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PRINTED: 01/15/2003

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: CLEOPATRA

ALTERNATE NAMES:
PALO VERDE GROUPS

MOHAVE COUNTY MILS NUMBER: 373A

LOCATION: TOWNSHIP 11 N RANGE 14 W SECTION 4 QUARTER S2
LATITUDE: N 34DEG 19MIN 12SEC LONGITUDE: W 113DEG 43MIN 13SEC
TOPO MAP NAME: ARTILLERY PEAK - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER OXIDE
GOLD LODE
SILVER

BIBLIOGRAPHY:
ADMMR CLEOPATRA MINE FILE
ADMMR MOHAVE CUSTOM MILL PROJECT
WEED'S MINES HANDBOOK, 1924, P. 283
MALACH, R. "MOHAVE CTY MINES" P 17, 1977
ADMMR CLEOPATRA & CLEOPATRA EXT COLVO FILE
ADMMR "U" FILE CU 5

"GOLDEN COPPER PLACER" CLAIMS 12-23-60
TPL-WR

MOHAVE COUNTY
OWENS DIST.

See: "NEW PROJECTS" file (Corres.files)

"LODE" NO. 1 to 66 CLAIMS 12-23-60
& "GOLDEN COPPER PLACER" TPL- WR

MOHAVE COUNTY
OWENS DIST.

Located by POOL, CALDWELL, CAMPBELL, MERCER AND FULLER,
of Tucson - J.E.Fuller, 1301 E.Ft.Lowell Rd., Tucson,
appears to be the principal in enterprise.

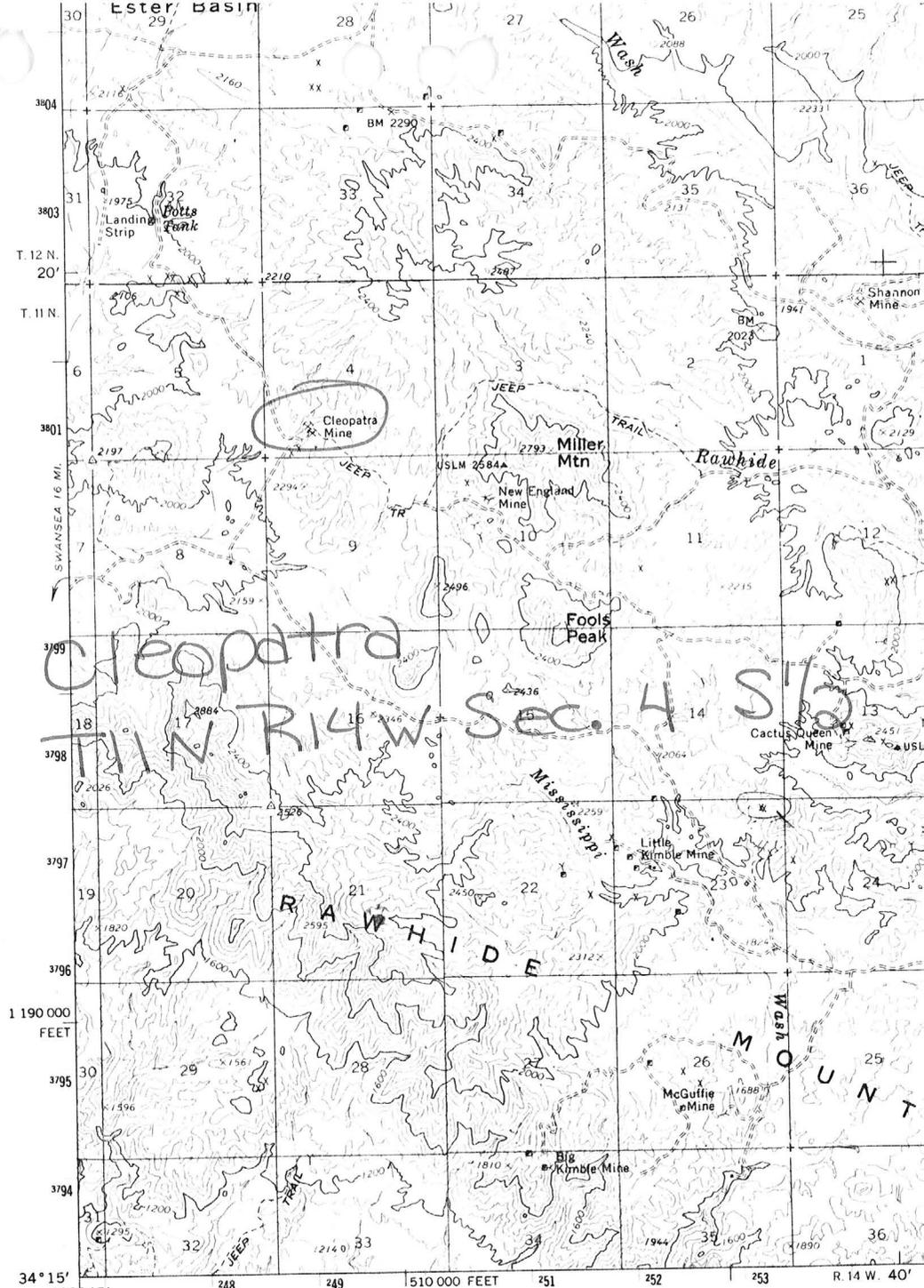
T12N, R14 & 15 W. & T11N, R15W, in region of Cleopatra
mine. 66 lode claims and 8 placer claims.
See: "NEW PROJECTS" file - (Corres. files)

GOLDEN COPPER PLACERS TPL-WR
12-23-60
& "LODE" NO. 1 to 66 CLAIMS

MOHAVE COUNTY
OWENS DIST.

