite and pyrite. At 142 to 148 feet from mouth of this tunnel is a winze 38 feet deep, penetrating a sulphide ore zone. Here Blackwell reports he sampled 6 feet 8 inches of ore that assayed: 0.06 oz. gold, 3.2 ozs. silver, 5.6% lead, 0.6% copper and 10.8% zinc.

In a 7 foot winze near back end of this tunnel, Blackwell took 3 samples that averaged: 0.12 oz. gold, 10 ozs. silver, 19% lead and 19% zinc.

From this same tunnel two lots of ore were shipped, giving following results: Lot No. 1: 30 tons carrying gold 0.172 ozs., silver 7.03 ozs, lead 11.6% and zinc 12.0%. Date of shipment Nov. 5, 1938. Lot No. 2: 27 tons, carrying gold 0.0163 ozs., silver 3.42 ozs., lead 2.3% and zinc 6.7%.

The North Tunnel had ore all along its course about one foot wide of sulphide material, assaying lead, zinc, gold and silver. These assays are from bands and bunches and do not represent much tonnage; but they show the ore to be of goodly grade and it is believed this class of ore will be found in quantity deeper and below the oxidized zone of the vein.

REMARKS: Attention is called to this property [illegible] marks of a large milling proposition in the making. This statement seems justified by the following facts:

1. In addition to data set forth in the first page of this report, the north extension of the Mary Bell vein is covered by the Pay Roll mining claims, two in number. This group is owned by the Thomas B. Scott Estate, for which J. G. Blackwell is agent.

The Pay Roll mine is developed by a working shaft sunk vertically in foot wall of vein 600 feet deep, with levels hundreds of feet in length at depths of 50, 200, 400 and 600 feet.

An assay map of this property by George M. Calvocoressos, of Phoenix, Arizona, of vein material on all the levels mentioned gives the following results:

Widths - ft.	Au ozs.	Ag ozs.	Cu %	Pb %	Zn %
4.1	0.11	2.45	0.37	1.4	8.58

2. The Mary Bell property is located only 3,000 feet from the Tennessee-Schuylkill mine, with a reported record of $18,000,000, in the same metals as are found in the Mary Bell property. The Tennesse mine is developed to a depth of 1,400 feet and is now the largest active complex ore mine in the Chloride area. This property is equipped with a selective flotation mill, which treats daily and profitably 150 tons of ore carrying gold, silver, lead, zinc and copper values; the ore being sulphide material. Two marketable products are made: First: a zinc concentrate, which is shipped to Amarilla for refining; and, second, a lead concentrate, carrying the other metals mentioned and which is shipped to El Paso for treatment.

CONCLUSION: From facts herein given, it is believed if adequate capital can be found to develop and block out the main ore-bearing vein of the Mary Bell property to a depth of 600 to 800 feet from surface, and then equip the property with a suitable flotation mill, a profitable operation will result.

However, any company taking the Mary Bell should also secure control of and plan to develop the Pay Roll mine referred to.

WATER for milling can undoubtedly be secured in quantity from these mines, in the process of developing the same, as is the case with the Tennessee property above referred to.

Elgin B. Holt,
Field Engineer.

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
FIELD ENGINEERS REPORT

Mine: PAY ROLL
District: Wallapai, Mohave Co., Arizona
Subject:

Date: July 20, 1943
Engineer: Elgin B. Holt

BRIEF REPORT

OWNER: Thomas B. Scott, Jr., 910 Thompson Bldg., Tulsa, Oklahoma.

LESSEE: Ralph R. Langley, Box 455, Kingman, Arizona.

METALS: Zinc, lead, gold and silver. Ore is complex sulphide material, galena, sphalerite and chalcopyrite; hence the same is suitable for treatment by selective flotation.

LOCATION: This mine is located about one-half mile southeast of the Tennessee-Schuylkill property and 1½ miles east of Chloride, Arizona.

MINE WORKINGS: The property is developed by a vertical shaft, with two compartments, sunk to a depth of 625 feet, with cross-cuts to vein each 200 feet depth in shaft. At points where these cross-cuts intersect vein, drifts have been run northwest and southeast on the same, for a distance of approximately 500 feet on each level.

ASSAY MAP: An assay map, consisting of a longitudinal section, was prepared in 1919 by C. E. Major, of Prescott, Arizona. Dr. J. G. Blackwell, of Chloride, has a copy of this map, which is tabulated; the average vein width and assay results being as follows:

Width-ft.	Au-oz.	Ag-ozs.	Cu-%	Pb-%	Zn-%
4.1	0.11	2.45	0.37	1.40	8.58

CHARACTER OF ORE: In the upper levels of property, years ago, many car loads of rich shipping ore were mined and shipped, per Schrader, that ran around $80.00 per ton in lead, silver and gold. These rich ores consisted of oxidized material encountered in the secondary ore zone. Below the 200-foot levels, per reports zincy sulphide ores came in, as set forth above. In the bottom of the mine, according to the assay map, the vein is widening and heavier zinc sulphide ore is coming in.

ORE RESERVES: There are no records available as to the amount of ore now blocked out in the Pay Roll mine, excepting the assay map mentioned. Also a limited amount of ore was stoped out and milled, some years ago, from the blocks now developed. However, from a study of the assay map, it would seem that there are now indicated in the mine, allowing liberally for stoped out areas, approximately 60,000 tons of ore assaying as set forth above.

CONDITION OF MINE: The collar of the shaft is caved in and water now stands near the 50-foot level in the mine. Hence, in order to make the said 60,000 tons of ore accessible for mining and extraction, it will be necessary to unwater the underground workings and recondition the shaft to the bottom thereof.

RFC LOAN: Mr. Langley, lessee of property, has been granted from RFC a loan of $5000 with which to unwater and rehabilitate the said shaft and workings. The said sum, in my opinion, is far from adequate; but due to the importance of this property, in that it has a considerable reserve of excellent grade milling ore fairly well blocked out, perhaps, after work is started by Langley, in carrying out the plan of reconditioning the mine, as above set forth, RFC may see fit to advance sufficient money to thoroughly clean the mine out and put it into production of badly needed startegic ores.

[ESTI]MATED DAILY PRODUCTION: From the above data, and granted that funds will be available in order to carry out the work above described, it is believed the [pro]perty could be put in shape within a period of 10 months to supply a custom mill with around 75 tons of ore daily over a period of at least two years. And this statement does not take into account that new and important ore reserves will be uncovered later on as fast as new development work can be carried out, especially below the 600-foot level of the mine. Also, as soon as production of ore can start, it is believed mill heads can be held at the average assay values, in zinc, lead, copper, gold and silver, as set forth in the above paragraph, entitled: "Assay Map."

/s/ Elgin B. Holt
Elgin B. Holt
Field Engineer

Los Angeles California.
February 5th, 1943

Mr. W. B. Ochring,
Supervising Engineer,
Reconstruction Finance Corporation
305 Heard Building,
Phoenix, Arizona.

Re: Payroll Mine.

Dear Mr. Ochring:

I would like your advice on the following at your early convenience.

For some weeks I have been negotiating with the attorneys for the owner (the owner being in the service in Africa) of the Payroll mine at Chloride, for a lease on the property. We have agreed upon terms and conditions but at the last minute the attorneys object to subordination of the cash minimum payments to the loan of the RFC.

The lease has not yet been made out and executed and it is not desirable to have it executed until all terms are agreed upon for the reason that in the absence of the owner it is necessary to have trustees and other representatives execute--which is quite a task to get around to all of them.

