



CONTACT INFORMATION

Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

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04/23/99

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: EMPORIA

ALTERNATE NAMES:

PATENTED CLAIMS MS 4226
ONE HUNDRED AND TEN
MAGWOOD COPPER MINES PROP.
BARBARA DEV. CORP. PROEPRTY

YAVAPAI COUNTY MILS NUMBER: 1138

LOCATION: TOWNSHIP 13 N RANGE 2 W SECTION 34 QUARTER NE
LATITUDE: N 34DEG 27MIN 47SEC LONGITUDE: W 112DEG 26MIN 45SEC
TOPO MAP NAME: GROOM CREEK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

GOLD
SILVER
COPPER

BIBLIOGRAPHY:

BLM MINING DISTRICT SHEET 248
YAVAPAI MAGAZINE JUL. 1918 P 4 SHARLOT HALL
MUSEUM PRESCOTT, AZ
ADMMR EMPORIA MINE FILE
AZ MINING JOURNAL OCT. 1919 P 23
CLAIMS ALSO IN SEC. 35

See photo Collection:

YAVAPAI

MONTHLY MAGAZINE

AT THE POSTOFFICE AT PRESCOTT, ARIZONA, UNDER THE ACT OF MARCH 3 1879

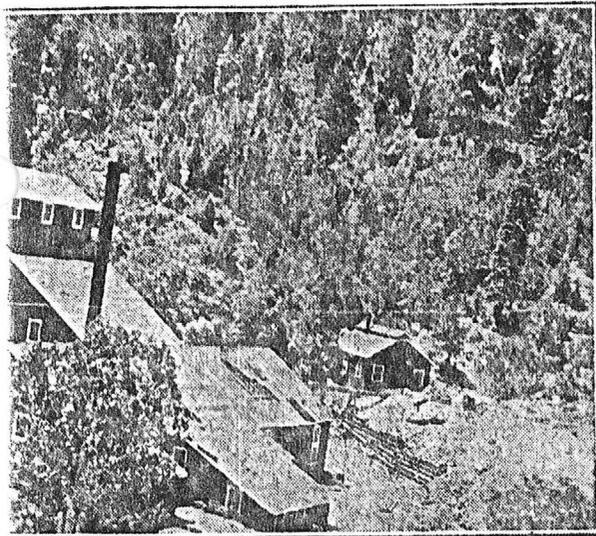
PRESCOTT, ARIZONA, JULY, 1918

Number 7

in the
Mines of Arizona
 on the
Ranges and Ranches
 Subscription, \$1.00 Per Year
AARON H. POWERS
 Publisher

Boom Creek Mines

Properties That First Attention to Yavapai's Mineral Wealth



MILL ON THE HASSAYAMPA RIVER

The State High-strings was one reason for the general belief that the mine was not worth while. The new management not only established the fact that the main ledge continued strong at the 400 level, but also showed that a chute of high grade encountered at the 200 level continued beyond the 400. They also opened up the old shaft on the Nevada claim, which adjoins the Midnight Test on the south, and developed some very desirable ore. The Midnight Test ledge runs from 2 feet to 3 feet in width, and about a year ago the engineer of the

company reported 38,000 tons of ore blocked out that would average at least \$18. There is also an interesting chute of high grade-ore that will average \$500 to the ton. In the early days considerable high grade was shipped from this property. The mine is now closed down and no report can be secured on it, although it is known that an offer of over \$200,000 was recently made from the property.

3—Chas. Behm Group—includes many claims. It adjoins the Midnight Test, and their ledge extends through the Behm property. There has been much shallow exploratory work. The property is now controlled by the Behm heirs, Mr. Behm having died a short time ago.

5—Home Run—was developed by the Douglas-Lacy Co., brokers, who were more interested in selling stock than in making a mine. The first Nissen mill ever put in service was installed by Mr. P. E. Nissen himself. It had a daily capacity of from 25 to 30 tons. A shaft was sunk 400 feet, with drifts at each level. Several thousand tons of ore were milled, but the ore was complex and the savings were not satisfactory. The values are in gold and silver, with iron and lead sulphides. The property has been idle for many years. It belongs to A. A. Johns and T. J. Laird.

6—Alma Group—consists of 9 claims. There are numerous veins that carry mineral values. The property has about 1000 feet of development work in the shape of shafts and tunnels. This property is controlled by the Bashford-Burmister Co. of Prescott.

7—Empire Group—consists of 7 claims. The principal workings are a 620 foot shaft. The ore has been stoped above the 600 level and it is reported that approximately \$200,000 was recovered. The ore above the 160 level was oxidized and carried at least 75 per cent of its values in free gold. Below that level at least half the values were in lead and iron sulphides and had to be saved by concentration. The lower levels show a

the 500 level and the property with a... Prescott, now contr...

Jacket Group—... Three of these... Yellow Jacket vein... fissure vein average... width and carrying... enum, and some gold... per. Through... Dos Oris vein. The... tz 10 to 12 feet wide... gold and silver, with... copper. The ore... advantage by grav... and oil flotation, wh... the value of the rec... of the lower metal... were lost. There... the property, one of... of 100 feet. The... points where expl... been done. The pr... mile west of the... the camp is locat... It is owned by H... ott.

connected it with tunnel No. 5. Tunnel No. 5 is which 1100 feet is in... with tunnel No. 4... 750 feet, at which... connects it with Nos... No. 1 is in 300 fe... is in the ground... owns the adjoin... by the system of u... ventilated to adv... time, the cost... conveying the ore to... ed to a minimum... At present the worl... the higher tunnel... these points carries... er values. Tunnel... which is about 200... mill, is in 350 feet... ore averaging about... are an upraise of... ct No. 7 with the m... will have to be exte... ore to reach this pos... This property was c... Major A. J. Picken... ng and others. In... capitalists owning th... ty in the Crown K... d a half interest... Part of the payment... duction plant on the... ty and enough cash... ally equip the mill... installed in the sur... work had to be dis... winter owing to the... work was well unde... when the mill as destr... and larger plan... lled with improved... ave greatly increase... of extraction... C. H. Dunning, who... Big Pine, as its g... ring the last eight... from this position to... rvice on June 1st. I... one time manager... nster at Jerome, has... his place. August... ncoe Bldg., Duluth... y of the company... 22—Gold Warrior... claims. It adjoin...

de—is a low grade... has seen many rich... varying in width fr... feet outcrops for... free gold values to... 5 feet to 55 feet, wh... ne is reached. A... g the strike of a cr... d the main Baltimore... th of 47 feet. Dr... 178 feet and south... kings were in ore... ld and silver. Thi... resulted in closing d... Through carelessness... rk was neglected... as re-located by par... d the mill and of... sold them. The... d to be a desirabl... rkings are caved a... uch money to put... shape. H. M. Cole... ntrols the property... ne Con. Mining C... s, of which 8 are... located about 12 m... cott in a heavily... y. It has been op... ral tunnels, which... 75,000 tons of com... which 4000 tons... and are on the st... milled. This ore... to \$15 a ton, and... ng and milling is... s than \$3... tion sand leaching... ation plant capabl... a 3000 to 4000 ton... h has been insta... a saving of 99 per... values and from 85... e silver values. At... 0 tons of ore per day... Two shifts are wo... and in grinding, w... are kept busy in tre...

work on the property... 2, which is in abou... s located just below... nel No. 6, so that ore...

clean cut fissure vein varying from 2 feet to 5 feet between the walls. The surface outcrops vary from 5 feet to 18 inches in width.

8—Gold Basis—includes 5 claims. There is a 325 foot shaft with several levels. The ledge varies from 2 feet to 5 feet in width. The values are in lead and gold with iron pyrites. The ore is complex and could not be handled to advantage by the 5-stamp mill with which the property was equipped.

11—Monte Christo—is a patented claim about a half mile from the Groom Creek postoffice on the road leading to the Midnight Test mine. There are two pronounced veins. A 300-foot tunnel has been run in a northerly direction on the main vein from the gulch at the south end of the mine. At the mouth of the tunnel a 400-foot shaft has been sunk, with levels at 100, 200 and 300 feet. At the 400 level a crosscut has been run 40 feet to the vein. No level has been run on this vein to intersect the ore chute, which is about 75 feet from the shaft at this point.

An unpraise to the surface was made 160 feet from the portal of the tunnel. A shaft was sunk at this point another 50 feet and a 50-foot drift run. The shaft was equipped with a whim and considerable rich silver ore carrying some gold was mined.

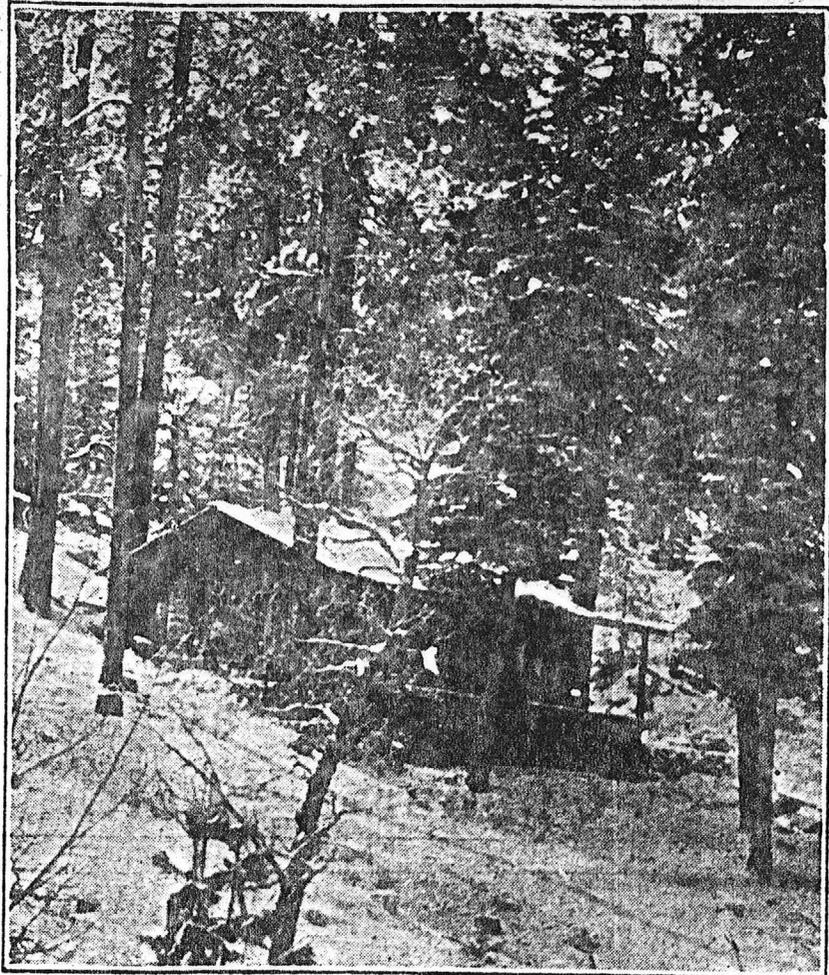
The property is equipped with a 5-stamp mill and a Wilfley table. The ore mined at the 100 and 200 levels ran 18 to 20 ounces of silver and from \$14 to \$26 in gold. The savings were poor, more than half the values being lost in the tailings. At 300 feet the vein is larger and softer. Stringers varying from 2 inches to 4 inches in width carrying 150 ounces of silver were encountered. It was planned to open up the known chutes at the 400 level, but before the plans could be carried out the finances of the company were exhausted and the property closed down, and has remained idle since.