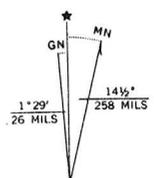
Located by POOL, CALDWELL, CAMPBELL, MERCER AND FULLER, of
Tucson - J.E.Fuller, 1301 E.Ft.Lowell Rd., Tucson, appears
to be the principal in enterprise.

T12N, R14 & 15W. & T11N, R15W, in region of Cleopatra mine.
66 lode claims and 8 placer claims.
See: "NEW PROJECTS" file - (Corres. files)



(SWANSEA)
3022 III

Mapped, edited, and published by the Geological Survey
 Control by USGS and USC&GS
 Topography by photogrammetric methods from aerial
 photographs taken 1964. Field checked 1966
 Polyconic projection. 1927 North American datum
 10,000-foot grid based on Arizona coordinate system, west zone
 1000-meter Universal Transverse Mercator grid ticks,
 zone 12, shown in blue
 Blue hatching indicates areas to be submerged by Alamo Reservoir
 at elevation 1070. Areas covered by dashed light-blue pattern
 are subject to controlled inundation



UTM GRID AND 1966 MAGNETIC NORTH
 DECLINATION AT CENTER OF SHEET.

Artillery Peak 15'

Name of Mine or Prospect: Cleopatra Mine	Township 11N	Range 14W	Section 4 cdb	Priority B
Principal Minerals: Malachite, Chrysocolla, Azurite, Cuprite	1:250,000 Quad Prescott		7.5' - 15' Quad Artillery Peak	
Associated Minerals: Magnetite, Quartz	District Artillery Mtn.		Principal Product Copper, Gold	
Type of Operation: Underground; Shafts	County Mohave	State Ar.	Type of Deposit Vein-Replacement	
Ownership or Controlling Interest: Arizona-Nevada Mining Co. (1969) ¹				
Access: From Alamo Crossing, proceed northwest on unimproved road for 5 miles. Turn left and travel west for 4.25 miles. Mine is shown on topographic quadrangle.				
Structural Control or Geological Association: "The rocks in the immediate area consist of mainly Precambrian schist with erosional remnants of Paleozoic limestones resting on the schists." ¹				
Age of Mineralization:				
Production History			Geochemical Analyses	
Patented Claim Bk #101 MS #3573			Ore average 4% copper \$7.00 gold/ton (date unknown)	
References				
1) ADMR file, Phoenix, Ar. 2) Mallach (1977) p. 17.				

NAME: CLEOPATRA

COUNTY: MOHAVE

Artillery Mts 15'

T 11 N R 14 W SEC. 4 E 1 1950'

DISTRICT: ~~OWENS~~

ARTILLERY MTS

Owens according to
Shattuck U.S. Patent
Shattuck U.S. Patent

6 miles N of ...

Mineralization: Fe Cu Malachite, Chrysocolla.

azurite, Cuprite, some sulfides.

Geology:

Type Operation:

Production:

References: Mohave Co. Maps P-16 Topo

Mohave City Card File

NAME OF MINE: ✓ CLEOPATRA		COUNTY: MOHAVE
		DISTRICT:
OPERATOR AND ADDRESS:		METALS: CU ✓
DATE:	MINE STATUS	
5/1/44	David R. Strong, ✓ Yucca, Ariz.	DATE: 5/1/44
		6/44
		Shipping to Clarkdale
		Closed

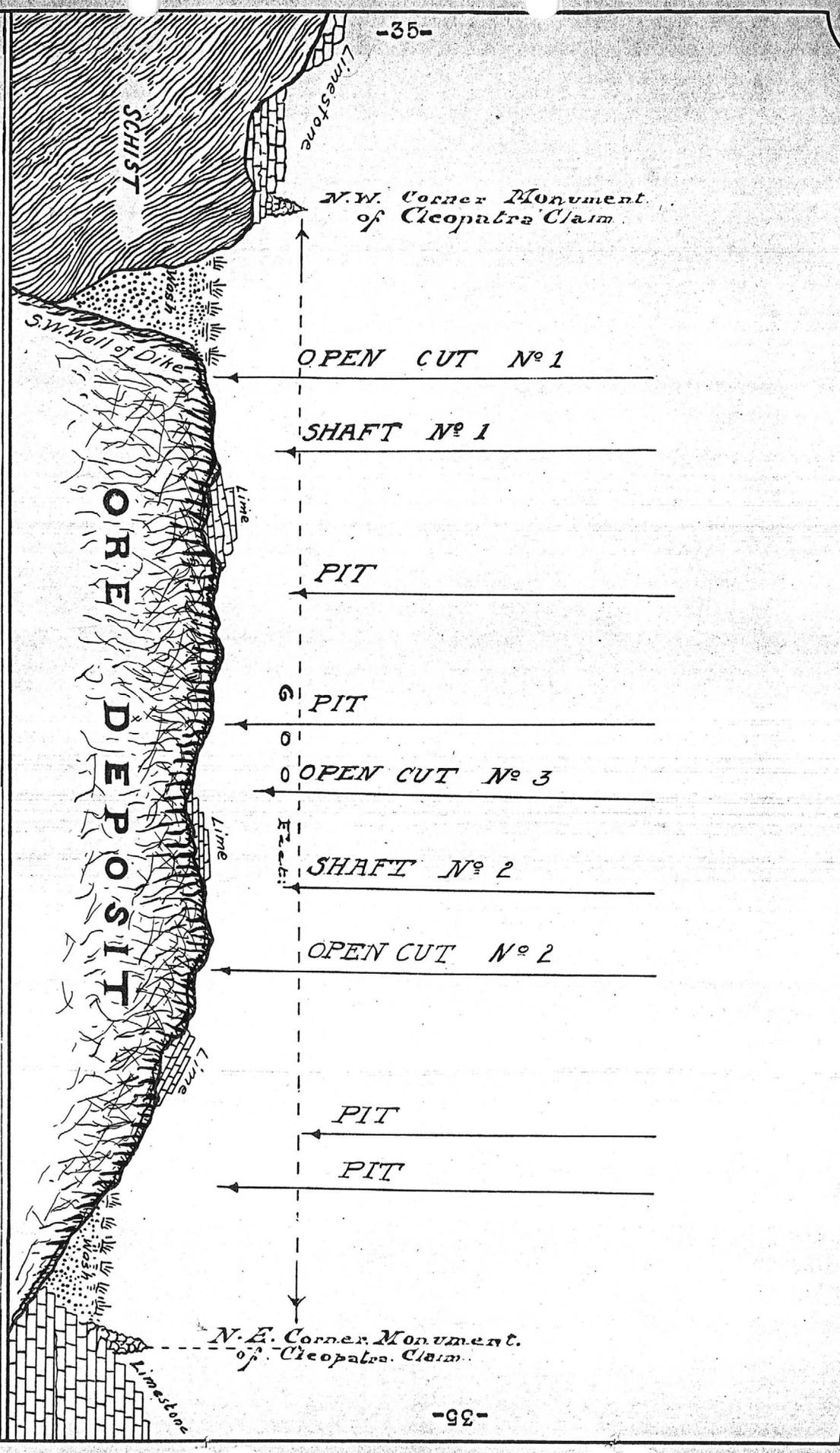
HARRIS & STRONG, Vanadium, New Mex. (LESSEES)
DAVID R. STRONG, SUPT.