I feel very sure that the owner would very readily subordinate, particularly since the whole matter is primarily a war necessity matter, but his New York Attorneys do not want to assume that responsibility. I think the RFC might waive the subordination if we put the commencing of the cash minimum monthly payments off until we have plenty of time to unwater and do some developing and thus either get into production or, decide to give the property up if the examination and sampling do not warrent proceeding.

Here is the situation. The Payroll appears to be one of the most potent zinc and lead properties in the district. It is developed six hundred feet in depth, by vertical shaft and drifts. Very little stoping has been done. The ore runs probavly 9% zinc and 3% lead with about 1% copper and about $2.50 in gold and silver. About 20,000 tins of ore are opened up on three sides. The workings are orderly and well done. The property and workings were thoroughly examined and sampled by Mr. George M. Colvocoresses whom you no doubt know, for the owners, before it filled with water. The figures and statements just given are taken from his assay map and report and from his conversations. It seems to be a property which will really produce zinc and lead--and at better than a sustaining profit.

I figure it will take thirty days to unwater and sample the mine, after RFC funds are available, then another thirty days to increase the loan for development and to start development and production. Four months from now we should either be in production to such

RALPH R. LANGLEY
1045 SOUTH BEDFORD STREET
LOS ANGELES 35, CALIFORNIA
P. O. BOX 455
KINGMAN, ARIZONA

RECEIVED

a $100.00 monthly minimum or we will not want the property.

So it occurs to me that if we make a practical matter of it and not agree to start making any minimum monthly payments until after time enough to get the property into production, perhaps eight or nine months hence, that might be considered by the RFC to be the same, in effect, as a subordination.

I believe the property is one of the most potential in the district and would like to open it up and develop it.

Am not sure whether you are in position to pass upon such a question, and if not then I think it is if sufficient importance to justify sending on to Washington by airmail.

If this point could be affirmatively settled a lease will be very promptly executed, an application for a loan made and the un. atering and sampling done.

Awaiting your advice with interest, I am,

Sincerely,

Ralph R. Langley.

cc. Copy to J. S. Coupal

Old photograph of Tyrol mine
year unknown, but the mine

PAY ROLL

per VBD phone call, 5/24/76 - owner is Thomas B. Scott, Jr., address 7547 N. Eucalyptus, Paradise Valley, 948-1575; office: 7244 E. Indian School Road, Scottsdale, 945-7771

I arranged for a backhoe to go to the Payroll mine in the Cerbat Mts. near Chloride to trench a large dump. The County Road Dept. sent a backhoe and operator to the Payroll mine to dig a sample trench on a large dump. After the trench was cut Foss, Doss and I surveyed in the dump and trench. VBD WR 6/16,17/76

Mr. Doss drove to the Pay Roll mine. After examining dumps on the Minnesota-Connor mine, Foss and I drove to the Pay Roll where we started sampling the dump. The crusher would handle only about 50 lbs. per hour and this was too time consuming. VBD WR 6/22/76

I answered a letter from Thomas B. Scott, Jr., owner of the Payroll and Black Prince claims in the Cerbat Mountains of Mohave County, with a telephone call. The Payroll mine is one of the properties sampled during the Mohave County Custom Mill Project. Mr. Scott is interested in leasing or selling his mine on a straight royalty basis to some responsible party. VBD WR 10/15/76

Project personnel on the Mohave County Mill Project used Arithmetical averages rather than weighted averages for dump computations at the Minnesota-Connors and Payroll Mines. WR VD 2/18/77

LEGAL NOTICES

same, and properly appurtenant thereto, including the ownership and operation of mills, smelters, railroads, tramways, tunnels, ditches, flumes and other property, including the power to lease its mines or lands, or part thereof, to other corporations; to buy, sell or lease mines and mining property of all kinds, and to reduce ores for others upon commission; to engage in trade and transportation of every kind, including road building and carrying; to deal in merchandise and property of every description; to acquire securities of any corporation and the property, good-will and securities of any person or corporation; to acquire and dispose of any patents, inventions or copyrights, trade marks and trade names; to guarantee, purchase, pledge or otherwise dispose of any of the securities of any corporation organized under the laws of any state or country; to issue bonds, debentures or obligations of this corporation for any of the objects or purposes thereof, and to secure the same by mortgage, pledge, deed of trust or otherwise; to purchase, hold, sell and transfer the shares of its own capital stock, provided it shall not use its funds or property for the purchase of its own shares of capital stock when such use would cause any impairment of its capital, and provided further that shares of its own capital stock belonging to it shall not be voted upon directly or indirectly.

To have one or more offices to carry on all its operations and business without restrictions of any sort; to acquire, own, mortgage, sell, convey or otherwise dispose of real or personal property of every description in any state of the United States or any foreign country.

To exercise all the powers conferred by the laws of Delaware upon corporations formed under the Act hereinafter referred to, and to do any or all the things hereinbefore set forth, to the same extent as any natural persons might or could do.

The foregoing clauses shall be construed both as objects and powers, and it is hereby expressly provided that the foregoing enumeration of specific powers shall not be held to limit or restrict in any manner the powers of this corporation.

FOURTH: The total authorized capital stock of this corporation is One Million ($1,000,000.00) Dollars, divided into

LEGAL NOTICE

may be from time to time designated by the Board of Directors.

TENTH: This corporation reserves the right to amend, alter, change or repeal any provision contained in this Certificate of Incorporation, in the manner now or hereafter prescribed by statute, and all rights conferred upon stockholders herein are granted subject to this reservation.

WE THE UNDERSIGNED, being each of the original subscribers to the capital stock hereinbefore named, for the purpose of forming a corporation to do business both within and without the State of Delaware, and in pursuance of the General Corporation law of the State of Delaware, being Chapter 65 of the Revised Code of Delaware, and the acts amendatory thereof and supplemental thereto, do make and file this Certificate, hereby declaring and certifying that the facts herein stated are true, and do respectively agree to take the number of shares of stock hereinbefore set forth, and accordingly have hereunto set our hands and seals this 12th day of March, A. D., 1920.

T. L. CROTEAU (Seal)
M. A. BRUCE (Seal)
S. E. DILL (Seal)

In the presence of:
HERBERT E. LATTER

STATE OF DELEWARE)
COUNTY OF NEW CASTLE) ss.

BE IT REMEMBERED that on this 12th day of March, A. D. 1920, personally came before me, Herbert E.

LEGAL NOTICES

Latter, a Notary Public for the State of Delaware, T. L. Croteau, M. A. Bruce and S. E. Dill, parties to the foregoing certificate of incorporation, known to me personally to be such, and severally acknowledged the said certificate to be the act and deed of the signers respectively and that the facts therein stated are truly set forth.

GIVEN under my hand and seal of office the day and year aforesaid.

HERBERT E. LATTER,
Notary Public

Herbert E. Latter, Notary Public, appointed February 25, 1919. State of Delaware. Term two years.

STATE OF DELAWARE
Office of Secretary of State

I, EVERETT C. JOHNSON, Secretary of State of the State of Delaware, do hereby certify that the above and foregoing is a true and correct copy of Certificate of Incorporation of the "PAY ROLL CONSOLIDATED MINES COMPANY," as received and filed in this office the thirteenth day of March, A. D. 1920, at 9 o'clock A. M.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal at Dover, this thirteenth day of March in the year of our Lord one thousand nine hundred and twenty.

EVERETT C. JOHNSON,
Secretary of State.

(SEAL)
First Insertion April 3
Last Insertion May 8-20-6t-up

The retimbering and unwatering of the Pay Roll shaft has been completed. Sinking has been resumed. Superintendent Blackwell reports good progress.