A shaft has been sunk almost to the tunnel level where the smaller vein cuts the main vein. This vein is a red oxidized fissure and runs northeast and southwest. The shaft is in a 4-foot ledge of ore carrying from 14 to 22 ounces of silver. The property is controlled by Tom Nolan of Mayer.

12—Chicago—produced considerable high grade silver ore in early days. There are no deep workings on the property.

13—Silver King Group—was located in the 80's. A big ledge cuts the granite formation northwest and southeast for four miles, the outcroppings being easily traced. The ore carries silver and gold. It was mined from the surface to the water level for about 1000 feet. The property was not developed deeper than 125 feet, although one shaft was sunk 250 feet. Because of legal complications over the title, work was shut down about 20 years ago and the property has been idle ever since. It is a wet ledge, so that the workings are now full of water and, of course, badly caved.

15—Emporia Group—consists of 7 claims and a mill site, approximately 100 acres. The principal vein, the Emporia, can be traced for several miles and maintains a width of approximately 12 feet.



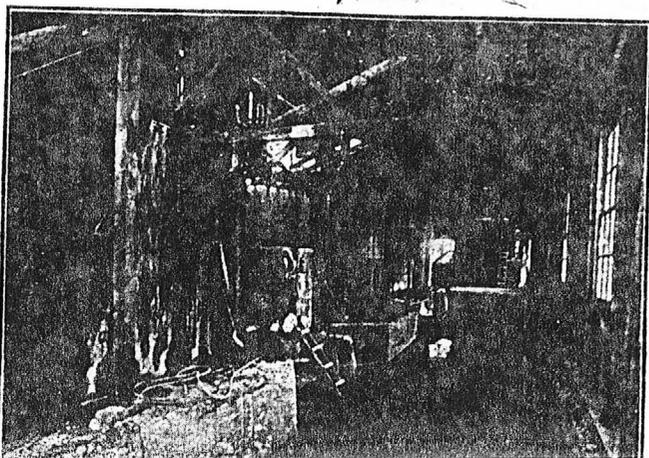
Big Pine Administration Building in the Big Pines

cuts it or is cut by the Emporia about 300 feet down the hill from the head frame. The principal workings consist of two inclined shafts about 100 feet apart and 200 feet deep on the Emporia claim. They are connected at the 75 and 100 foot levels and have several drifts of snort length. All of this development is in ore from 3 to 8 feet wide, all in place except a small surface stoppe, from which several hundred tons of high grade ore was shipped. Most of the ore so far extracted has been milled.

A small 40-foot shaft has been sunk on the Manhattan vein and shows good ore approximately 2 feet wide. The ore averages \$13, principally

gold, with some silver and copper. With simple amalgamation and concentration there is a 90 per cent extraction, of which \$4 will be recovered on the plates and \$7.20 in the concentrates.

The equipment includes a 40 h. p. boiler and steam hoist with a bucket, skip and small steam pump, a forge and blacksmith shop, assay office and necessary houses. The property is about 1000 feet off the State Highway, about 10 miles from Prescott. There is a large supply of oak and pine on the ground. Water is obtainable from the Emporia workings and also from Wolf Creek, which passes through the property. Engineers ad-



vised sinking and equipping the property. P. R. Milne

16—Yellow—consists of 13 claims are of which is a s ing 2½ feet per cent mol silver and claims runs is a vein of carrying \$8 some lead a be treated t concentration would increa ery by the v that in the p two shafts of feet and ano are also mar tion work ha erty is about poria group on Wolf Cree Keyes of Pre

18—Sunny—property tha tudes. A ve 12 feet to 15 feet. It carr depth of from the sulphide foot tunnel al vein intersec vein at a de were run nor feet. The w rying \$9 in cial troubles the property assessment v the property who dismant

equipment ar erty is report but the old w would take r property into of Prescott c

20—Big P—has 14 claim ented. It is south of Pre bered count up with seve blocked out cial ore. of been broken ready to be run from \$1 cost of mini mated at les

A combina sand decanta treating from ore per mon which effects of the gold v per cent of th ent, about 100 being treated in the mine three shifts a the ore.

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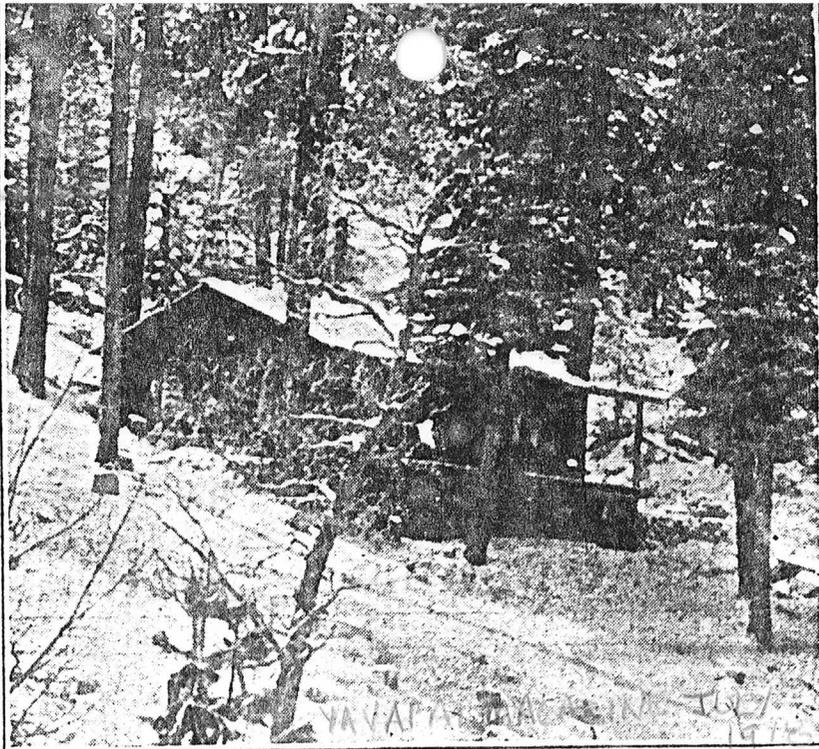
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Big Pine Administration Building in the Big Pines

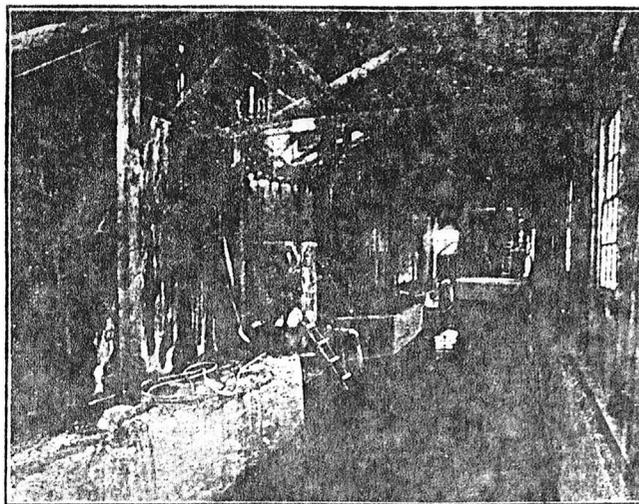
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Agitator-Thickener Sets and Dumps, Big Pine Mill

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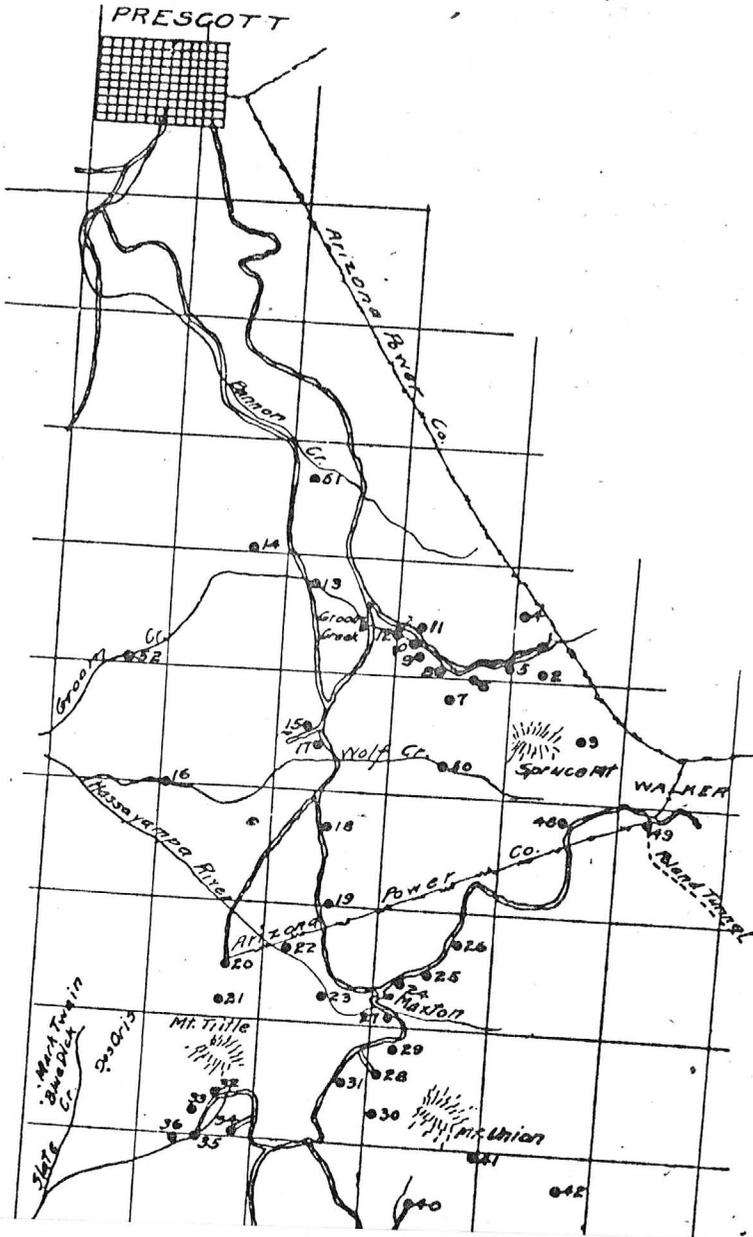
20—Big has 14 cla ented. It f south of P bered cour up with se blocked ou cial ore, c been broke ready to b run from 2 cost of mi mated at 1

A combi sand deca treating fr ore per m which effe of the gold per cent of ent, about being treat in the mi three shifts the ore.