MINE - CLEOPATRA MINE - 54 miles south of Yucca.



Mining Journal 7/15/42

CROSS SECTION OF CLEOPATRA ORE-BODY



SCHISTED DIABASE COVERS BY LIMESTONE

Proved Ore-area

PLAN

Schist
Mineralized
Fissures

DIKE

Limestone Covering

DIAGRAM ILLUSTRATING PROBABLE STRUCTURE
OF DIKE & LATERAL ORE-BODY

DIKE

Limestone

ORE

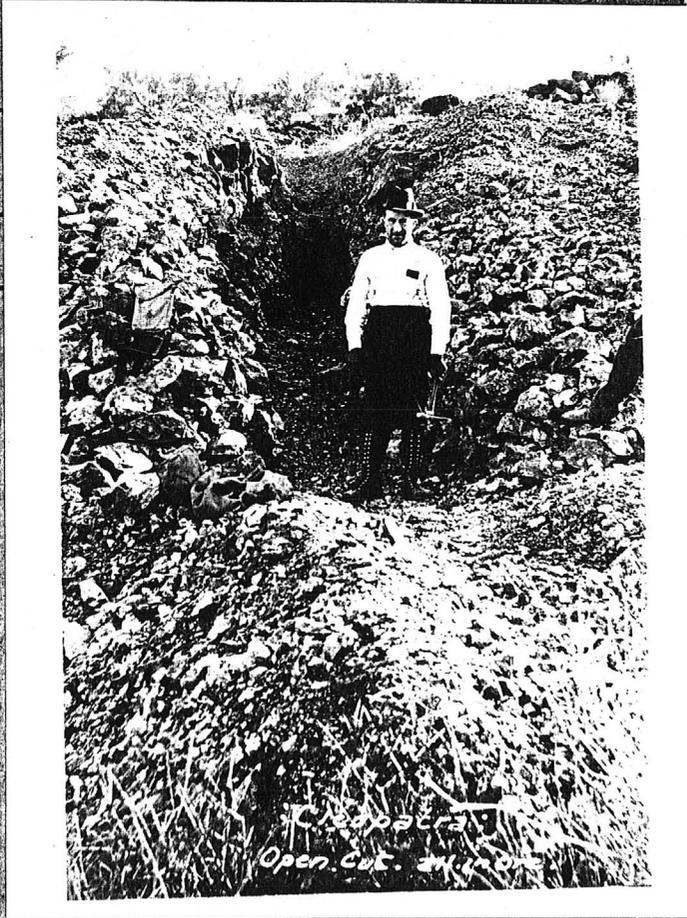
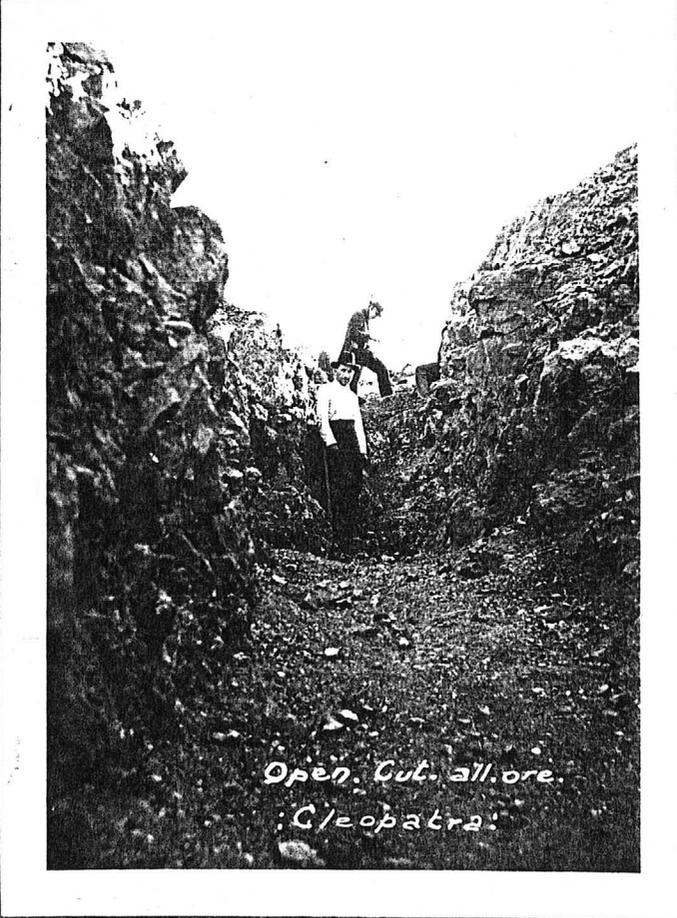
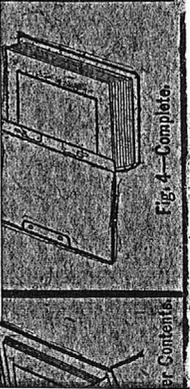
ORE BODY
(Replacement)