The Pay Roll has a day shift of five men at work getting ready for sinking

PAYROLL TO BE WORKED BY EASTERN MEN

The shaft of the Payroll, at Chloride, is being kept free of water until the management maps out its plan of development. This property was recently taken over by a Pittsburgh group of financiers who purposed developing it to a considerable depth below the present level. Owing to the tightness of money in the big eastern money centers the work of financing was not carried on with as much celerity as it was at first thought possible, which accounts for the slowness of the development work.

The Payroll is believed by mining men to be one of the most important base metals mines of this part of the state and with proper development it ought to be brought into a state of productivity that will rival any of the mines in the larger camps. In the early days the mine shipped many hundreds of tons of rich silver-gold ore, but the deep work did not pick up the ore shoots found in the upper levels, wherefore the necessity for development into new ground on the 600. In the winze from the tunnel level the mine showed a big body of ore and this shoot has never been exploited at depth, although some attempt was made to cut into it on the 400. It is to be hoped that matters will be cleared up and that further important work will be soon under way.

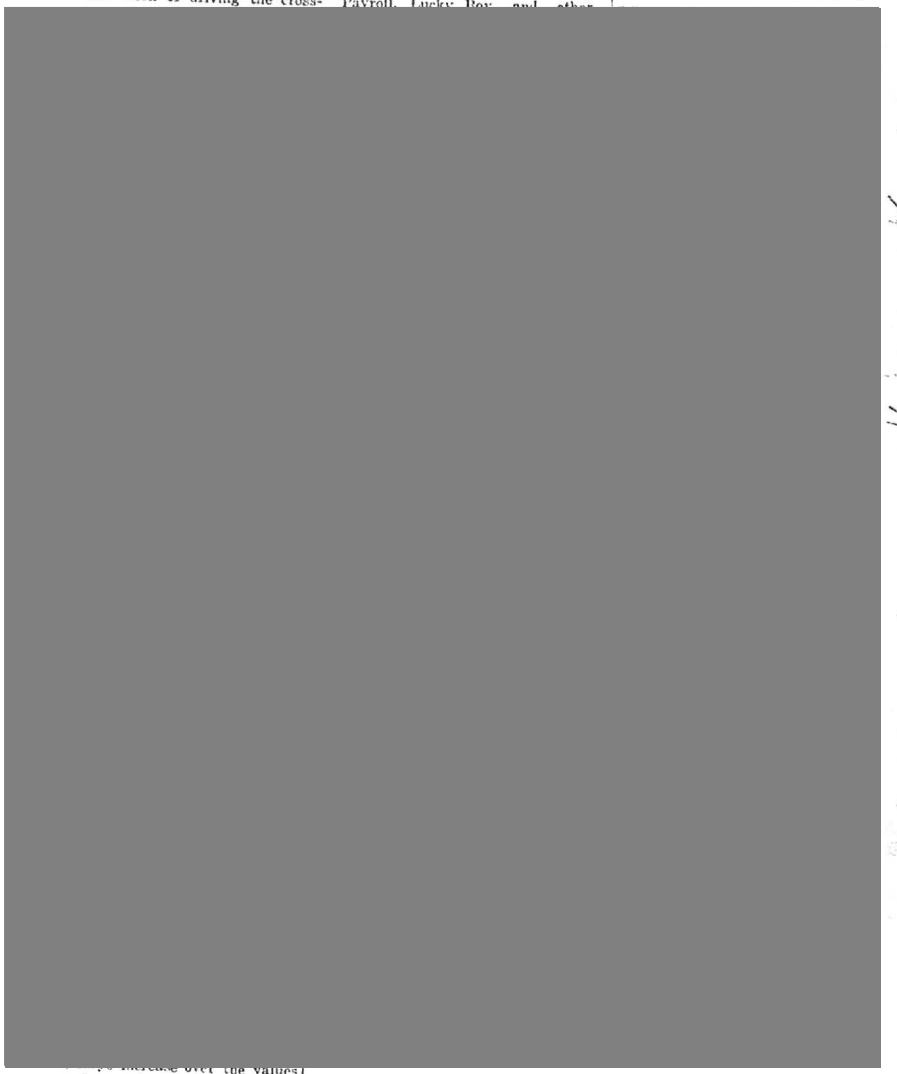
600 LEVEL PAYROLL

The work of driving the cross-

HERE THIS WEEK

Thomas B. Scott, owner of the Payroll, Lucky Boy and other

TAKEN OVER BY



and near the surface.

M SCOTT STARTS

DEVELOPMENT WORK MAPPED OUT FOR

BEING UNWATERED

The work of unwatering the big

crop, and this new work is to get in to the vein at a new level, where it is expected a big flow of water will be encountered, which may take some time to control. When the vein was

Returned Owner

Kingman 8/1/30

The Payroll mill is running two shifts and the development that is

Year	Mine Cu lbs	Payroll Ag oz	Payroll Au oz	Pb lbs	Zn lbs	Short Tons
1900						
1901						
1902						
1903						
1904						
1905						
1906	11419	313	11	0	0	42
1907						
1908						
1909						
1910						
1911						
1912						
1913						
1914						
1915						
1916						
1917	0	908	61	12828	77778	500
1918						
1919						
1920						
1921						
1922						
1923						
1924						
1925						
1926						
1927	0 233	320 74	04 5	8000 to	26300 0	200 to 3
1928						

George M. Colvocoresses
Mining and Metallurgical Engineer
1103 Luhrs Tower
Phoenix, Arizona

August 5, 1930.

Messrs. Clark & Phelps,
149 Broadway
New York, N. Y. Attn: Mr. Murphy.

Gentlemen:

REPORT ON PAY ROLL MINE

Pursuant to your letter of instructions, dated New York, June 25th, 1930, I have examined and sampled the PAY ROLL MINE, near Chloride, Mohave County, Arizona, property of the Thomas B. Scott Estate, and herewith beg to submit my report in duplicate, together with blue-print of assay map and tabulated analysis of samples.

PROCEDURE

The field work on which this report is based was conducted from July 17th to 24th, inclusive, when I was assisted by George J. Harbauer, a Mining Engineer of long experience, and by two miners who cut, cobbed and quartered the samples under our direction. The analysis of samples was made by H. C. Smoot, Custom Assayer, of Prescott, Arizona, whose work is accurate and reliable.

Every assistance and courtesy was extended us by your representative, Dr. Blackwell, to whom I am indebted for much information regarding the history of the mine and surrounding properties.

On the fourth level (600' level) we ran a survey with a Brunton Transit. The map of the other levels was traced from a blue-print furnished us by Dr. Blackwell and said to have been taken from a mining survey. In some details this print did not appear to be altogether accurate but the discrep-

sults or conclusions.

All underground samples were chipped with moils representing roughly a 2" groove across the width of ore. In the better portions of the vein these grooves were made at 10' intervals, elsewhere at 20' intervals. No samples were taken in material which appeared to be waste or almost barren of commercial minerals, and some portions of the mine were inaccessible due to caving of the old workings. Also it should be noted that the vein or stringers of ore at times appeared to run off into the walls of the drifts, so that sampling ore at these points was not feasible, but I believe that our sampling was sufficiently thorough and complete for all practical purposes.

PROPERTY AND LOCATION

There are two patented mining claims, namely, Pay Roll and Black Prince, aggregating forty acres. These are located on the southwest slope of Rainbow Mountain, in the Cerbat Range, Mohave County, Arizona, and near the head of Pay Roll Gulch. They are one and one-half miles northeast from the town of Chloride, and 1.9 mile by auto road, which is in fair condition. The elevation of the collar of the shaft is about 4400' above sea level, that is, 400' above the town of Chloride. Chloride is twenty miles from Kingman by road, and is served by a branch of the Santa Fe Railway on which a train runs once a week, the main line passes through Kingman.