The first in tunnel M feet.

The mill portal of tu be forced drop. Tum feet. At 6

MINES AND ROADS OF SENATOR AND GROOM CREEK SECTION
(Each Square Represents One Mile)



connected it with the portal of Tunnel No. 5.

Tunnel No. 5 is in 1500 feet, of which 1100 feet is in pay ore. At 1400 feet an upraise of 100 feet connected it with tunnel No. 4. Tunnel No. 4 is in 750 feet, at which point an upraise connects it with Nos. 3, 2 and 1. Tunnel No. 1 is in 300 feet, of which 150 feet is in the ground of Bob Meader, who owns the adjoining property.

By the system of upraises the mine is ventilated to advantage. At the same time, the cost of mining and conveying the ore to the mill is reduced to a minimum.

At present the work is concentrated on the higher tunnels, as the ore at these points carries specially high silver values. Tunnel No. 7, the portal of which is about 2000 feet from the mill, is in 350 feet. This work is all in ore averaging about \$15. It will require an upraise of 200 feet to connect No. 7 with the mill. The tunnel will have to be extended 1700 feet more to reach this point.

This property was originally owned by Major A. J. Pickerell, C. H. Dunning and others. In 1915 Minnesota capitalists owning the Mascot property in the Crown King district, acquired a half interest.

Part of the payment price was the reduction plant on the Mascot property and enough cash to install and fully equip the mill. This plant was installed in the summer of 1916. Work had to be discontinued that winter owing to the heavy snowfall. Work was well under way in 1917 when the mill was destroyed by fire. A new and larger plant has been installed with improved processes that have greatly increased the percentage of extraction.

C. H. Dunning, who has developed the Big Pine, as its general manager during the last eight years, resigned from this position to enter the naval service on June 1st. D. B. Finlayson

onstrated. The chief value is in copper, but it carries lead, and some gold. In the flotation process, a separate value is effected and separates so that they add to the returns instead of the returns for which the smelter is necessary to charge a premium.

It is Mr. Anderson's plan to open up the old workings, but work in the beginning will be at the 400 level to establish and the values of the ore at that depth. Later a crosscut will be made to the Black vein, from which considerable high grade ore has been shipped.

26—Ratliff Group—22 claims. There has been little work on practically all claims on outcroppings, but a large ore body. On the claim is a 285-foot shaft. A drift of 50 feet was made all in good ore. A 135-foot shaft has been run on the same vein. A cut tunnel has been started 165 feet and will have to be extended 100 feet more to intersect the vein. A 100-foot shaft five cars of ore were shipped that averaged 100 ounces of silver and 4.5 per cent copper. Work has developed a ledge carrying from 12 to 15 inches of high grade. This property was leased a short time ago to Bradshaw Copper Co. This company was unable to meet the requirements and the property returned to the owner, Alex Ratliff on June 1st.

27—Senator Group—w



FRANCO-AMERICAN COPPER CO.

Considerable attention has recently been given the Franco-American Copper company by the state press, due to the shipments of some very rich ore.

This property is located adjoining the Arizona-Binghamton Copper company in the Mayer district, and has long been considered one of the best prospects of that great mineral district according to the management.

The Franco-American Copper company has today something like 1,500 tons of a good grade of shipping ore on its dump; out of this 1,500 tons, there is approximately 250 tons of very high grade ore, the balance of the dump will in all probability run 8 per cent per ton with some four or five dollars in gold.

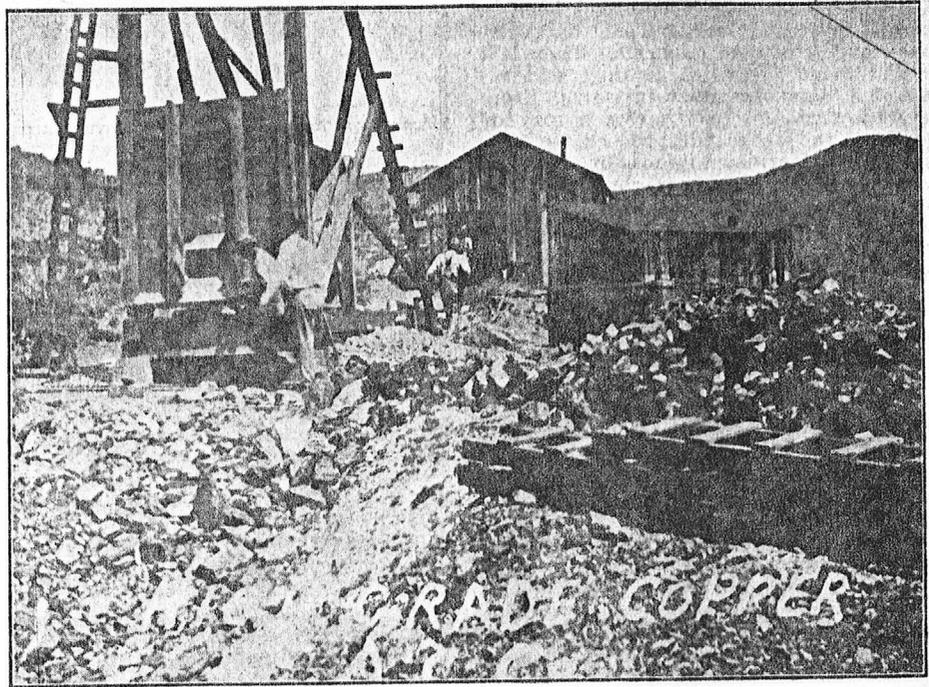
There have been four car loads of ore shipped from this ground of which two car loads netted the company 24 per cent copper; one car load netted 27 per cent copper and the last car load, of 40 tons, taken from the 200-foot level, netted the company 35 per cent copper and something over \$5.00 in gold, with a few ounces in silver.

The company expects to sink to the 500-foot level and then crosscut the entire fissure, which is something like over 150 feet of vein matter at the place where the shaft is being sunk. The present depth of the shaft is 279 feet.

Frank Garmon, who has been east and has interested a great many people of West Virginia in this property is at present in Prescott and is very highly pleased over the conditions of the company and the showing that the Franco-American has made in the last seven months.

The Franco-American will have a big display of very fine carbonate ores, together with chalcopyrites at the Northern Arizona fair that occurs this month and will endeavor to have the same display at the State Fair.

The owners of this property claim that the "mine does not need any boosting; that the values are comparatively small so what they should be when they reach the 1,000-foot depth." The company is owned and controlled by Col. Fred Bowler as president, J. E. Russell, a Prescott attorney, as secretary, and Hon. E. S. Clark,



The Franco-American Mine

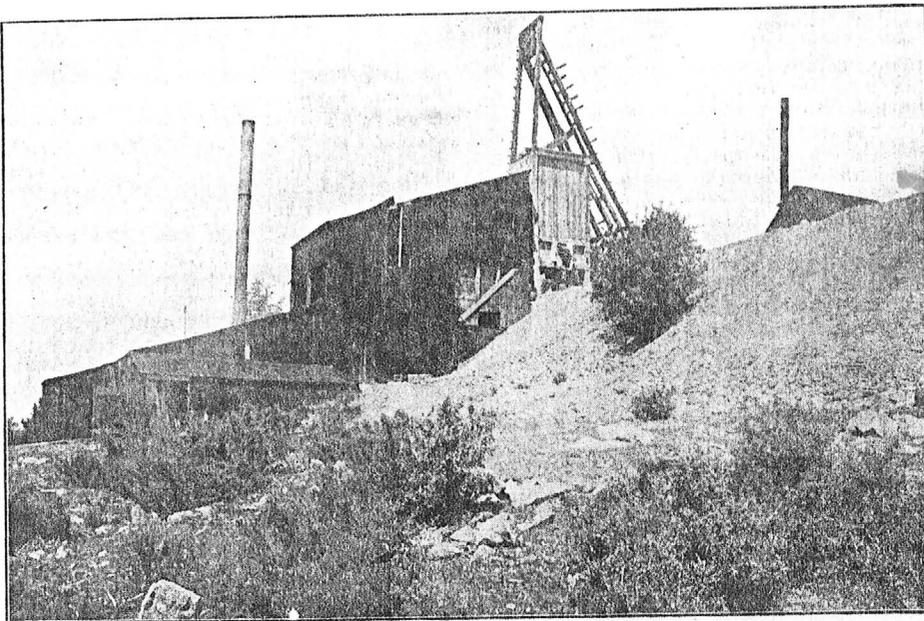
ex-attorney general of Arizona, and Frank Garmon of West Virginia, directors.

THE EMPORIA MINE

The Emporia mine in Yavapai county, owned by the Golden Dragon Mining & Milling company, with J. Gardner Scott of Prescott as general manager, is attracting attention as a very promising prospect. The mine is situated in the Hassayampa mining district about nine miles south of Prescott, and has an excellent location on account of the natural facilities nearby. The mine itself furnishes a generous supply of water, while Wolf creek, a short distance from the mine, will supply all the necessary water for a large mill. There is an abundance of timber in the surrounding section and it is roughly estimated that there are 3,000,000 board feet of lumber within a radius of two miles. There is a road with an easy grade 800

feet from the state highway and thus the mine is accessible by autos and trucks.

In regard to the history of the Emporia mine, H. H. Keays and three partners bought the property in 1898. The former gradually bought out the other men until he and William Storts were sole owners. Storts died, and in 1916 the Golden Dragon Mining & Milling company was organized to run the mine. Owing to war conditions, nothing was done. Between 1898 and 1916, development work was carried on, and about \$50,000 in gold taken out. The mine has paid for its ment consists of two shafts 200 feet deep ment consists of two shafts 00 feet deep each, connected by drifts, and blocking out ore valued at \$163,000.00 gold. The present equipment consists of a Hendie friction hoist, automatic skip, five-stamp mill and two Wilfley tables. The tailings loss by this mill runs from \$6 to \$16 per ton. It is the intention of the present management to enlarge the present mill and to add such proper reduction methods as will handle the ore most efficiently. While these determinations are being made the shipping ore will be utilized. Mr. Keays is to be mine superintendent, and development work will proceed simultaneously in order to keep reserve ore bodies. Mention has only been made of the ore actually blocked out, but in addition to this as per reports, prospects for a little bonanza are excellent. It is known that some very rich high grade is in the mine, but no mention has been made of this as yet.