SCHIST

"C" TRENCH AT TOE OF LATERAL
ORE-BODY

"B" TRENCH ACROSS PORTION OF
LATERAL ORE-BODY





E. F. THOMPSON, PRESIDENT
KINGMAN, ARIZONA
LEROY ANDERSON, COUNSEL
PRESCOTT, ARIZONA

ANSON H. SMITH, VICE-PRESIDENT
KINGMAN, ARIZONA
HARVEY HUBBS, DIRECTOR
KINGMAN, ARIZONA

J. W. MORGAN, SEC'Y-TREAS.
KINGMAN, ARIZONA
W. S. THOMPSON, ASS'T SEC'Y
KINGMAN, ARIZONA

CLEOPATRA COPPER AND GOLD MINES CO.

THOR WARNER & C. W. NELSON

CABLE ADDRESS
THOR, LIEBER & UNICODE
CODES

MEMBERS
AMERICAN INSTITUTE MINING ENGINEERS
CANADIAN INSTITUTE MINING ENGINEERS

BANKERS
ARIZONA CENTRAL BANK
KINGMAN, ARIZONA

MINE OPERATORS

CENTRAL BUILDING
PHOENIX, ARIZONA,

History shows that since the discovery of the usefulness of Copper, there has never been a time that the demand has ceased. In war time as well as peace the consumption of Copper stands in proportion with steel at the top.

The increased home demand for commercial use in addition to the urgent clamour from the battle-front as well as the future reconstruction of the war-ridden Europe gives the Copper producer a bonded assurance of big prices for the red metal during the next ten years.

A successful and foresighted investor once said:-"I prefer to place my money in Copper shares as I know that Copper is one of the prime factors in construction, and Copper mines pay big dividends and last for years."

For the benefit of those that so far have failed to realize the value of the shares in "Cleopatra" we quote herein abstracts from reports made on the company's property by eminent mining engineers from which you may judge for yourself.

The price of "Cleopatra" shares is 50 cents each and only sufficient amount of shares will be sold to raise the necessary money for the purpose of building a suitable plant to produce the Copper from ore now in sight.

The best advice we can give you, is for you to buy now all the "Cleopatra" shares that you can afford and for your convenience we are enclosing herewith a subscription-blank.

Yours respectfully,

Warner & Nelson.
(Not Inc.)

EXTRACT FROM REPORT MADE BY BYRON O. PICKARD, E. M.

Briefly and generally discussing this subject; the basal formation of the property is a siliceous ceritic schist grading into a Gneiss of Pre-Cambrian origin. This is capped (showing only in a few places) by grey limestone which has been practically eroded away, exposing the schist. The limestone on the higher places is from one to twenty feet thick. These formations have been cut by dikes of Quartz-Porphry, which have not cut through the formations continuously but outcrop in several places. The effect of the intrusion was to brecciate both the schist and the porphyry and practically metamorphose the porphyry to quartz and from a large replacement zone in the schist near the contact.

These brecciated and replacement zones are irregular in shape, the main one being approximately rectangular in its surface showings and having an estimated length of 1200 feet and a width of 600 feet, giving an estimated area of 17 acres. This is found on the Redbreast, Cleopatra and Somerset number 2 claims, being covered on the Somerset number 2 by limestone and on the Roosevelt and Keystone by wash.

Shafts on the Jefferson show the same formation occurring below the wash, making it probable that the zone is of greater extent than estimated.

Another smaller zone is shown by workings on the Jefferson claim.

These zones are highly siliceous and considerably stained with iron. Copper stains are everywhere in the main zone; it is unusual to knock off new surface without finding copper.

It is locally known as the copper farm.

The report is favorable, recommending its development as it presents immense possibilities.

EXTRACT FROM REPORT MADE BY C. H. JAMES, E. M.

THE PROPERTY

The holdings of the CLEOPATRA COPPER & GOLD MINES COMPANY comprise 19 claims, totaling 380 acres, in the Owens mining district, Mohave county, Arizona.

ASSAY VALUES AND QUANTITIES

For the purposes of this report, the writer sampled in 10-foot sections, the principal trenches across the dike, and western limit of the exposed deposit, and these samples showed an average at those places of 2.92% copper for sampled total widths of over 70 feet.