The climate is very dry with average annual rainfall about 6", and it is hot in summer but pleasant during the balance of the year and surface work can be carried

on continuously. The country is rough, rocky and barren with little regetation, so that it might be classed as "near desert".

GEOLOGY

The formation of this district is pre-Cambrian granite and hornblende schist with intrusive dikes of pegmatite, diorite and aplite. The veins may be classed as intrusive vein-dikes of granite porphyry or pegmatite, and since the original surface has been eroded for a great distance, it is assumed that the minerals were deposited from gases or highly heated waters at considerable depth below the original surface, and that they probably extend to horizons much below those which have been worked to date.

The Pay Roll is one of three large parallel veins striking NW and SE and lying to the east of the town of Chloride. It can be traced on the surface for over two miles and has been made the basis of mining operations at various points, as will be noted later.

The vein is nearly vertical, dipping slightly to the NE, the strike averaging N-30°-W. The footwall country shows considerable schist mixed with the granite. The hangingwall is practically all granite. Along the footwall of the vein there is a gouge of talcose material which seems to separate the ore from the wall rock. On the hangingwall of the ore there is a band of dike rock which has been classed as aplite or alaskite, and beyond this is found shattered and largely barren quartz with narrow seams of ore gradually shading into the granite proper.

Oxidation has taken place in the vein to a considerabel distance below the surface, extending in parts of the mine down to the 400' level. The valuable minerals in

the oxidized portion are principally lead carbonate, zinc carbonate and iron oxide. In spots they are substantially enriched by gold and silver residual no doubt from the eroded upper portions of the original vein. In the lower and unoxidized portions the minerals are principally zinc blende (sulphide), galena (lead sulphide), chalcopyrite (copper iron sulphide) associated with iron sulphide. Along the second and third levels substantial quantities of the gouge material along the footwall have slipped down into the drifts and in places have made it difficult to pass thru into the workings beyond.

HISTORY

Discoveries of ore in this district date from the early 1860's when prospectors and miners, working east from California, found high grade surface gold ores near Catman. In the 1870's mining was quite active, silver ores also received attention, and the base metals came into prominence after the main line of railroad was constructed thru this country in 1882.

The Pay Roll Claim was located in 1887 and some high grade ore was mined and shipped from points near the surface. It is said that much of this material had a gold value of $80, or thereabouts, per ton, but no reliable records appear to have been kept, not is it now possible to determine from exactly what points the ore was taken, although apparently most of it came from small pockets in the oxidized portion of the main Pay Roll vein where gold and silver would have had an opportunity to concentrate.

The main shaft at the Pay Roll was sunk to a depth of over 200' prior to 1908, and two other shafts had been put down in the vein as noted on the map. It does not

appear that any large quantity of ore had then been taken from those shafts or from any workings excepting those near the surface.

After Mr. Scott acquired this property, in about 1910, he deepened the main shaft, which is in the footwall of the vein, to 400', crosscut to the vein and extended the drifts on this level.

About 1916 the mine was leased to a man named Martin, who shipped some ore from the 200' and 400' levels, but apparently this proved too low grade to warrant continued operations.

In 1924 the Pay Roll Consolidated Company took a lease on the property and sunk the shaft to the 600' level, after which Mr. Scott resumed control and ran the crosscut on the 600' to the intersection of the vein. The last work done (1927-29) was by the Pay Roll Mines, Inc., operating under a lease and bond, and consisted principally in extending the 600' drift along the vein to its present limits as shown on the map. A little ore was mined from the stopes on the 400' and 600' and from the drifts, raises and winzes, and some was shipped crude, the balance sent to the concentrating mill which was built in 1929.

OTHER WORKINGS ON PAY ROLL VEIN

Aside from the shafts mentioned, there are several trenches and shallow pits along the surface of the Pay Roll Claim developing the outcrop of the vein and showing in places oxidized ore. Apparently several other pits were sunk but have now been covered by waste dumps. The Black Prince Claim, which lies to the northwest, does not show any promising outcrops and has not been developed to any substantial extent.

To the southeast of the Pay Roll Claim is located the Mary Belle, owned by Dr. Blackwell, who has also worked near to the north end of the Pay Roll where some lead ore was found near the surface, but apparently did not extend to any depth.

On the Mary Belle Claim there are two tunnels driven in opposite converging directions from the slopes of a ridge which runs at right angles to the Pay Roll vein. The tunnels are in the vein but quite close to the surface, and from both of them a little high grade ore has been taken. Here the vein is fairly strong but either narrow or split up into several stringers. The values are higher in lead than on the Pay Roll Claim, and also said to be richer in gold and silver.

The Rankin Tunnel starts on the Mary Belle millsite and runs due east 775' from the portal to a point where it cuts the Pay Roll vein with a back of 210'. From this point a drift was run along the vein for about 100', but this is now caved and could not be visited. Where the vein was originally cut by the Rankin Tunnel it shows stringers of lead and zinc ore scattered through quartz and does not appear to be commercial.

All of these workings are within a comparatively short distance of the surface and the ore shows considerable oxidization. They give some encouragement toward further development at depth provided that similar development in the Pay Roll Mine itself should give satisfactory results.

About a mile southeast from the Mary Belle are the workings of the Mayflower Mine from which some good ore has been taken from pockets but where no continuous pay ore

bodies have yet been found. I did not visit this property which has been idle for some time and where I understand that most of the workings are inaccessible.

At a short distance northwest of the main Pay Roll shaft the vein intersects Pay Roll Gulch which appears to be a line of faulting and to cut off the vein altogether. Surface indications lead one to assume that the vein has been thrown a considerable distance to the southwest and the outcrop of a similar vein on the North Georgia property is very probably a continuation of the Pay Roll, although this could not be positively determined from data now available.

It is my opinion that, while the entire Pay Roll vein may be classed as an ore-bearing zone, commercial values are confined to comparatively short and nearly vertical shoots or lenses such as the one developed near the main shaft and the more important shoot at the southeast end of the 600' level. A similar shoot is developed on the Mary Belle and undoubtedly there are many others along the strike of the vein, but their exact location is not indicated by the outcrop and they could only be proved by systematic drifting at a deep level where the oxidization would have disappeared. This would obviously involve a very heavy expenditure which at the present time does not seem justified.

MINE LAYOUT AND EQUIPMENT

The mine is developed by one vertical two-compartment shaft, each compartment being 4' 6" inside timbers with sets of 8 x 10s, spaced 6' apart, and generally lagged solid. There are four levels located respectively at 50', 200', 400' and 600' below the collar of the shaft. The sump extends 25'

below the fourth level.

Two other shafts were sunk in the vein many years ago; one is about 100' east of the main shaft and connects with this through an intermediate level and a raise from the 50' level. This connection is now impassable, although it serves to some extent for ventilation. The second shaft, at a considerably higher elevation, is about 300' to the SE and cannot be descended at the present time. It is not connected with any of the other underground workings. All the above can be best understood by reference to the Blue-print attached.

The equipment in the main shaft consists of a good headframe with sheave-wheel and cable, to which is attached a 1¼ cu. ft. mining bucket which can be replaced as desired by a 200 gallon baling bucket. At one time a cage was provided but it is said that the hoist was not sufficiently powerful to lift this, together with a loaded ore car, from the fourth level. The mine makes some 3500 to 4000 gallons of water per day, which is baled out to below the fourth level by daily operation of the hoist and baler for about two hours.