Shaft of Emporia Mine

EMINENT ENGINEER EXPECTS MINING BOOM IN JEROME DISTRICT

The Jerome News says:

Just one more mine and then the Verde district will be off to a boom beside which all its previous booms will pale into insignificance. This is the confident prediction of Colonel W. P. Harlow, heavy stockholder in the United Verde Extension and known throughout the country as a geologist and as a picker of winners in the mining game. He foresees many winners in the Verde district.

Colonel Harlow, or Doctor Harlow, as

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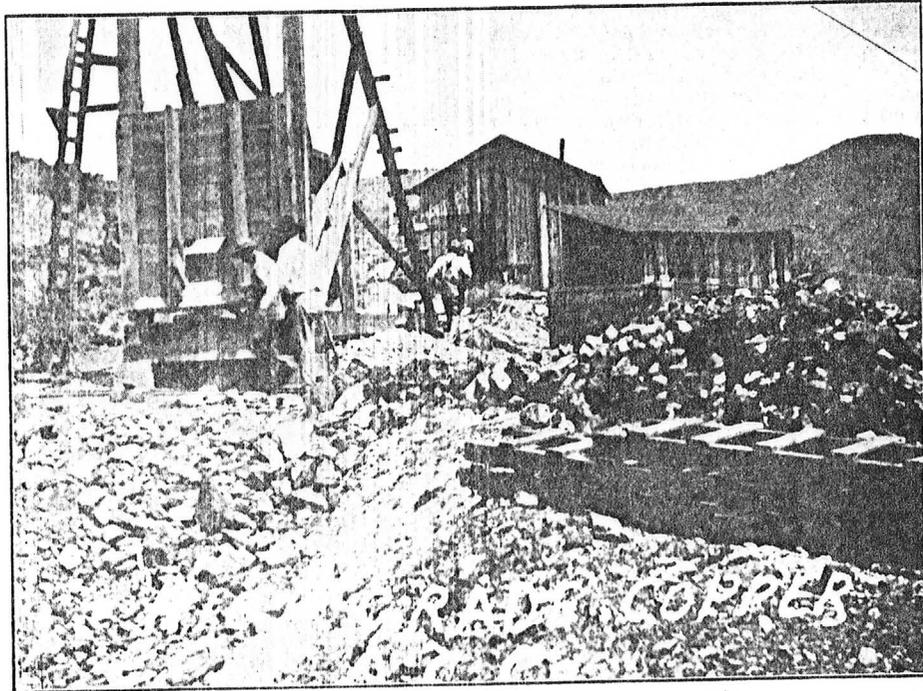
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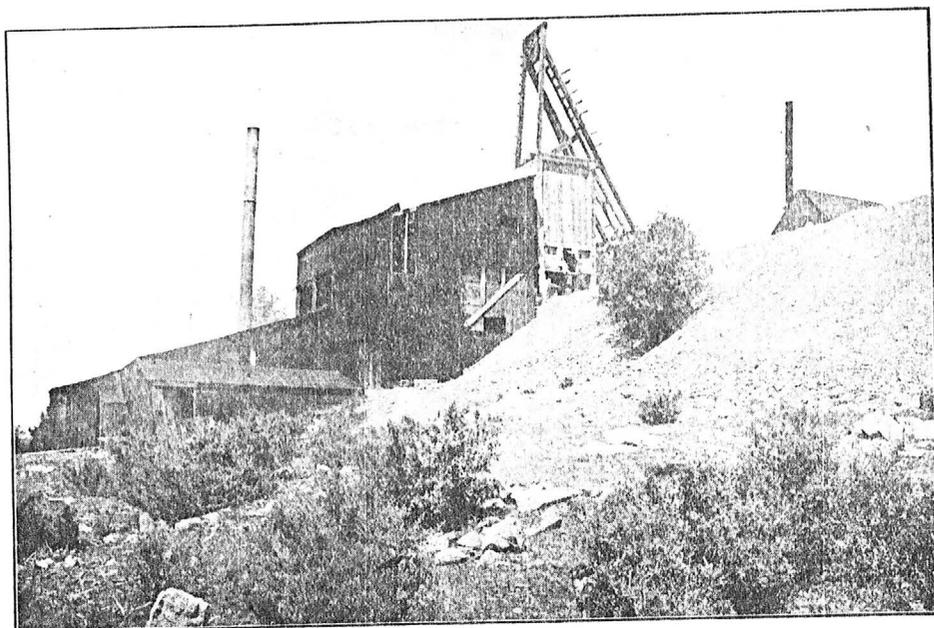
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The Emporia mine in Yavapai county, owned by the Golden Dragon Mining & Milling company, with J. Gardner Scott of Prescott as general manager, is attracting attention as a very promising prospect. The mine is situated in the Hassayampa mining district about nine miles south of Prescott, and has an excellent location on account of the natural facilities nearby. The mine itself furnishes a generous supply of water, while Wolf creek, a short distance from the mine, will supply all the necessary water for a large mill. There is an abundance of timber in the surrounding section and it is roughly estimated that there are 3,000,000 board feet of lumber within a radius of two miles. There is a road with an easy grade 800

feet from the state highway and thus the mine is accessible by autos and trucks.

In regard to the history of the Emporia mine, H. H. Keays and three partners bought the property in 1898. The former gradually bought out the other men until he and William Storts were sole owners. Storts died, and in 1916 the Golden Dragon Mining & Milling company was organized to run the mine. Owing to war conditions, nothing was done. Between 1898 and 1916, development work was carried on, and about \$50,000 in gold taken out. The mine has paid for its ment consists of two shafts 200 feet deep each, connected by drifts, and blocking out ore valued at \$163,000.00 gold. The present equipment consists of a Hendie friction hoist, automatic skip, five-stamp mill and two Wilfley tables. The tailings loss by this mill runs from \$6 to \$16 per ton. It is the intention of the present management to enlarge the present mill and to add such proper reduction methods as will handle the ore most efficiently. While these determinations are being made the shipping ore will be utilized. Mr. Keays is to be mine superintendent, and development work will proceed simultaneously in order to keep reserve ore bodies. Mention has only been made of the ore actually blocked out, but in addition to this as per reports, prospects for a little bonanza are excellent. It is known that some very rich high grade is in the mine, but no mention has been made of this as yet.



Shaft of Emporia Mine

EMINENT ENGINEER EXPECTS MINING BOOM IN JEROME DISTRICT

The Jerome News says:

Just one more mine and then the Verde district will be off to a boom beside which all its previous booms will pale into insignificance. This is the confident prediction of Colonel W. P. Harlow, heavy stockholder in the United Verde Extension and known throughout the country as a geologist and as a picker of winners in the mining game. He foresees many winners in the Verde district.

Colonel Harlow, or Doctor Harlow, as

set in width. The and gold with iron pyrites. The complex and could not be hand- advantage by the 5-stamp mill which the property was equipped.

Monte Christo—is a patented about a half mile from the Creek postoffice on the road to the Midnight Test mine. There are two pronounced veins. A tunnel has been run in a westerly direction on the main vein to the gulch at the south end of the property.

At the mouth of the tunnel a shaft has been sunk, with levels at 100, 200 and 300 feet. At the 100 level a crosscut has been run to the vein. No level has been run on this vein to intersect the ore vein, which is about 75 feet from the shaft at this point.

Unpraiseworthy to the surface was about 160 feet from the portal of the tunnel. A shaft was sunk at this level another 50 feet and a 50-foot shaft run. The shaft was equipped with a whim and considerable rich ore carrying some gold was obtained.

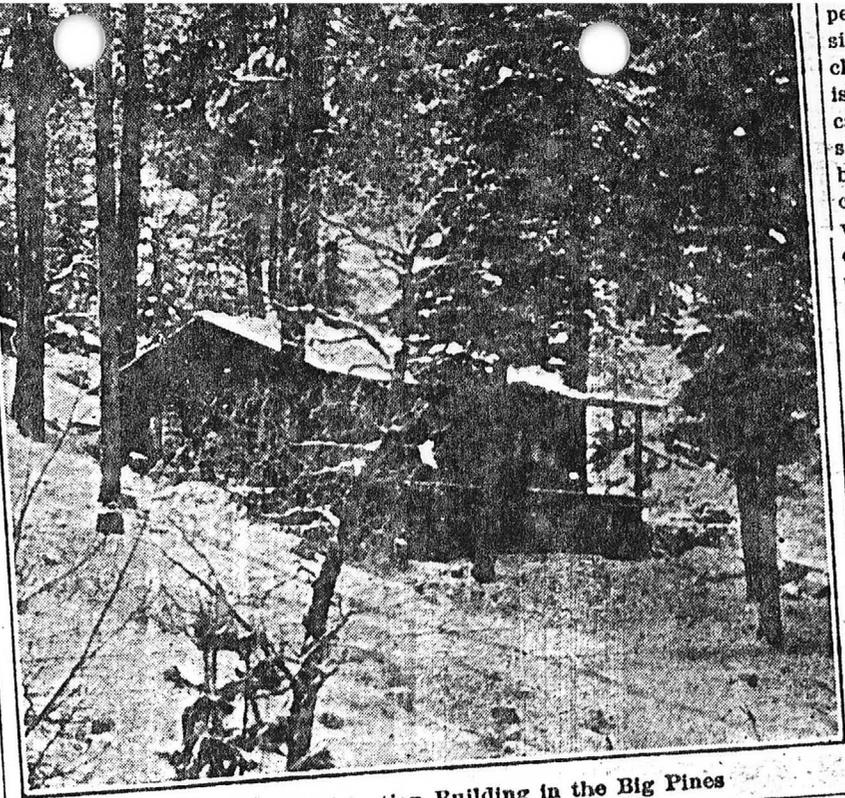
The property is equipped with a 5-stamp mill and a Wilfley table. The mine is mined at the 100 and 200 levels, yielding 18 to 20 ounces of silver and from \$18 to \$26 in gold. The savings were about more than half the values being obtained in the tailings. At 300 feet, the ore is larger and softer. Stringers of ore varying from 2 inches to 4 inches in width carrying 150 ounces of silver were encountered. It was planned to run up the known chutes at the 400 level, but before the plans could be carried out the finances of the company were exhausted and the property closed down, and has remained idle since.