That easily mined siliceous ore in such quantities and carrying over 2.5% copper per ton can be operated at big profit has been amply demonstrated in several copper mining centers in Arizona and elsewhere, though in few of the cases is the grade above 2% copper; and that these large and partly opened Cleopatra deposits can be made to yield handsome profits is a matter beyond question.

MINING, TRANSPORTATION, ETC.

The large exposed deposit can be cheaply mined by a series of open faces (long wall) and steam shovels used.

Transportation of ore would be governed by location of the treatment plant; if the latter is erected at the mine, a series of "flying fox" cable haulage ways from the several points of quarrying would concentrate the broken material at one point and tramway would then convey it to plant.

CONCLUSIONS

The large tonnage of proved and partly proved ores in the surface exposures are only a moderate proportion of the additional ore that may be expected from the proposed exploratory work.

The development of the copper and gold bearing dike and fissured zone also promises to result in the opening up of profitable ore-bodies at depth, and the whole project provides an exceptionally sound mining and metallurgical undertaking of magnitude, promising large profits to the operators.

EXTRACT FROM REPORT MADE BY H. A. DeRUDIO, E. M.

There is in all probability 850,000 or 900,000 tons of pay ore in this large deposit in sight.

VALUES

From a series of grouped samples, each sample containing ten pounds, making a total of 220 samples, the result was an average of Gold .33, Copper 4.9% as sample sheet will show, although two high-grade samples have been purposely left out in making up the average.

MINING

The ore can be mined for some time at a cost of not more than 25 cents per ton, when machine drills are used. This part of the operation will be the same as quarrying rock for concrete cement, and will be all open work for few years, at the rate of 500 tons per day of 24 hours.

TRANSPORTATION

The terminus of the Swansea and Arizona R. R. is about 14½ miles south of the Cleopatra, on the south side of the Bill Williams Fork, and is a branch line from the Prescott-Phoenix R. R. This branch is 21 miles from Bouse on the main line.

There is a wagon road from the property to Swansea, a distance of 14½ miles.

The ore can be transported to the river by cable train at a cost of not more than 30 cents per ton, making the total cost of mining and transportation of the ore about 60 cents per ton.

SUMMING UP

Considering advantages and disadvantages, I can safely state that the Cleopatra property is second to but very few low grade properties in the United States.

EXTRACT FROM REPORT MADE BY J. R. ADAMS, E. M.

Situated in the southeast part of Mohave County, Arizona, Owens Mining District, about 4 miles north of Big Williams River.

This property is in a natural basin formed by nature leaving by volcanic eruption a mammoth dyke, upon which the great deposits of mineral were found upon the "Cleopatra," "Cleopatra Fraction" and "Redbreast."

By the least calculations there is not less than 1,100,000 tons in sight, of ore that will average 4 per cent copper and \$7.00 per ton in gold. To handle this ore with economy it will be necessary to build a pumping plant on the river, convey water by pipe line to the property, and erect mill on the property of a capacity treating at least 200 tons per day.

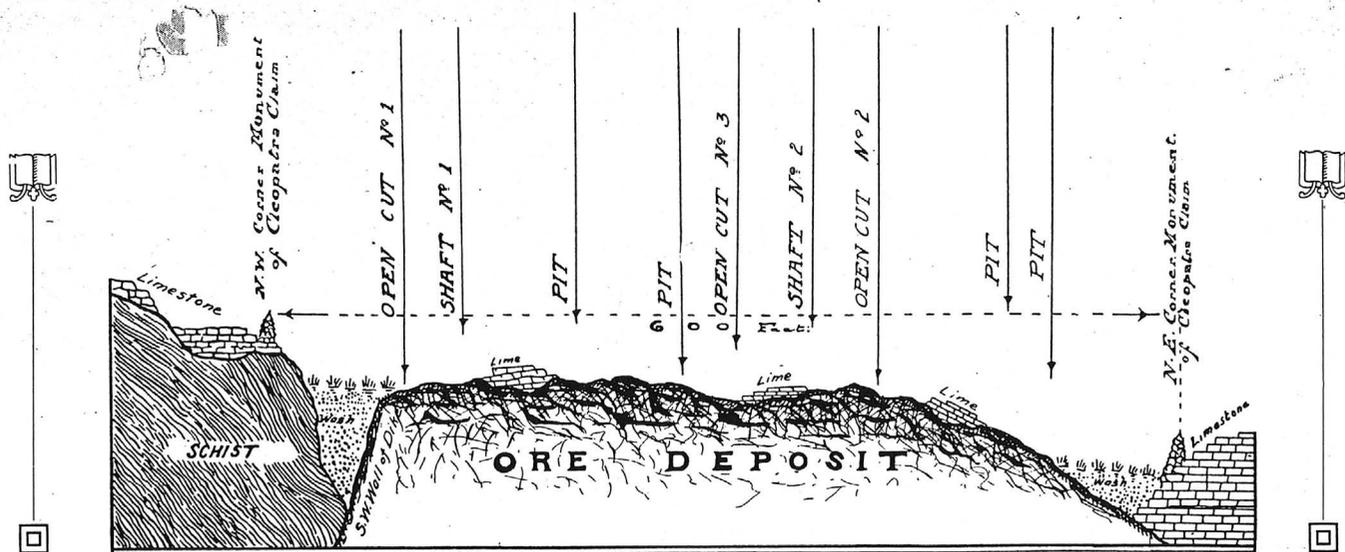
In taking, all over this great body of ore on this mammoth dyke on the Company's property, three hundred and eighty (380) samples assayed an average of 4 per cent copper, \$7.00 in gold per ton.

The topography of this property is such that with a mill properly located on the property this ore can be treated at less than \$1.00 per ton.