The power-house is built of frame timber covered with corrugated iron. There is one 40 H.P. Fairbanks-Morse oil hoisting engine, one 60 H.P. Fairbanks-Morse engine driving a Chicago-Pneumatic 12 x 10 compressor. At the collar of the shaft there is a 4 H.P. Novo oil engine driving a blower for ventilation underground and a centrifugal pump to put water into the tanks. South of the shaft is located a framing shed and blacksmith shop equipped with a forge, hand-driven blower, and Waugh drill sharpener. There is on hand a #5 Comeron sinking pump, also several drills and a considerable quantity of drill steel and fittings.

Other buildings comprise a change-room with shower bath, two small store houses, and across Pay Roll Gulch a combined office building and dwelling house with four comfortable rooms and porch. Buildings and equipment are in good shape excepting the power house which needs some repair. The hoisting engine is of an old type and said to be wasteful of fuel, and, if operations were to be resumed, the engines would probably need a thorough overhauling, re-babbitting of bearings and some other repair work.

CONCENTRATING MILL

The mill, built in 1929 by the Pay Roll Mines, Inc., has a capacity of 50 tons of ore per day. It is located 200' south of the main shaft to which it is connected by a narrow gauge mine track. The crude ore bin and coarse-crushing-plant are on the Pay Roll Clain, the line of which cuts across the belt conveyor which is an offset from the coarse-crushing plant to the main-building. The main-building is on the Millsite Claim belonging to the Pay Roll Mines, Inc., but now encumbered, together with all its equipment, by various liens filed by creditors of the Pay Roll Mines, Inc.

The mill buildings are of frame timber covered with corrugated iron and are well constructed and in excellent shape. The mechanical design of the mill is good and the flow-sheet and treatment of the ore are correct from the metallurgical standpoint involving the separate production of a lead and a zinc concentrate through the application of selective-flotation. In a larger mill it might prove advantageous to make a third product, namely, a copper-iron concentrate, but this would not be economical in such a small plant and, judging from the assays of the concentrates, the copper and gold values in the ore are principally contained in the lead concentrate, which is advantageous from a financial standpoint.

The machinery in the mill was mostly purchased new and is in good condition. Some of it was not skillfully erected but adjustments could be made without difficulty or great expense. The principal items of equipment are as follows:

(A) - In Coarse-Crushing Plant

1 - crude ore bin with capacity of 50 tons, covered by a grizzly.

1 - 7" x 10" Hendrie & Bolthoff jaw crusher

1 - 5" x 9" Joshua Hendy jaw crusher

1 - 25 H.P. motor

The conveyor from the coarse-crushing-plant to the main building is housed in a substantial shed and consists of a conveying belt 20" wide and 120' long, equipped with runners and idlers and driven by a 5 H.P. motor.

(B) - In Main Mill Building

Storage bin for fine ore
(crushed to pass 1" ring)
Capacity 50 tons.

Automatic feeder and ball mill 5' x 4'
(no name plate)(Above driven by belt from 50 H.P. Motor)

Dorr Duplex Classifier 16' x 5'
The above driven by a belt from the same 50 H.P. Motor.

Mineral Separation Company Flotation Machine
(sub-aeration type)
12 cells, each 30" x 44"
Equipped with Link Belt silent chain drive also Roots blower
This machine built by Joshua Hendy Iron Wks.

40 H.P. Motor to drive flotation machine

1 - 20' diameter thickener tank with Dorr mechanism and small motor

1 - 10' thickener tank with Dorr mechanism and small motor.

1 - Wilfley Table used as a pilot.

2 - Dorrco pumps for the thickened pulp feeding the filters

1 - Oliver filter 50" x 36" for zinc concentrates.

1 - Filter (no name plate) 28" x 24" for lead concentrates.

2 - concentrate bins, respectively for lead and zinc concentrates. Each with capacity of about 30 tons.

NOTE:- (In the zinc concentrate bin there are approximately twenty tons which may be fairly represented by my sample, showing Gold - .12 ozs. per ton; silver - 5.6 ozs.; copper - 1%; lead - 2.5%; zinc 35%.

In the lead concentrate bin there was only a small amount of material which according to my sample contains; Gold - 1.41 ozs. per ton; silver - 63 ozs. per ton; copper - 11.6%; lead - 30.2%; zinc - 5.2%.

Should the concentrating mill be acquired by your clients it is recommended that both lead and zinc concentrates be sold and also any pay material that could be cleaned up in the thickener tanks and other protions of the mill.)

All motors in the mill are A.C., 60 cycle, 3-phase, 440 volts.

About 100' west of the mill is located a transformer house with transformers for reducing the primary current, which comes in at 44,000 volts, to that of the mill circuit, i.e. 440 volts. I was told that these transformers are the property of the Pay Roll Mines, Inc., but am not certain on this point.

The power line of the Desert Power and Light Company terminates in the transformer house mentioned and I understand that power was sold to the Mining Company at 2.75¢ per KW Hour. Undoubtedly this rate could be improved upon if regular operations were undertaken and a good load factor maintained. Under such conditions it might be advantageous to consider scrapping the gas engines in the power-house at the mine and utilizing electric current for the operation of all the mining machinery as this would result in a substantial operating economy.

RELATION OF MILL TO MINE

It is obvious that the mine in its present partially developed condition does not and never has justified the erection of a concentrator since steady operations of the mill could not be forecast until say 30,000 tons of ore were definitely assured and the mine workings properly advanced to permit the economical production of 50 tons per day.

Since, however, the mill has been erected and is actually on the property, the instant question is to decide whether this is worth acquiring at a comparatively low price on the chance of its proving of much greater value to any parties who might operate the mine in the future, or whether the owners of the mine should merely stand on their rights and allow the holders of the liens to remove and sell the buildings and equipment. I am informed that the total of the liens other than your own now filed against the Pay Roll Mines, Inc., and the property on their Millsite Claim amounts to $6,447.76. These liens could probably be purchased for cash with a discount of about 25%, and there seems to be little chance that the Pay Roll Mines, Inc., will be in a position to redeem this property, and to do so they would have to pay the full amount of the liens, plus accrued interest and costs. I should judge that the mill building and machinery actually cost over $30,000, and it should be worth from $12,000 to $15,000 to any company in need of a similar mill, but in the event that no such purchaser could be found and that operations are not resumed at the Pay Roll, it might have to be sold to secondhand machinery houses, in which case the net price that might be realized would probably not exceed $6,000 or $7,000, considering the great surplus of secondhand machinery which is now on the market.

QUANTITY AND QUALITY OF ORE

The blue-print attached shows the plan and section of the Pay Roll Mine and also the location by number of the samples taken in the course of my examination. The tabulation of assays gives the respective width and analysis of each of those samples. No analysis for copper was made on samples taken in the upper levels where this metal was noted only in negligible quantity, and the percentage of both lead and copper in the samples from the lower level is disappointing. The character and width of the vein varies to a considerable extent in different parts of the mine and in sampling we aimed to cover only the width of pay ore which should be mined as clean as possible in order to keep up the grade. In places where the ore is wide - for example in the southeast end of the fourth level - a certain amount of sorting could be advantageously done, decreasing the tonnage by probably 25% and increasing the average grade of the material mined by from 15% to 20%.

I have not placed any value upon the various samples for the reason that the prices of all the metals contained (excepting gold) have varied so widely during the last few months and are now at such an abnormally low level that any such valuation might become wholly meaningless within the course of the next few months. As an example, consider the ore developed along the southeast section of the 4th level, represented by samples #7 to #35, inclusive. This ore-shoot has a length of 360' and an average width of about 5', the maximum width being in excess of 10' at the winze, but decreasing to the northwest. The grade of this ore is:

Gold	-	.1 oz. per ton
Silver	-	3.0 ozs. " "
Copper	-	.[illegible]%
Lead	-	.[illegible]%
Zinc	-	7.6%

For comparison with this average I took a sample of the ore in the mine bin which was said to have been taken largely from this section of the mine, the analysis of which was as follows:

Gold	-	.08 oz. per ton
Silver	-	3.40 ozs. " "
Copper	-	.7%
Lead	-	2.3%
Zinc	-	6.1%

The metal contents being slightly above the average of the mine samples above quoted.