A shaft has been sunk almost to the tunnel level where the smaller vein cuts the main vein. This vein is a red oxidized fissure and runs north-east and southwest. The shaft is in a 4-foot ledge of ore carrying from 4 to 22 ounces of silver. The property is controlled by Tom Nolan of Mayer.

12—Chicago—produced considerable high grade silver ore in early days. There are no deep workings on the property.

13—Silver King Group—was located in the 80's. A big ledge cuts the granite formation northwest and southeast for four miles, the outcroppings being easily traced. The ore carries silver and gold. It was mined from the surface to the water level for about 1000 feet. The property was not developed deeper than 125 feet, although one shaft was sunk 250 feet. Because of legal complications over the title, work was shut down about 20 years ago and the property has been idle ever since. It is a wet ledge, so that the workings are now full of water and, of course, badly caved.

15—Emporia Group—consists of 7 claims and a mill site, approximately 100 acres. The principal vein, the Emporia, can be traced for several miles and maintains a width of approximately 13 feet, of which 3 feet is quartz and 10 feet is vein matter. The Manhattan vein runs at right angles to the Emporia vein and either



Big Pine Administration Building in the Big Pines

cuts it or is cut by the Emporia about 300 feet down the hill from the head frame. The principal workings consist of two inclined shafts about 100 feet apart and 200 feet deep on the Emporia claim. They are connected at the 75 and 100 foot levels and have several drifts of snort length. All of this development is in ore from 3 to 8 feet wide, all in place except a small surface stope, from which several hundred tons of high grade ore was shipped. Most of the ore so far extracted has been milled.

A small 40-foot shaft has been sunk on the Manhattan vein and shows good ore approximately 2 feet wide. The ore averages \$13, principally

gold, with some silver and copper. With simple amalgamation and concentration there is a 90 per cent extraction, of which \$4 will be recovered on the plates and \$7.20 in the concentrates.

The equipment includes a 40 h. p. boiler and steam hoist with a bucket, skip and small steam pump, a forge and blacksmith shop, assay office and necessary houses. The property is about 1000 feet off the State Highway, about 10 miles from Prescott. There is a large supply of oak timber on the ground. Water is obtainable from the Emporia workings and also from Wolf Creek, which passes through the property. Engineers ad-



Agitator-Thickener Sets and Dumps, Big Pine Mill

per cent moisture. Through silver and copper. Through claims runs the Dos Oris vein is a vein of quartz 10 to 12 feet carrying \$8 in gold and silver some lead and copper. They be treated to advantage by concentration and oil flotation would increase the value of the ore that in the past were lost. Two shafts on the property, 100 feet and another of 100 feet are also many points where flotation work has been done. The property is about a mile west of Emporia group and the camp is on Wolf Creek. It is owned by Keyes of Prescott.

18—Sunnyside—is a property that has seen many vicissitudes. A vein varying in width 12 feet to 15 feet outcrops on the surface. It carries free gold to a depth of from 35 feet to 55 feet. The sulphide zone is reached at a depth of 100 feet. A 40-foot tunnel along the strike vein intersected the main vein at a depth of 47 feet. Workings were run north 178 feet and south 99 feet. The workings were very rich in gold and silver. The principal troubles resulted in the property. Through a re-assessment work was done on the property was re-located. The equipment who dismantled the mill was sold and the property is reported to be a dud but the old workings are still there. It would take much money to get the property into shape. H. H. of Prescott controls the property.

20—Big Pine Con. No. 1 has 14 claims, of which 10 are patented. It is located about 10 miles south of Prescott in a hilly country. It has been up with several tunnels, the largest being blocked out 75,000 tons of silver ore, of which 40,000 tons have been broken and are ready to be milled. The cost of mining and milling is estimated at less than \$3.

A combination sand and water decantation plant treating from 3000 to 4000 tons of ore per month has been installed which effects a saving of 10 per cent of the gold values and 20 per cent of the silver value. About 100 tons of ore are being treated. Two shifts are kept in the mine and in the mill three shifts are kept in the mill.

The first work on the property was done in tunnel No. 2, which is 100 feet deep.

The mill is located on the portal of tunnel No. 6, which is 600 feet deep. The mill is 60 feet high and 10 feet wide. Tunnel No. 6 is 600 feet deep. At 600 feet an

Yavapai County Magazine July 1918

THE BARBARA DEVELOPMENT CORPORATION.

EMPERIA DIVISION.

MARCH, 1st, 1928.

BARBARA DEVELOPMENT CORPORATION.

EMPORIA DEVISION.

SURFACE PLANT:- This is in fairly good shape. No expenditures other than those incurred in the course of ordinary operation are contemplated. One man is required. He runs the hoist, sharpens steel, attends to the pump and makes himself generally useful about the surface.

THE MINE:- The mine has operated about seventy days under the writer's management. By referring to the accompanying print the amount of work done may be better explained. The workings marked in red have been repaired and those marked in yellow represent new ground broken.

No. 2 shaft was repaired during the month of August 1927 and the 200 foot level reached on October 1st, when the mine was shut down. From that time until January 21st, 1928 no work was done underground except a repair job here and there to hold what had been done. One man was kept at work as combination watchman and pumpman as the shaft would have again got in bad shape and in all probability have caved had the water been allowed to reach its natural level. Work was resumed in January and by the 25th, the 200 level had been repaired and new ground entered. Connection with No. 1 shaft was made March 1st, 1928.

By referring to the print the object of making this connection may be seen.

1) A second exit from the mine is provided which affords added safety and better ventilation.

2) Amenities of delivering waste rock into the mine is provided for the purpose of filling space from which ore is taken thereby preventing caving.

3) As shown from the widths and value of the samples, (5'-18.60 means ore five feet wide assaying \$18.60 per ton) a

the only ore that can be mined at this time. That around the No.2 shaft must be left as a pillar to protect it.

FUTURE OPERATION OF MINE.

1) No. 1 shaft will be repaired and reopened.

2) Ore will be mined around this shaft and as close to the No.2 Shaft as is deemed safe.

3) The 200 level will be continued north in the hope of finding new ore. (It may be said in this connection that the Emporia Vein shows values for at least 300 feet north of NO 1 Shaft.

4) Crosscut to the east to explore the hanging wall.

There is a vein 40 feet east and parallel to the Emporia which is practically virgin ground and should prove every bit as good.

At present two men are employed under ground as only the north face of the 200 was being worked. There is room for at least four more. The two now employed should be put on ore and development continued.

Labor is the big item in mining expense here. The ground is very soft and little powder is used. Timber is cut on the ground except for special purposes. The mine makes about 7500 gallons of water a day.

THE MILL:- This must be improved upon. The past thirty days have been spent experimenting on a very low grade ore coming from the 200 development. In general it may be said that :-

The capacity is about one ton per hour; the ration of concentration varies with the grade of the ore (as far as weight is concerned), from fifty to one to ten to one. That is the weight of the concentrates as compared with the weight of the ore entering the mill.

The ration by value is about 12 to 1, that is it comes out about twelve times as rich as it goes in.

The recovery is very poor, due to worn machinery. This can be greatly improved with little expense so that a 75% recovery can be attained.

Improvements in milling practice since the ~~present~~ type machinery we now have had been installed will recover upward of 90% of the values. Prices of this is being investigated.

COSTS:- The following costs are indicated and can be obtained.

Mining -----	\$2.50 to \$5.00 per ton.
Milling-----	1.50 " 2.00 "
Total	\$4.00 to \$5.00 per ton.

These are ultimate costs which I hope to make with the present equipment. According to the assay map the average grade of the ore is better than \$15.00 per ton, of which from \$10.00 to \$13.00 can be recovered. Hauling freight and smelting charges will figure less than \$0.75 per ton.

It must be remembered that all this is predicated on our present equipment and tonnage. Better ore should be opened up and it is certain that better costs can be made with newer equipment.

COSTS OF OPERATION.

Labor per day -----	\$24.50
Fuel " -----	10.00
Supplies " -----	4.50
TOTAL	\$40.00

Expences for February were about \$1120.00 with an inventory as of March 1st, of about \$100.00, or \$38.00 per day. I do not anticipate that this will continue for more then 60 days as we should be producing before that time.

Mining Engineer.

R E P O R T

o n

E M P O R I A M I N E

E 1/2 sec 34 + W 1/2 sec 35 T13N R2W

Property:

The EMPORIA group of mines, consisting of eight claims, lies about ten miles south of Prescott, Arizona, in the Hassayampa mining district. The State Highway from Prescott passes through the property, and but a few hundred feet from the mill.

GEOLOGY AND ORE BODIES:

The general country formation surrounding this property is grano-diorite. This formation is cut by the Emporia vein. It is well to remember that all the veins found in Yavapai County is in this grano-diorite. Adjoining the Emporia vein, and accompanying it is an intrusive rhyolite dike, ranging from 20 feet to 80 feet in thickness, from which no doubt the Emporia vein derived its mineral content.

The vein is ribbon quartz, and has been called the Mother Lode of the district.

The values consist of gold and silver. Much of the gold is free, especially is this true in the upper workings where the weathering has been most pronounced. However, free gold has been found in the quartz below the most weathered zone. There is a well defined talc gouge between the vein and the walls, varying in thickness from one inch to several inches. Nowhere did I find the vein frozen to the walls. The presence of the intrusive dike, together with the clean, free character of the vein, would indicate permanency in depth, and well as in length.

DEVELOPMENT:

The mine is opened up by two shafts, about 110 feet apart, sunk at different times. There has been some stoping done from the older of the two shafts, and all told from \$8,000.00 to \$10,000.00 worth of ore taken out at various times. The larger portion of the ore thus extracted was milled for the free gold only. When the quantity of free gold fell off with depth the mine was abandoned. However, there is some free gold to be found in the ore from the lowest workings intimately associated with the pyrite. The values do not appear to be confined to the quartz vein, but have been found in the rhyolite dike that accompanies the ore body.

There are numerous shallow shafts found along the strike of the vein from which much free gold ore had been taken many years ago.

In sinking the inclines the dip of the veins was followed, but at depth of about 165 feet the vein straightened up and the inclines continued

DEVELOPMENT:

- 2 -

into the hanging wall in place of following the vein, hence the bottom of the inclines is in the hanging wall, and not in ore. On drifting back the ore body was picked up and found to contain all the characteristics of the vein in the upper workings. The total depth, on the dip of the vein, that has been reached is about 200 feet.