In giving a description of this property the object will be devoid of technical phraseology, to honestly state the reasons and draw conclusions why, in my estimation, based on 25 years practical mining, this property possesses merit and gives evidence of there being a legitimate and paying investment to those who desire placing there capital in mining enterprises.

Some of the great producers surrounding this property, that have made mining companies wealthy, are the McCracken Mine, about 8 miles north; Centennial Mine, 3 miles northeast; Buro Mine, 25 miles northeast; Old Rawhide Mine, 5 miles southeast; Arizona-Montana Mine, 8 miles southeast; Kimball Mine, 8 miles south; Planet Mine, 12 miles west, as shown on map.

In conclusion I would state that I unhesitatingly recommend the property as one of undoubted value; that its prospects of becoming a paying proposition are second to none in the district, and that every dollar expended in its development will return to the investors many times multiplied.



CROSS-SECTION VIEW, CLEOPATRA ORE-DEPOSIT, LOOKING NORTH

ASSAY SHEET

COMPILED FROM SAMPLING OF THE WORKINGS ON CLEOPATRA ORE-BODY

BY

WARNER & NELSON, MINE OPERATORS

CENTRAL BLDG., PHOENIX, ARIZONA

May 12th, 1917.

Samples	Workings, Open Cuts, Pits and Shafts	Sections in Ft.	Total Dist. in Ft.	AU	\$20.00	Cu. %	30c	Tot. Val.
5	Open Cut No. 1.....	10	50	.06	1.20	3.41	20.46	21.66
8	Open Cut No. 2.....	10	80	.06	1.20	2.58	15.48	16.68
1	Open Cut No. 3.....	10	10	.03	.60	2.58	15.48	16.08
1	Open Cut No. 4.....	10	10	.04	.80	1.92	11.52	12.32
1	Open Cut No. 5.....	10	10	.10	2.00	3.08	18.48	20.45
1	Shaft No. 1.....	From Dump		.04	.80	3.25	10.50	20.30
1	Cut No. 1.....	High-grade—Hand Sample		.04	.80	32.50	201.60	202.40
1	Shaft No. 2.....	12 ft. depth	8	.02	.40	4.00	24.00	24.40
1	Cut No. 3—Hand Sample.....	Chipped from total length of cut		.02	.40	4.00	24.00	24.40
1	Cut No. 1—Hand Sample.....	Chipped from total length of cut		.28	5.60	7.75	46.50	52.10
1	Cut No. 5—Hand Sample.....	Mostly Quartz		.10	2.00	4.47	26.82	28.82
1	Cut No. 2—Hand Sample.....	High-grade		.30	6.00	17.00	102.00	108.00
1	Pit No. 1.....	10	10	.10	2.00	2.40	13.80	15.80

Note: All high-grade eliminated in the general sampling.

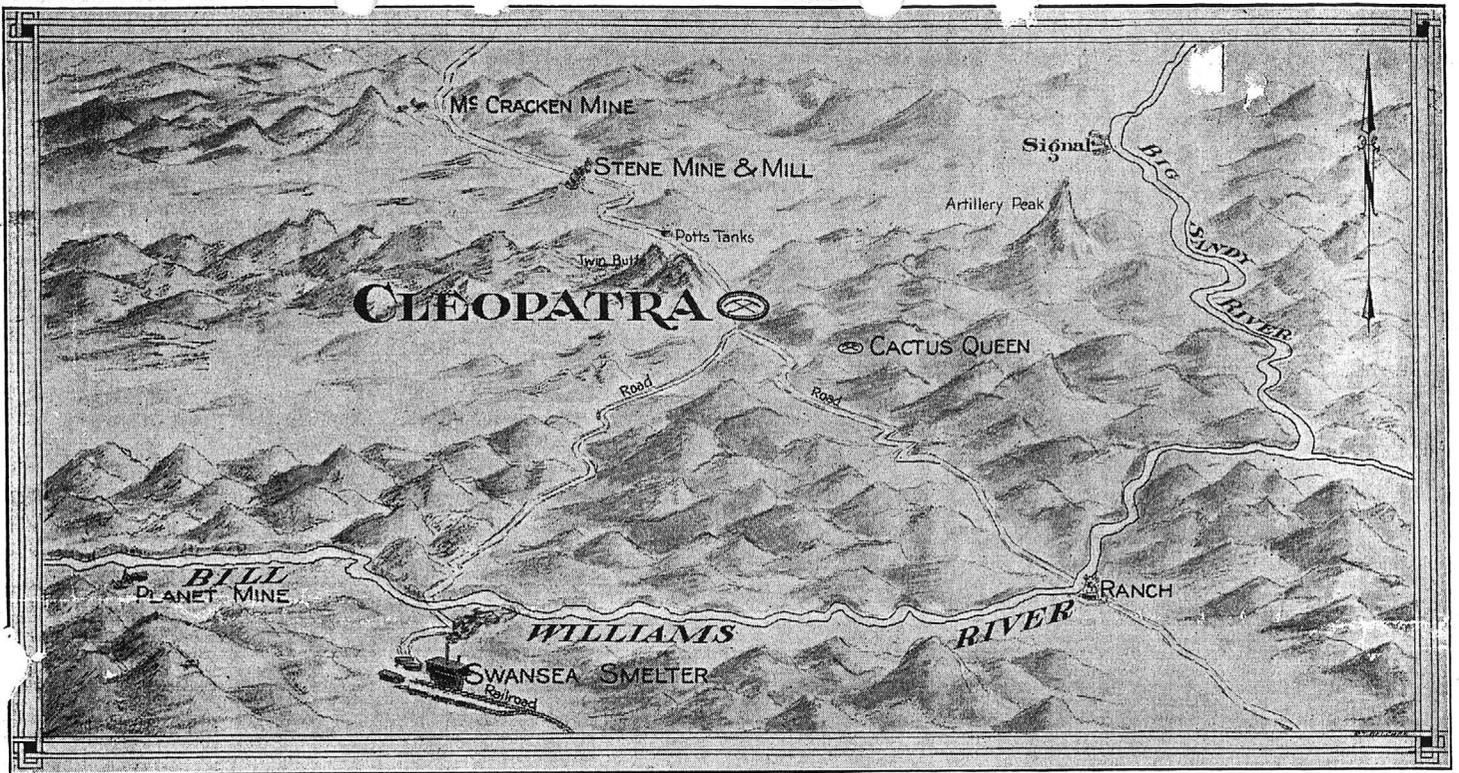
Cleopatra shares will be listed on the Boston and New York curb markets in due time.