Now the gross value of the ore which might be mined from this section of the fourth level without sorting is $11.00 per ton, based on present metal prices, whereas it would have been $16.45 per ton in July, 1929. These figures are merely quoted for purposes of comparison since the gross value of any ore means but little to the producer and real importance attaches only to the net value which must be figured out by very complicated calculations.

Considering that the Pay Roll ore, (except in a few scattered pockets), is not sufficiently rich to be shipped crude to a smelter, calculations must be made on the basis of concentrating the ore and shipping the two classes of concentrates produced with due allowance for tailing and other losses in concentration, for the fact that some of the precious metals will be contained in the zinc concentrates where they have little or no value, that some of the zinc will be contained in the lead concentrates, and some of the lead in the zinc concentrates, and that the concentrates must stand the cost of trucking, railroad freight, treatment, refining and marketing charges, and smelter deductions and penalties. Considering then the character of the concentrates produced in the Pay Roll mill, as indicated roughly by the samples taken and making due allowance as above, it is apparent that the net value of the

ore of the east end of the fourth level is about $6.40 per ton on the basis of present metal prices and would have been about $9.50 on the basis of the prices which prevailed a year ago.

The best grade of ore in the mine was found on the third level and in the stope above it (samples #36 to #45, inclusive), but the width of this ore was only about 2', the length of the shoot being figured at 150'. The net value of this material is at present $15.00 per ton, and would have been $22.50 per ton a year ago.

To figure the operating costs I estimate the expense of normal development and mining, considering the average width and character of the vein, at $4.50 per ton, and the cost of milling at $2.50, with general expense, overhead and supervision estimated at $1.00, aggregating a total operating cost of $8.00 per ton of ore, which figure should be increased to about $9.00 per ton, if sorting were carried out as suggested. It therefore appears that under present conditions, or even under those which prevailed a year ago, only the ore in the vicinity of the stope on the 3rd level could be mined and milled with profit, but, since the tonnage available at this point is entirely problematic and the width of the vein so narrow as to increase the average mining cost, it would not be advisable to make any optimistic forecast regarding the possibility of handling even this ore with advantage.

Considering then the actual present condition of the mine, I should say that on the two upper levels there is no pay ore developed except at one or two points where small pockets or chimneys occur and where the gold or lead values are sufficiently good, as at the location of sample #43 and #38, to make it possible for small operations to be conducted with advantage, preferably by lessees.

On the third level there is a small shoot of ore which justifies some further development particularly the upward extension of the raise which was inaccessible for sampling, and it is possible that some ore might be profitably taken from this point provided sufficient additional ore could be developed in other sections of the mine to permit the operation of the concentrator.

The south end of the third level is too low grade to be commercial but a further extension of the drift is justified on the chance of developing a somewhat better grade of material and for the purpose of extending at least to the point where the raise from the fourth level would intersect the third level drift.

The showing on the fourth level is the most interesting in the mine, for, while the grade is not sufficiently good to permit profitable mining, there are indications that the ore is both widening and improving in grade with depth and the values in copper and zinc appear to be increasing. This showing justifies development, preferably the sinking of the winze for an additional 100' and farther if the expected improvement is then apparent. It is my opinion that the further value of the property will depend almost entirely upon the results of this development and no definite estimate regarding this value can be made at the present time. It will be noted that this ore-shoot is fairly continuous for a length of 360', having an average width of 5' and being 10' wide in the vicinity of the winze, therefore, the winze itself could be sunk entirely in ore. The quantity of ore which might be developed in this shoot figures at 200 tons per vertical foot, so that there is a probability of proving up 20,000 tons by deepening the winze 100' and running a drift for the length of the ore at this level, or double this tonnage by going down 200' and repeating the

drifting, always assuming that conditions do not change adversely while such work is in progress. Obviously it would be of no advantage to develop a large tonnage of non-commercial ore, but I am strongly of the opinion that the mine workings are just beginning to enter the pay zone and that during the next 100' the ore value will substantially improve. Should this prove not to be the case, the work could be stopped at any time that such action appeared justified.

DEVELOPMENT WORK RECOMMENDED AND ESTIMATED COST

Should the owners of the property or other parties decide to proceed with operations at the Pay Roll Mine, the following work is recommended both for the purpose or complying with the State Mining Laws in reference to escapement ways and with the object of developing additional ore reserves.

Overhauling mine plant and building, and minor repairs. Estimated cost.....	$ 675.00
Estending 400' level about 50' southeast and cleaning out drift. Estimated cost.....	1,000.00
Completing raise from 600' to 400' level. Distance 105'. Estimated cost.....	1,575.00
Completing raise from 400' to 200' level. Distance 100' Estimated cost.....	1,500.00
Driving raise from 200' to 50' level Distance 150'. Estimated cost....	2,250.00
Cleaning raise from 50' level to intermediate level and intermediate level to old shaft. Retimbering the above and providing same with proper ladders. Estimated cost.....	1,000.00
Deepening winze at east end of 600' level for 100' Estimated cost.....	5,000.00

Crosscuts on 600' level.....	$ 500.00
Crosscuts and drifts from winze 100' below 600' level.....	2,000.00
Deepening winze an additional 100' and crosscuts and drifts at bottom.....	8,000.00
Overhead, engineering and incidentals.....	1,500.00
TOTAL.....	$25,000.00

This development work might reasonably be expected to bring the positive and probable ore reserves of the mine to from 40,000 to 50,000 tons in which event, assuming that the grade of the newly developed ore improves as expected, stoping and milling operations would be justified with a resultant profit dependent on the average grade of material produced and the market prices of the metals, - neither of which factors can be forecast at present.

CONCLUSION

The Pay Roll Mine in its present condition must be considered as only a partially developed property with practically no reserve of commercial ore that can be classed as either positive or highly probable. The general conditions indicate that the upper workings of the mine are in a portion of the vein which was never highly mineralized or where oxidation and leaching have robbed the vein of its original values, excepting those in gold and silver which have been increased by concentration at certain specific points. The geology of the deposit and the showings in the lower levels of the mine indicate that the true ore zone is being approached and encourage the belief that a more substantial mineralization

and higher values, particularly in copper and zinc, will be found at greater depth. The showings at the southeast end of the fourth level should be made the basis of additional development in depth and this development appears justified and is recommended subject to an improvement in the metal markets and particularly the price of zinc which constitutes the principal content of the ore and is likely to increase as greater depth is gained.

(Signed) G. M. Colvocoresses

HERSHEY & WHITE
Consulting Engineers
Crocker Building San Francisco, Cal.

GEOLIGICAL REPORT ON MARY BELL GROUP.
by
Oscar H. Hershey

Copy.

San Francisco, California.
April 24th. 1929.

Dr. J. G. Blackwell,
Chloride, Arizona.

Dear Sir:

Yesterday I made an examination of your Mary Bell group of mining claims, situated on the west slope of the Cerbat Range, about 1.5 miles from Chloride, Mohave County, Arizona. I regard the property as constituting an exceptionally attractive prospecting opportunity and hence I will discuss it in considerable detail.

The group consists of the Mary Bell, Tenby, Silver Glance and Silver Glance Fraction quartz mining claims and the Mary Bell millsite. These claims are held by location and annual assessment work.