VALUES AND SIZE OF ORE BODIES:

The vein so far as opened up will vary in thickness from 2 feet to more than 5 feet, with an average of 3.5 feet to 4 feet. In places the rhyolite as mentioned above carries values ranging from a few dollars up to more than fifty dollars per ton. How extensive this rhyolite enrichment will prove to be is yet an open question. However, we find that much of it will pay to mill, and can be considered as ore.

I took some 200 or more samples from the various parts of the mine and found values ranging from \$9.00 per ton up to \$40.00, with some samples running much higher. While it is quite difficult to give an average value to the mine ore, I would roughly estimate the gross value of the entire mine as now opened up to be somewhere between \$12.00 and \$15.00 per ton. I would also estimate the value of the free gold that will be recovered on the plates to be around \$7.00 and \$8.00 per ton. These values will very likely decrease somewhat as depth is reached. However, there is quite a percentage of free gold in the ore below the more weathered zone, and this condition is likely to continue for an unknown depth, at least so long as present conditions obtain. This free gold found at the lowest depths yet reached is intimately associated with the pyrite. I can see no reason why this condition should not continue to great depths. From my investigations I am forced to the conclusion that more or less free gold will be found at great depths, and that a combination reduction plant will be suited to the ore at whatever depth the mine may be opened.

ORE IN SIGHT:

If the condition of a vein could be assumed to be duplicated where not exposed as it is where personal inspection is possible, the estimation of total values were an easy thing to compute. But this condition is not likely to be fully and completely carried out. Hence we can only approximate the tonnage and values. Making due allowance for irregularities I would estimate a total tonnage of about 10,000 tons available above the 200 feet level. There is in every mine a prospective value that can reasonably be expected to yield somewhat equal values. In the Emporia vein I would put this prospective value as somewhere near the positive value. Not only this, but should the vein continue to the depth of possible mining this prospective value would reach many times the present value. As indicated above I would place the milling value of the ore at about \$14.00 per ton. This estimate is based on not only the assay value from several hundred assays, but on the milling of several hundred tons milled. This will give a total for the ore in sight much above \$100,000.00. Modern methods of extraction should realize the value as given above.

OTHER CLAIMS:

Besides the Emporia vein proper there are at least three other claims that contain veins of varying widths that assay from \$8.00 to \$20.00 per ton. Systematic development of these other ore bodies may expose ore rivalling in size and values the Emporia claim itself. The possibilities presented by this group of claims cannot be over estimated. Careful and intelligent development may add double value to the venture.

WATER:

In ordinary seasons the mine, during the dry period, will furnish from 12,000 to 15,000 gallons of water per day, of 24 hours. Wolf Creek, only a short distance from the mill will supply water for domestic purposes, and can be relied upon to supply water for milling purposes if required.

TIMBER:

The section surrounding the mine is heavily timbered with pine and oak. Within a radius of 2 miles there is probably more than 3,000,000 feet.

TRANSPORTATION:

The mill is situated within about 800 feet of the state highway, and only 9 or 10 miles from Prescott, with an easy grade for trucks.

CONCLUSION:

Compared with the results of many mines that I have examined in the past few years, I know of none that have more prospects for the making of a dividend producer than the Emporia group of claims. Certainly none are more satisfactorily situated. The climate is equitable; neither very hot in summer, nor very cold in winter. Work can be prosecuted the entire year round under the most ideal conditions. Few mines are so ideally situated, and few have the promise of profitable working that is to be found here. With economical and intelligent development I feel quite safe in assuring an entirely satisfactory return for the money spent, and predict a great and satisfactory outcome, and a dividend producer for many years.

Respectfully yours,

This is a verbatim copy taken from the original report,
signed by Mr. Allen C. Redding, Mining Engineer
of San Francisco, California.

GEO. W. MAGWOOD

Report on the Emporia Mine and adjacent property
of the Magwood Copper Mines

LOCATION The group of claims on which the Emporia Mine is located lie in the Hassayampa Mining District, within the east half of Sec. 34 and the west half of Sec. 35, Township 13 North, Range 2 West. This area is about six miles south of Prescott, Yavapai County, Arizona.

PROPERTY The property consists of 16 unpatented full mining claims embracing approximately 320 acres of land and a mill-site containing approximately 5 acres. The names of the claims and place of record follows.

Name of Claim	Book of Mines	Page
Emporia	70	397
Pogo	70	399
Manhattan	88	201
Jester	88	280
El Lobo	88	279
St Paul	88	563
Whitney	88	217
Buckskin	88	482
Happy Home	98	382
Harry	123	32
Pine Ridge	123	33
Pine Flat	123	34
West End	123	35
Jumper No 1	127	197
Jumper No 2	127	196
Jumper No 3	127	198

The Emporia Millsite and Water Rights Claim is Recorded in Book of Mill Sites and Water Rights #3 on page 261

TITLE The company hold these claims by right of discovery and location may continue in possession thereof as long as the annual assessment work (specified as \$100.00 worth of improvement per claim) is performed.

Sufficient has now been done to hold the ground until July 1st, 1929.

A county road locally known as the Senator Highway

crosses a portion of the property, as does a road called the Wolf Creek Road (kept in repair by the National Forest Service). These are public roads and have a right of way.

An Easement was granted the City of Prescott to install and maintain a pipe line carrying a portion of the waters of Wolf Creek across the property for ultimate consumption by the city.

GENERAL INFORMATION

SUPPLY POINTS Prescott, the County Seat of Yavapai County, Arizona, is the nearest supply and shipping point. Prescott is a modern city of 8000 inhabitants. It is located on a branch of the Atchison, Topeka, and Santa Fe Railroad.

TRANSPORTATION Supplies are trucked to the Mine from Prescott a distance of nine miles over the Senator Highway and delivered directly to the Emporia Mine .2 of a mile off the main road.

This Highway is kept in good repair by the County and is easily traveled over.

^{Water}
CLIMATE The groundwater level within few feet of the surface and there is an adequate supply for all domestic and mining purposes.

TIMBER The surface is thickly wooded with Western Yellow pine, some Sugar Pine and an occasional oak. Many of the pines attain a diameter of over two feet and there is an abundance of trees over twelve inches through. There is

sufficient timber for all needs.

COSTS The wages paid district varies with the scope of the operation. For properties like the Emporia the following scale is used.

Miners \$6.00; shaftmen \$7.00; Mechanics \$6.00; surface men \$4.50 to \$5.00

Hauling between Prescott and the mine is done for \$3.00 per ton.

MARKETS

There are three possible markets for the product of the Emporia Mine. These, with the cost of transportation for ores and concentrates of various value, in lots of 30 ton minimum are listed below.

Name	\$10.00	\$20	\$30	\$40	\$50	\$60	\$70	\$80	\$90	\$100
Southwest Metals Co	.60	.70	.85	1.00	1.10	1.25	1.35	1.45	1.60	1.75
O S & R		3.30	3.50	3.75	4.15	4.55	4.55	5.00	5.00	5.75
Magna Copper Co		3.90	4.15	4.45	4.90	5.40	5.95	6.80	6.80	6.80

THE EMPORIA MINE

HISTORY The Emporia claim was the first claim worked in the Groom Creek district. It was located in 1868 by Bob Groom and at that time called the "One Hundred and Ten". Groom and his partners worked the surface--the oxidized ores being rich enough to pack to Groom Creek, one mile distant, where the ore was treated in an arrastra. It then came into the possession of William Harlan who started the No 1 shaft. The ore at this point was so rich that 10 lbs production per day paid all

expenses.

Harlan sold to Mr H. H. Keays, now living in Prescott, and who is the authority for my information as to the Emporia's history.

Keays sunk the No 1 shaft to the 70 ft level drifted north 20 ft and south 60 ft on the 70 ft level. The south drift ran out of ore, was continued and when new ore was struck a great deal of water was encountered. This lead to the starting of the tunnel which found ore where it cut the vein and remained in ore practically all the way until it connected with the south drift mentioned above. This ore was oxidized and milled \$8.00 per ton in free gold. The sulphides came in below this level. Keays then sunk the No 1 shaft 100 ft and drifted both ways on that level. The property was then optioned to a Mr. Wood who sunk the No 2 shaft to the 180 and drifted 50 west and 55 ft south on that level.

In 1908 the No 2 shaft was sunk to the 165. In 1914 the 100 level was connected between shafts. It was then optioned to the Hellmans of San Francisco who sunk the No 2 shaft to the 200 and drifted on that level. Before these people took over the proposition they had it thoroughly sampled and the existing assay map is the result. It appears that very little ore was taken out by the Hellmans--lack of finances having forced them out of business before they were really in shape to mine.

The Magwood Copper Mines an Arizona Corporation acquired the property in 1926 reopened the No 2 shaft and did a little work in driving the 185 "Sub-level." In August, 1927, a re-organization took place and under new management the No 2 shaft was repaired and the 200 level which was badly squeezed and caved

is being reopened.

At present writing the underground workings are in shape to continue development in new ground and commence mining ore already developed. The production has been between \$50,000 and \$75,000.

THE EMPORIA MINE

EQUIPMENT

SURFACE PLANT 20x20 Corrigated Iron Hoist house with fuel shed and Blacksmith shop.

1-6x8 Fairbanks Morse steam hoist and 500'-5/8 plow steel cable.

1-28 tube (3 $\frac{1}{2}$ x 8'6") steam boiler 30 H.P.

Miscellaneous, tools, sufficient for ordinary repairs.

1-Meyer 3x4 pump (belt driven)

1-9 cubic foot hoisting skip

1-10,000 gallon water tank

1-40 ft 8x8 headframe and ore bin

3-12 cubic ft mine cars

1-gasoline engine (small)

MILL

Corrigated iron mill building

{Crushing fl. 18x25
{Concentrating floor 30x40

1-8" Blake Type crusher

Battery of 5-850 lb Stamps

2-Wilfly # 14 Concentrating Tables

1-8x16-150 R.P.M. Steam Engine

1-40 tube Steam Boiler 50 PP.

UNDERGROUND

1 Fairbanks Morse Duplex 6-4-6 station pump

1 Cameron #5 Sinking pump

1 Cameron #6 Sinking pump

Sufficient miscellaneous small mining equipment.

CAMP

1-13'x 32' Frame Boarding house

2-13'x22' Frame Bunk house

The Boarding house is equipped with a Garland 6 hole range and a small amount of cooking utensils.