All shares issued in payment for mining properties held in pool.

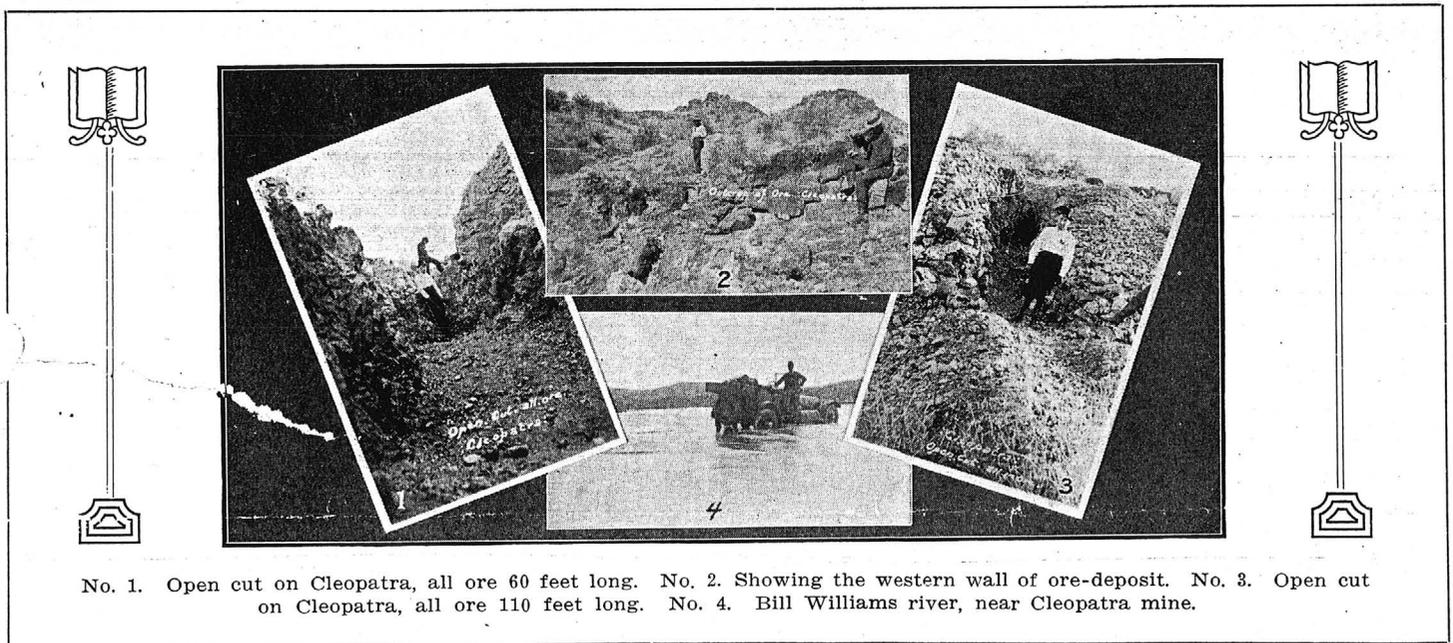
Only sufficient amount of treasury stock will be sold to raise the needed money for the building of a plant and the commencing of active operation.

We welcome your investigation of the merits of the company's property as well as the personnel of its officers.

We reserve the right to raise the price of shares without notice and we also reserve the privilege of withdrawing all of the stock from the market.



BIRD'S-EYE VIEW, SHOWING LOCATION OF CLEOPATRA, OWENS MINING DISTRICT, MOHAVE COUNTY, ARIZONA



No. 1. Open cut on Cleopatra, all ore 60 feet long. No. 2. Showing the western wall of ore-deposit. No. 3. Open cut on Cleopatra, all ore 110 feet long. No. 4. Bill Williams river, near Cleopatra mine.

The Cleopatra Copper & Gold Mines Company was organized in the early part of 1917 under the laws of Arizona with a capital of 3,000,000 shares of par value \$1 each, 1,500,000 having been placed in the company's treasury.

The company holds perfect title to 19 mining claims located in Mohave county, Arizona, under United States mineral law. Upon the Cleopatra claim was discovered the large copper-deposit and from which the company also derived its name.

The company has complied with the regulations of the Arizona corporation commission and holds a permit to sell shares.

I N D E X
OF REPORT ON
✓
CLEOPATRA COPPER & GOLD MINES COMPANY

Compiled by
Warner & Nelson,
Central Building,
Phoenix, Arizona.