The principal vein traverses the Mary Bell claim on a course about N. 30 W. and dips northeastward 75 to 80. The claim is 1267 feet in length. About 100 feet from the southeast end of the claim the dump of an old hole has a pile of oxidised porous quartz with lead carbonates and remnants of galena, derived from a small footwall band. You have told me that this material was sorted and the best ore shipped during the war. A streak of quartz and yellow dirt 6 to 8 inches thick may be traced southeastward to beyond the end line of the claim. About 50 feet across altered granite possibly seamed with quartz leads to the hanging-wall band of what I am going to call the vein zone. This hanging-wall band is soft, makes a slight depression partly filled with debris and has been little prospected on your claim. From what I can see of it it seems to be more strongly stained by iron and manganese oxides than is the footwall band and I suspect that it has less quartz, but more of an iron-bearing carbonate of intermediate composition, probably ankerite, and more pyrite than the footwall band. The latter outcrops strongly and the development has been practically confined to it. Yet I suspect that the hanging-wall band may be the better.

Several hundred feet from the southeast end line the foot wall quartz outcrops 6 feet wide and is much stained by iron oxide. Here it is 80 feet th the hanging-wall band. The intervening rock is mostly an altered pegmatitic granite, sheeted, dipping northeastward 75. The wall rocks are rather a fine-textured light-colored granite that occupies a large area extending northeast and southwest. Thence to the mouth of the South tunnel, the footwall band is strong and in places there is much porous limonite which may overlie an orebody. At the mouth of the tunnel there is a bold outcrop of iron-stained porous quartz 12 feet wide whose footwall is a small fault gouge that dips northeastward 80 and the hanging-wall dips in the same direction 75, suggesting a widening of the quartz downward. There is another quartz vein about 40 feet southwest of the mouth of the tunnel. This converges upon the main vein and meets it about 260 feet northwest.

The South tunnel, driven from the south side of Mary Bell hill, is about 265 feet long and is mostly in the soft altered granite on the footwall side of the quartz band. At 70 feet in, a crosscut goes 15 feet through the quartz but fails to reach the hanging-wall. There is a little sulphide in places. At 45 feet farther in there is a crosscut to the left that shows vein matter 16 feet wide, dipping northeastward 75, probably the branch vein seen 40 feet southwest from the mouth of the tunnel. It is partly compact fine-textured altered porphyry, but there are porous bands rich in limonite, good indication for ore below the zone of oxidation. About 10 feet farther in the tunnel there is a right-hand crosscut that goes 10 feet through porous, iron-stained quartz with much limonite and a little malachite stain. You have told me that some of this material assays well in gold. The remaining 7 feet of the crosscut is in altered porphyry.

Winze

At 142 to 148 feet from the mouth of the tunnel an inclined winze has been put down 38 feet. It penetrates the sulphide zone and the lower portion shows an ore band 6 feet wide that dips northeastward 75. A sample that you took across 6 feet 8 inches assayed 0.06 oz. gold, 3.2 oz. silver, 3.6% lead, 0.6% copper, 10.5% zinc. My impression is that this represents one of the poorer sections of ore-shoots that may be developed on the claim.

From the winze the tunnel runs 27 feet along the wall of the quartz band to a crosscut 20 feet through fine-grained altered porphyry with a little pyrite. At the end there is a band with some ore sulphides, but at the face there is a porous mass rich in limonite that may overlie a good orebody.

Next the present accessible tunnel has been driven along the hanging-wall side of the quartz band where a sulphide streak develops that in about 45 feet becomes thick enough to be commercial and thence to the face, 45 feet, it may be 1 to 2 feet thick. It dips northeastward 75 to 80. It is 2 feet thick at the face, is rich in dark brown sphalerite and the best band 6 inches thick has considerable galena, a little chalcopyrite and pyrite. About 15 feet back from the face there is a winze 7 feet deep. You took three samples over this winze that averaged by assay 0.12 oz. gold, 10.00 oz. silver, 19% lead and 19% zinc. A sample taken across a 6-inch streak in the winze assayed 1.05 oz. gold, 19.6 oz. silver, 3.0% copper, 25.2% lead, and a small amount of zinc. But this is just part of an 18-inch band that was mined clean and placed on the dump. AA sample from it assayed 0.68 oz. gold, 14.1 oz. silver, 0.4% copper, 34.7% lead and 21.6% zinc, according to a certificate by John Herman. These assays do not represent much tonnage but they demonstrate that the vein has some very good grade ore. Of course, I cannot assume responsibility for any statement of values based on assays in this report, but I see no reason to question them as the material sampled has the appearance of containing the lead and zinc claimed.

This South tunnel is too high to make much showing of ore, but it reveals a lot of oxidized and leached material that is probably underlaid with milling grade ore and where it penetrates the sulphide zone it shows a narrow band of good-grade ore.

The iron-stained porous quartz outcrop runs from the mouth of the tunnel to the top of the ridge where it is about 20 feet wide over the end of the tunnel and 120 feet above it. Here the vein zone is 135 feet wide, chiefly somewhat altered pegmatitic granite. A dark gray gneissic rock appears in the footwall country.

Thence down to the North tunnel near the northwest end line of the claim the outcrop and float of the footwall quartz band are strong. There is dark gray granodiorite on the footwall. The North

tunnel, 140 feet long, has been driven in the gougy soft band on the footwall side of the quartz band which dips northeastward 75 to 80. The gougy material has small pockets of sulphides, one with galena that yielded a small pile of ore on the dump. A 4-foot drill hole in the quartz band showed it oxidized and leached.

Some years ago a tunnel was begun on the Mary Bell mill site and driven across a corner of the Pay Roll claim about 775 feet to the presumed hanging-wall of the Pay Roll-Mary Bell vein. This is now known as the Rankin tunnel and is in good condition except that it ought to have heavier timbers near the mouth and it has caved at the vein. It passes through gneissic granite with pegmatite and aplite dikes and cuts an altered zone that is said to be barren. The face of the tunnel is in Pay Roll ground about 100 feetfrom the Mary Bell end line. In a small side crosscut and short drift to the left of the tunnel the vein is 20 feet wide and its hanging-wall dips northeastward 70. About 6 feet from the hanging-wall there is a dark gray fault gouge several inches thick that dips northeastward 75. Between it and the hanging-wall is the presumed hanging-wall band of quartz, the iron-bearing carbonate and thin bands of sulphides, chiefly sphalerite, some galena, pyrite and chalcopyrite, probably low grade ore. The remainder of the vein is altered gneiss streaked with quartz and carbonate and with scattered bunches of sulphides. A 2 to 4 inch streak of sulphide ore along the footwall dips southwestward 85. It may represent the footwall quartz band in a greatly pinched place. In fact, the entire vein zone is greatly pinched here, probably due to a dike of light-colored rock that is said to trend more eastward than does the vein zone and leaves it going southeast. This dike is soft and has caused the caving in the main tunnel. You have told me that you drove along the footwall streak 98 feet to the end line and 15 feet into the Mary Bell claim and that in a short crosscut you had 2 feet of ore, practically pure sphalerite and galena, and did not go through it. The ore on the dump is chiefly dark brown sphalerite, with some galena, chalcopyrite and pyrite.