TOPOGRAPHY While the region in general is dissected by deep canyons cut by the narrow and (at times) turbulent streams, the ground embraced by the Emporia is of even contour, modified by small gullies formed by seasonal rains. The general slope is probably less than 10 degrees to the west making it impractical to attain more than 70 ft of depth on the vein by tunnel. The sinking of shafts for development is therefore the only course to pursue. Roads all have easy grades.

GEOLOGY The outcropping rocks on the Emporia Claims are.

(1) A granite rock. This is a coarse grained rock containing quartz, orthoclase, feldspar, biotite.

This constitutes the country rock and forms both the hanging an footwall of the Emporia vein system. Between the veins it is badly decomposed and in the vicinity of the Hanging wall is friable. On the footwall side it is unaltered.

(2) A dyke material--an acid rock with a fine grain sandy buff colored groundmass containing crystals of glassy quartz. It is hard and tough weathers yellow and red and has a

characteristic break into hexagonal fragments.

This dyke appears to be 60 ft wide, east of the No 2 shaft but narrows to a width of 14 feet near the tunnel where its contacts with the granite is clearly visible.

It strikes across the path of the vein system and appears to cut it.

Both disappear under a flat to the south, where the croppings are obscured by an over burden of soil.

(3) Lying adjacent to and on the east side of this dyke is a coarse grained igneous rock the dominating mineral being quartz. It weathers in a red colored rock and is easily distinguished from the light colored granite lying on its east side.

(4) THE EMPORIA VEIN SYSTEM

It is in this area that the Emporia ore chute occurs. Two

parallel veins have been uncovered--one the Emporia lying on the west or foot wall side, the other known as the Hanging Wall Vein which lies to the east. On the surface both appear to dip at the same angle--53 degrees to the east, and strike N 25 degrees W. They are 41 feet apart measuring horizontally.

The Emporia vein has produced all the ore so far extracted. The Hanging Wall vein has never been explored. On the surface it sampled \$5.00 per ton over a width of 5 feet. On the 70 foot level a cross out into the vein yielded a sample of \$9.00 per ton over a width of 8 feet. On the 125 foot level a crosscut 25 feet long was driven. Though a small vein of quartz was out it is the opinion of the writer that the vein had not been reached. On the 200 level a crosscut was driven off the station. Sulphide ore was reported to have been found. This, however, is caved as is another crosscut driven off the 200 North drift which did not reach its objective. The Hanging Wall Vein is therefore virgin territory and is either a split off the Emporia or a parallel vein formed under the same conditions.

There is therefore every reason to believe that it contains as valuable an ore chute as does the main Emporia vein.

OTHER VEINS

In a granite country the existence of several veins within a relatively small area is usual. This condition also obtains on the Emporia group.

On the Manhattan Claim is the Manhattan vein. This strikes east and west. A shallow shaft was sunk on ore assaying as high as \$45.00 per ton. It contains some galena (lead Sulphide) and chalcopyrite (copper-Iron Sulphide).

DEVELOPMENT

With the exception of 5 crosscuts to the "Hanging Wall" vein on the 70 ft. 125 ft and 200 ft levels all work has been done on the Emporia vein. This totals 1155 feet as shown:-

<u>Working</u>	<u>Shaft</u>	<u>Crosscut</u>	<u>Drift</u>
No 1 Shaft	180 ft		
No 2 Shaft	210 ft		
70 ft Level		40	300ft
100 ft Level			135 ft
125 ft Level		25	20 ft
155 level			35 ft
165 level			100 ft
200 level		25	85 ft
Totals	390	90	675

Number 2 shaft has been repaired and is in good condition. The two hundred foot level is now the main working level and is in good condition.

All other levels have caved portions. The No 1 shaft is caved at the collar.

The development done has served its purpose to this extent-- it has opened the Emporia ore chute permitted the taking of numerous samples proving the existence and value of the ore. Of these 109 were recorded. They were taken by men assumed to know their business and are considered reliable. Until work now in progress again makes this area enterable, so that they may be checked by the writer; they will be used as a basis for preliminary calculation of ore users.

ORE RESERVES

The ore chute has been proven for a length of 290 feet on the 70 foot level and in the No 1 shaft has a proven depth of 180 feet with an average thickness of $\frac{1}{2}$ feet.

It contained 6500 tons having an average value of \$16.15 per ton or \$101,000 gross value.

Of this tonnage probably 1400 tons has been extracted.

There are certain blocks of ground which, it appears from information deemed reliable, may be mined as soon as present repairing is completed. These are shown on the accompanying map and listed below.

Block	Width	Value per ton	Tonnage	Gross value
A	4.5'	\$12.60	640	\$8.060
B	2.8'	20.40	560	11.650
C	3.4'	13.90	1530	21.230
D	2.6'	18.90	1430	27.000
Totals			4160	\$67.940

NATURE OF ORE

The values are principally in gold and occurred in the free state to the 70 ft level. At this depth sulphides appeared in the form of massive pyrite which cannot be concentrated and must stand direct shipping and also in seams and grains and small bunches disseminated through out a gang of quartz. This is readily concentrated, the ratio being about eight to one.

MINING

Lack of care has permitted existing workings to cave but with proper timbering no trouble will be experienced in holding the ground. Cut and fill stopes can be held with little or no water. The water handled is no excessive-- about 10,000 gallons per day.

CONCLUSIONS

Disregarding the speculative possibilities of finding other ore chutes by extensive exploration and regarding the entire situation as it stands to day, I look upon the Emporia mine as a business venture on which the new owners can receive a handsome return on their investment.

The property has been equipped and opened up by former owners whose chief difficulty seemed to be lack of adequate working capital.

Present equipment will serve for the time being. Later it can be brought up to a point of far higher efficiency by replacements and the addition of other units.

RECOMMENDATIONS

SURFACE PLANT The two small boilers should be replaced by one larger unit which can be purchased in Prescott. This will affect a saving in fuel.

THE MILL Heavy losses now occur because only a rough concentration is possible with present equipment and no close check can be made on the results. When the mine is so opened that a large tonnage is available a representative sample should be sent to one of the several reputable engineering firms who are designers of mills, for experimental purposes. It is certain that an almost complete recovery can be made.

THE EMPORIA MINE I do not recommend additional depth at this time. I believe that sufficient ore will be found in the Emporia Vein and Hanging Wall Vein above the 200 to supply the mill for at least a year, which is a sufficient reserve for a mine of this type. The 200 level should be extended north and south, connection should be made with the No 1 shaft for addition ventilation and exit from the mine and crosscuts should be drawn to the Hanging Wall vein and this vein explored.

OTHER VEINS These should be prospected at the surface. They will prove an addition source of revenue.

APPRAISAL OF EMPORIA MINE BY
COLEMAN AND DAY, ENGINEERS AND CONTRACTORS, PREGCOTT, ARIZ.

Dear Sirs:

I beg to state that a fair and reasonable valuation of your properties is as follows:

EMPORIA DIVISION

Surface Improvements

Mill complete, hoisting plant, blacksmith shop, tanks, pumps, rails, camp and camp buildings.

\$14,000.00

Underground workings

392 ft. of shafts, 605 ft. of drifts and 50 feet crosscuts

25,000.00

Approximate gross values of ores

Ore in sight, 17,000 tons @ \$20.00	\$ 340,000.00
Probable Ore, 10,000 " " 20.00	200,000.00
Prospective Ore, 75,000 tons @ \$10.00	<u>750,000.00</u>

Total Valuation \$ 1,329,000.00

Explanatory Notes.

EMPORIA:- Surface Improvements. The valuation placed upon the surface improvement is based upon the reproductive value. This also applies to the valuation placed upon the underground workings. ORES:- The ore in sight, approximately 17,000 tons is largely blocked out, the remainder being exposed on one and two sides. The value of \$20.00 seems conservative from the assay map. The probable ores are assumed to reach 100 feet below the 200 foot level or lower level of present development and to extend 300 feet along the strike of the vein. The value has been assumed to be the same as that of the ore in sight. The prospective ore was assumed to go 375 feet below the imaginary 300 foot level and to extend along the strike of the vein 600 feet. This seems most reasonable from the surface indications as there is a strong outcrop extending over this whole distance. The value of this prospective ore has been placed at \$10.00 a ton, assuming the possibility of a lower grade primary ore. This value may be considerably increased from actual development; likewise the tonnage may be far greater than is shown in this schedule. There is on the hanging wall, and 30 feet easterly from the foot wall vein upon which this tonnage and estimate is based, another vein with absolutely no development upon it. The intervening dyke material shows gold and silver values as high as \$5.00 from a short cross-cut driven into it. Further development may show a large tonnage of this lower grade ore.

Very truly yours,

W.H. COLEMAN,
Registered professional engineer.

Dear Sirs:-

Supplementing my report appraising the value of your properties, I desire to state that the values of the ores given therein are the gross values, and do not take into consideration the cost of mining and treating to recover the valuable metal content.

With the present milling arrangements on the Emporia, and the 17,000 tons of ore in sight, together with the 10,000 tons of probable ore, it should be possible to mine and mill same at a cost of approximately \$9.00 a ton, leaving an operating profit of \$11.00 per ton based on \$20.00 ore.

With regard to the prospective values on this division, when these ores are developed to a depth of 600 feet the 700 foot level, together with the necessary lateral development, it would be advisable to install a modern reduction plant of suitable design, with an approximate capacity of 100 tons a day. This larger tonnage would materially reduce fixed charges, and it should be possible to mine and mill under the improved conditions due to new plant, for approximately \$6.00 a ton. This would mean an operating profit on \$10.00 ore of recoverable profit of \$4.00 a ton.

At this point I want to call your attention to the fact that the 100,000 tons of ore classified as ore in sight, probable ore and prospective ore, is not a limitation of ores on this property. Far from it. It is merely the present reasonable anticipation of ore on this property; but with the completion of the development to the 700 foot level, the probable and prospective ores will become ores in sight, and beyond that horizon we have more probable and prospective ores.

Very truly yours,
W. H. COLEMAN.
Registered Professional Engineer.

Dear Sirs:

I have just completed an examination of your properties in Yavapai County, Arizona, in company with Mr. Walter H. Coleman, in charge of your operations.

The location and physical aspects of the properties are so well known that it is needless to cover them in a formal report.

I much prefer to convey my observation in detail in a letter to you and trust that it will meet with your approval. I have drawn my conclusions and directed my attention along such lines as I would follow if the property were my own and under my own management. These views coincide very closely with Mr. Coleman's, and as I hope that he will soon be with you in New York he can go farther into detail on any points you wish cleared up.

The Emporia vein can be traced more or less continuously for five claim lengths, or approximately 7500 feet. Not all this length lies on the Emporia property and from reports and statements it is claimed that the vein extends for several miles. For the interest of this property however, it is sufficient to say that the vein is a firmly defined one, traceable for a long distance outside your properties and carrying good mill values wherever opened up.