Pay Roll

The Pay Roll claim covers the vein northwest from the Mary Bell claim. Holes dug on the vein in the first 500 feet in that claim seem to be on the hanging-wall band which is more porous and iron-stained than the footwall band and may have more ore. Kernels of galena are usually present in the material from these holes. This becomes a boldly outcropping iron-stained porous quartz vein 20 feet thick on the top of the ridge and leads to near the Pay Roll main shaft 625 feet deep. A longitudinal [illegible] section prepared in 1919 by O. E. Major of Prescott, Arizona, shows this shaft 1120 from the face of the Rankin tunnel, a 50-foot level driven 340 feet toward the Mary Bell, a 200-foot level driven 205 feet, and a 400-foot level driven 325 feet in that direction. A leasing company is now driving a 600-foot level toward the Mary Bell and you have told me it is 370 feet long, with the [illegible] better and that the last time you saw it it was 6 feet [illegible] level was rich in pyrite and had considerable galena and chalcopyrite, with some sphalerite. You say there is less gold and silver in the Pay Roll mine than in the Mary Bell and give the dike as the dividing line. Perhaps however, the difference is due to the Pay Roll workings being on the hanging-wall band and your workings on the footwall band.

In "Mineral deposits of the Cerbat Range, Black Mountains and Grand Wash Cliffs", published in 1909 as Bulletin 397 of the United States Geological Survey Publications, Mr. F. C. Schrader describing the Pay Roll as one of the large veins in the Chloride region, he says: "As shown by its persistent croppings it has a horizontal extent of nearly a mile, but is reported to be somewhat broken in the bottom of the mine. It varies from 6 to nearly

100 feet in thickness, 10 feet being perhaps a fair average, and contains in places a fair grade of concentrating ore. The gangue is mainly quartz, and the vein is in places separated from the wall rock by a thick sheet of argillaceous or talcose gouge.

"Near the mine, as shown in figure 4, the vein is joined by the Redemption Clyde vein, which probably enriches the Pay Roll ore shoots. The ore in the persistent pay shoots consists of lead carbonates and galena, with some pyrite and chalcopyrite; it contains both gold and silver. The total production of the mine was not learned, but it is reported to include many carloads of rich shipping ore that run about $80 a ton, mostly in gold, derived principally from the surface workings, excellent values being found in the south shaft. So far as can be judged at present the deposit is a good-sized body of low grade ore".

That was written at a time that the zinc content of the Chloride veins was a detriment instead of an asset. The leasing company that is now developing the Pay Roll 600-foot level is erecting a 50-ton selective flotation plant. My guess is that they ought to have at least a 100-ton per day plant.

In the gulch beyond the main shaft, the vein seems to end abruptly, Schrader says by being cut off on the northwest by a raised fault block of black hornblende schist, or is sharply bent down the gulch as you think.

Returning now to your property: The Silver Glance tunnel has been driven about 100 feet on a band of porous, honey-combed quartz 6 inches to 3 feet thick in a zone of altered and quartz-seamed rock (granite apparently) at least 25 feet wide. At one place the quartz had galena and lead carbonate and you took a sample that assayed 2.1 ozs. gold, 14 ozs. silver, and 54.2% lead. There is very little of such material in sight, but at depth the vein might be found to have a large body of low-grade milling ore. The vein stands nearly vertical with a slight tendency to dip southwestward. At a cut on the vein S. 60 E. from the tunnel the vein zone is 6 feet wide. Farther southeast a shallow shaft has seams rich in fine-grained or so-called steel galena, in the wide mineralized zone. Traces of the vein continue southeast to the end of the claim, then the vein is relatively weak in the Tenby claim.

The Tenby vein is supposed to pass obliquely from the Silver Glance to the Pay Roll vein. Where first seen it strikes N. 60 W. and has a tendency to dip steeply northeastward, in places nearly vertical. The vein material is very porous, coarsely crystallized quartz, rich in limonite and lead carbonate, with kernels of galena and traces of chalcopyrite remaining in places. This occurs in one or two places in two small veins. They will go down into narrow streaks rich in sulphides, probably chiefly pyrite and chalcopyrite with considerable galena, and may carry good gold and silver values.

Going southeastward in the Tenby claim there is considerable float of quartz with lead, copper and iron stains. Then in a cut the vein is [illegible] a foot wide and dips northeastward 75, cutting gray granodiorite. In a tunnel in a small gulch the Tenby vein, 6 inches wide, and standing vertical, is supposed to reach the Silver Glance vein, dipping southwestward 80. The latter is narrow and continues S. 40 E. across the gulch and in a cut and small tunnel it has 1 to 2 feet of quartz and limonite banded ground that will go down into lead-silver ore. It dips southwestward 80. This is supposed to be the Tenby vein and to become the Redemption vein on the adjoining property. No more work has been done on the vein in your ground but you say it improves in size in that direction.

Schrader says the Redemption Clyde vein in the Redemption mine strikes N. 60 W. and dips 85 northeast and is known to have an extent on the surface equal to the length of at least four claims. The vein is about 4 feet thick and the ore shoot about 18 thick. The ore contains chalcopyrite in quartz and carries about

8 per cent of copper, 1 to 2 ounces of silver to the ton, and some gold. The production amounts to 200 tons of ore".

I suspect the vein of being better in the Tenby claim but because of its small size I do not recommend immediate further development of it. The same recommendation applies to the Silver Glance vein.

The big chance in the property is in the Pay Roll-Mary Bell vein. I am surprised that it has remained so nearly undeveloped to this late date. However, an important portion of its metal content is zinc and until recent times mining operators were not anxious to develop the zincy ores in the Chloride district. Now things are different and you ought to have no difficulty either in selling the property if you will give long time for development or in financing exploration on some other basis.

It appears to be a very easy prospecting proposition. A railroad is within one mile and a power-line within 3000 feet. I would carry a power-line to the mouth of the Rankin tunnel, install the necessary machinery, strengthen the timbering in the outer part of the tunnel, clean up and timber the caved ground at the vein and then drive your drift on the footwall quartz band the entire length of the Mary Bell claim, about 1300 feet. The major longitudinal section indicates that this drift would pass 217 feet below the North tunnel and 223 feet below the South tunnel. It will be deep enough to develop entirely in the sulphide zone. I would drive a few crosscuts to the hanging-wall band and if it appeared encouraging I would drive along it. Say at most 3500 feet of driving on the Rankin tunnel level would thoroughly explore the vein zone in the Mary Bell claim. If that will not yield a large tonnage of milling grade ore and a series of small bodies of good grade ore such as is in the South tunnel I will be very greatly surprised.

The cross-section of ore-shoots determined on the Rankin tunnel level, the ore can be expected to extend very deep. Ore in the neighboring Tennessee mine has been developed to a depth of 1400 feet or more. The geology is favorable to commercial ore extending much deeper in the district. Thus the possibilities at the Mary Bell run into rather large figures, though it would be foolish for me to attempt to be more specific.

At some later date, with a mill in operation to pay for the work, the Rankin tunnel can be driven ahead into the Mary Bell ground and then turned northeast and driven to the Tenby vein, a distance of probably 450 feet. An additional 450 feet will take it to the Silver Glance vein in the Silver Glance claim. Both veins may be cut about 400 feet deep. Considerable driving on them would bring this prospecting campaign to an aggregate of 3000 feet of work. Thus 6500 feet of driving on the Rankin tunnel level may be required to prospect the property as it deserves prospecting but I contemplate only work on the Pay Roll-Mary Bell vein as a requisite to determining the value of the property.

Deep development will probably solve the water problem as suggested by Schrader. Climatic conditions are favorable to continuous and relatively cheap operation. Nearness to the railroad solves the problem of transportation. Nearness to Chloride precludes the necessity of constructing bunk and boarding houses. The only question that remains somewhat in doubt is that of disposing of the zinc concentrate at a profit. That is a problem that will have to be solved for the district as a whole, but there is so much zinc-lead ore in the district that I am satisfied that by the time the Mary Bell has been properly developed, and equipped with a selective flotation plant, a market for the zinc concentrate will be in sight.

Respectfully submitted,

Oscar H. Hershey.