The shaft has been unwatered to the 200 foot level. The ground over the present ore body, which is on the foot wall of a grano-diorite dyke, is extremely heavy and hard to hold. As a result, wherever the vein material is opened up it begins to swell and creates heavy pressure. Both sides and tops of all drifts have been tightly lagged so as to prevent caving. Where stopes have been opened the entire ground is badly caved and too dangerous to open up.

A drift was started north in the 100 foot level in order to get at some of the ore for immediate milling. This was in ground where ore had been stoped both above and below. Even though roughly timbered, several slips occurred so that little or no ore can now be stoped thru this new level at the

In view of the heavy ground and difficulty of mining into the old blocked areas, excepting by means of proper raises from the lower or 200 ft. level, it is suggested that new ground be opened up by drifting both north and south on the 200 foot level before any attempt at the regular mining and milling be started.

The mill is unable with the present equipment to make a satisfactory saving. It consists of a Blake Crusher, five stamps and two Wilfly tables. The present extraction is about 60%.

It is proposed by both Coleman and myself to install a small ball mill and classifier - cone thickener and flotation cells. This will bring the extraction up to 90 or 92% of the values and increase the tonnage capacity up to 40 to 45 tons per day. The amount as per the attached estimate. - using discretion in buying certain used equipment which is in good condition is approximately \$5000.

It will take from 30 to 60 days to install this equipment.

A program of development work has been laid out which calls for drifting 300 feet north and 100 feet south on the foot wall vein on the 200 foot level. Also three crosscuts of approximately fifty feet each from the foot wall vein to the hanging wall vein. This development work is limited to opening up the known ore which has been proven in the upper levels and will be extended both north and south after stoping is started and milling of the ore in the remodelled mill is under way.

Sinking of the present shaft to the 300 foot level and opening up a new level at 300 feet.

The 300 foot level should be driven 300 feet north and 100 feet south and 2 crosscuts driven to the hanging wall vein as on the 200 foot level.

The 200 and 300 foot level should be connected by a raise at the north, and this raise continued to the surface, both as a means of ventilation and so as to make an emergency exit from the underground workings in accordance with the Arizona Mining Law.

Assuming that the ore above the 100 foot level will be inaccessible for mining - due to the caving of the old stopes - this development program will block out 20,000 tons of ore above the 300 foot level. This is all on the foot wall vein and assumes an average width of 3 feet which is lower than shown on the old assay maps - but which is safe as the old figures cannot be checked.

A known hanging wall vein occurs about 50 feet east of the foot wall vein. No development work has been done on this hanging wall vein. A cut near the hoist house - near the surface - shows a width of over five feet. The vein is again cut on about the 90 foot level - where about 3 feet in width of vein material occurs.

It is very probable that the development work outlined will enable us to block out an additional 30,000 tons of ore on the hanging wall vein - which, whereas it is not proven may be regarded as probable ore.

The remodeling of the mill calls for the use of $\frac{1}{2}$ " screen on the stamps which will increase the production up to at least two tons per hour.

An itemized list of the proposed equipment and installation is as follows:

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Ball Mill	\$750.00
Holt 75 H.P. Engine	700.00
Foundation and Erection	400.00
Classifier	350.00
Flotation Cell	750.00
Thickener	600.00
Tanks	350.00
Pumps	200.00
Belts etc	200.00
Hauling and Erection	700.00
Total	\$ 5000.00

Sufficient ore will be taken out in the development work to keep the mill busy for one shift per day for a period of three months. From there on the stopes can be started and by the end of six months the mill should be kept busy up to a capacity of 40 to 50 tons per day.

I have been unable to sample or check the measurements of the ore for the reason already stated, namely the bad condition of the ground. The ore body has been stoped for several hundred feet in length. It is known to extend both north and south of the limits of the present workings. The values occur mainly in gold with the massive pyrite which are known to continue in depth.

You are fully warranted in and justified in carrying out the plan as outlined.

I consider you most fortunate in obtaining the Emporia property. It is capable of production with a limited amount of work. The development work is not planned to be hunting for ore, but merely to make accessible and available for efficient mining the ore which is already proven. The remodeling of the mill is a comparatively small expenditure, but must be made in order to get a fair extraction. The ore is amenable to cyaniding - which can be added by the present equipment as soon as sufficient ore has been opened up. I firmly believe that the present outline will get very favorable results.

Respectfully submitted,

J. S. OSFAL,
Boston, Mass.
Mining Engineer.

REPORT ON EMPORIA MINE BY
ALLAN C. REDDING, MINING ENGINEER, SAN FRANCISCO, CAL.

PROPERTY:

The EMPORIA group of mines, consisting of eight claims, lies about ten miles south of Prescott, Ariz., in the Hassayampa Mining District. The State Highway from Prescott passes through the property, and but a few hundred feet from the mill.

GEOLOGY AND BODIES:

The general country formation surrounding this property is granodiorite. This formation is cut by the Emporia Vein. It is well to remember that all the veins found in Yavapai County are in this granodiorite. Adjoining the Emporia vein and accompanying it is an intrusive rhyolite dyke, ranging from 20 feet to 30 feet in thickness, from which no doubt the Emporia vein derived its mineral content.

The vein is ribbon quartz and has been called the Mother Lode of the district.

The values consist of Gold and Silver. Much of the Gold is free, especially is this true of the upper workings where the weathering has been most pronounced. However, free gold has been found in the quartz below the most weathered zone. There is a well defined talc gouge between the vein and the walls, varying in thickness from one inch to several inches. Nowhere did I find the vein frozen to the walls. The presence of the intrusive dyke, together with the clean, free character of the vein, would indicate permanency in depth, as well as in length.

DEVELOPMENT:

The mine is opened up by two shafts, about 110 feet apart, sunk at different times. There has been some stoping done from the older of the two shafts, and all told from \$3000 to \$10000 worth of ore taken out at various times. The larger portion of the ore so taken out was milled for the free gold only. When the quantity of free gold fell off with depth the mine was abandoned. However there is some free ore to be found in the mine from the lowest workings intimately associated with the pyrite. The values do not appear to be confined to the quartz vein, but have been found in the rhyolite dike that accompanies the ore body.

There are numerous shallow shafts found along the strike of the vein from which much free gold ore had been taken many years ago.

In sinking the inclines the dip of the vein was followed, but at depth of about 165 feet the vein straightened up and the inclines continued into the hanging wall in place of following the vein, hence the bottoms of the inclines are in the hanging wall and not in ore. On drifting back the ore body was picked up and found to carry all the characteristics of the ore in the upper workings. The total depth, on the dip of the vein, that has been reached is about 200 feet.

VALUES AND SIZE OF THE ORE BODY.

The vein so far as opened up will vary in thickness from 2 feet to more than 5 feet, with an average from 3.5 feet to 4 feet. In places the rhyolite as mentioned above carries values ranging in value from a few dollars up to 30 dollars per ton. How extensive this rhyolite enrichment will prove to be is yet an open question. However we find that much of it will pay to mill and can be considered as ore.

I took some 200 or more samples from various parts of the mine and found values ranging from \$9.00 per ton up to \$40.00 with some samples running much higher. While it is quite difficult to give an average value to the mine ore, I would now roughly estimate the gross value of the entire mine as now opened up to be somewhere between \$12.00 and \$15.00 per ton. I would also estimate the value of the free gold that will be recovered on the plateau to be around \$7.00 and \$8.00 per ton. These values will very likely decrease somewhat as depth is reached. However there is quite a percentage of free gold below the weathered zone, and this condition is likely to continue for an unknown depth, at least so long as present conditions obtain. This free gold found at the lowest depths yet reached is intimately associated with the pyrite. I can see no reason why this condition should not continue to great depths. From my investigations I am forced to the conclusion that more or less free gold will be found at great depths, and that a combination reduction plant will be suited to the ore at whatever depth the mine may be opened.

ORE IN SIGHT:

If the condition of a vein could be assumed to be duplicated where not exposed as it is where personal inspection is possible, the estimates of total values were an easy thing to compute. But this condition is not likely to be fully and completely carried out. Hence we can only approximate the tonnage and values. Making due allowance for irregularities, I would estimate a total tonnage of about 10,000 tons available above the 200 foot level. There is in every mine a prospective value that can be

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reasonably expected to reveal somewhat equal values. In the Emporia vein I would put this prospective value as somewhere near the positive value. Not only this, but should the vein continue to the depth of possible mining, this prospective value would reach many times the present value. As indicated above I would place the milling value of the ore at about \$14.00 per ton. This estimate is based on not only the assay value from several hundred assays, but on the milling of several hundred tons milled. This will give a total for the ore in sight of much above \$100,000.00. Modern methods of extraction should realize the value as given above.

OTHER CLAIMS:

Besides the Emporia claim proper there are at least three other claims that contain veins of varying widths that assay from \$8.00 to \$20.00 per ton. Systematic development of these other ore bodies may expose ore rivalling in size and value the Emporia claim itself. The possibilities presented by this group of claims cannot be over estimated. Careful and intelligent development may add double value to the venture.

TIMBER:

The section surrounding the mine is heavily timbered with pine and oak. Within a radius of 3 miles there is probably more than 3,000,000 feet.

TRANSPORTATION:

The mill is situated within about 500 feet of the State Highway, and only 9 or 10 miles from Prescott, with an easy grade for trucks.

CONCLUSION:

Compared with the results of many mines that I have examined in the past few years, I know of none that have more prospects for the making of a dividend producer than the Emporia group of claims. Certainly none are more satisfactorily situated. The climate is equitable; neither very hot in summer nor very cold in winter. Work can be prosecuted the entire year round under the most ideal conditions. Few mines are so ideally situated, and few have the promise of profitable working that is to be found here. With economical and intelligent development I feel quite safe in assuring an entirely satisfactory return for the money spent, and predict a great and satisfactory outcome, and a dividend producer for many years.

Respectfully yours,

Allen C. Redding,
Mining Engineer,
San Francisco, Cal.

EMPORIA PARK

LOCATED IN THE PRESCOTT NATIONAL FOREST
NEAR PRESCOTT, YAVAPAI COUNTY, ARIZONA.

SCALE 1 INCH - 200 FEET
A.S. KONSELMAN
ENGINEER.
THE BANK OF ARIZONA BLDG.
AT PRESCOTT, ARIZONA.



CLARK & ADAMS U.S. PAT.

TO PRESCOTT 3 MILES

POWER LINE
1 MILE

EMPORIA PARK

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