-oOo-

Page	
1 to 4	- Preface
5	- References
6	- Company's Officers & abstract of title (Supplement)
7	- Photo showing part of ore deposit
8	- " " Highgrade
9 to 10	- Part of copy of report of J. R. Adams
11 to 14	- " " " " " " Byron C. Pickard
15 to 18	- " " " " " " H. A. deRudio
19 to 31	- Complete report of C. H. James
32	- District Map
33	- Map of Cleopatra holdings
34	- Illustrating Diagram Plan
35	- Cross section map of ore deposit

-oOo-

"PREFACE"

For the purpose of laying before you the merit of this company's holdings, we have compiled this report, which embraces the report of C. H. James, E.M., together with parts of reports made by three other mining engineers who have examined the Cleopatra property.

The complete report of Mr. James whose estimate and figures are the most conservative out of the four reports, and which deals with conditions in detail, and from our own personal examination of the mine, we have nothing to add or subtract except to say that his report is indeed conservative, nothing having been allowed for in his final estimate in addition to what can actually be seen on the surface.

The results obtained in the past year in treating low-grade copper ores by leaching have been demonstrated a success, and the large ore deposit exposed on the company's property makes the "Cleopatra" a steam-shovel proposition of great possibilities, and we ask you to carefully read the attached reports, leaving yourself as the judge of the value of the company's holdings.

For an engineer to determine in accurate figures the percentage per ton in mineral contents in an immense ore

body as that on the Cleopatra is a very difficult undertaking and such determinations require extensive as well as careful sampling. You will notice in one of the reports that the average value has been computed from 380 samples and in another from 220 samples which have been taken from surface outcrops.

The most satisfactory method employed in ascertaining the value as well as the extent of large copper deposits is by churn or diamond drilling.

To more fully draw your attention to the estimated value of the Cleopatra ore deposit, we quote abstracts from attached reports.

Mr. Pickard allows for the first ten feet		
600,000 tons of ore carrying 2% copper		\$8,640,000.00
600,000 " " " " " \$5.75 gold and silver		<u>\$3,450,000.00</u>
Total value of estimated ore (gross)		\$12,090,000.00

Mr. deRudio estimated that there are, taking his lowest estimate, 850,000 tons of pay-ore in sight, his results having been taken from 220 samples.

850,000 tons Gold per ton .33		\$5,865,000.00
850,000 " Copper " " 4.9%		<u>\$29,988,000.00</u>
Total gross value of estimated ore,		\$35,853,000.00

From the report of Mr. Adams we have his estimate of

1,100,000 tons of ore containing 4% copper per ton,	
value,	\$31,680,000.00
1,100,000 tons containing 7.00 per ton,	
gold and silver,	<u>\$ 7,700,000.00</u>
Total value of ore in sight,	\$39,380,000.00

From the lowest estimates made by each one of the engineers, we find the average value of ore in sight to be \$29.57 per ton, and a total gross value of the ore in sight to be \$20,202,637.98, or nearly seven times the capitalization of Cleopatra Company.

These figures are based on copper at 36¢ and gold at \$20.00, but by cutting this estimate in two, or copper at 18¢ per pound, we still find the value of Cleopatra to be \$10,101,318.49, or nearly three and one-half times the capitalization of the company.

Our purpose in calling these figures to your attention is to have you carefully read the reports from which we have taken the above estimates, and our aim is to further explore virgin ground held by the company and do additional development work, either by diamond or churn-drilling or sinking of test pits, or both, in order to further post ourselves for the erection of a suitable plant to treat the ore.

The property can be reached by automobile from Kingman, Yucca, Planet or Swansea, which is fourteen miles to the south, and is also the nearest smelting point. Electric power can be obtained from a plant now under construction at Burrow Creek. Bill Williams River flows about five to six miles to the south, and will furnish water needed.

The ore deposit dips under surface debris, gravel, sand, etc., and it is difficult to estimate the extent, but the estimates given above are on what can be seen, and it is sufficient to say that it gives the best of promise, and, from indications of the outcrops, will keep a fairly good sized reduction plant busy for years.

We beg to remain,

Yours respectfully,

W. W. Williams *C. W. Nelson*

Phoenix, Arizona,

April 20, 1917.

We beg to refer you to the following banks with which we have done business during periods indicated below:

Canadian Bank of Commerce, South Porcupine, Ontario, Canada, 1910-1912.

Bank of Ottawa, South Porcupine, Ontario, Canada, 1910-1913.

Union Bank of Canada and Bank of Ottawa, Haileybury, Ontario, 1906-1912.

Nixon National Bank and Sheeline Banking & Trust Co., Reno, Nevada, 1912-1915.

Arizona Central Bank, Kingman, Arizona, 1915-1916.

Or any business, professional or mining men in the Cobalt and Porcupine region from 1903 to 1912.

CLEOPATRA COPPER & GOLD MINES COMPANY

organized under Laws of Arizona

Capital 3,000,000 shares, par value \$1.00 each

Treasury 1,500,000 shares.

-oOo-

Property consists of 360 acres, in Mohave County, Arizona, and is known as the "Cleopatra," "Cleopatra Extension" and "Palo Verde" Groups.

Large ore tonnage exposed on surface which can be worked with steam shovels, and contains commercial values in copper and gold.

Officers and Directors:

President,	E. F. Thompson,	(Formerly Postmaster of Kingman, Arizona);
Vice-President,	A. H. Smith,	(Owner and Publisher of Mohave Daily Miner) Kingman, Arizona;
Secretary and Treasurer,	J. W. Morgan,	(Formerly Recorder of Mohave County), Kingman, Arizona.
Counsel	LeRoy Anderson,	Prescott, Arizona.
Transfer Agents	Arizona Central Bank, Kingman, Arizona.	

Branch Office, care of

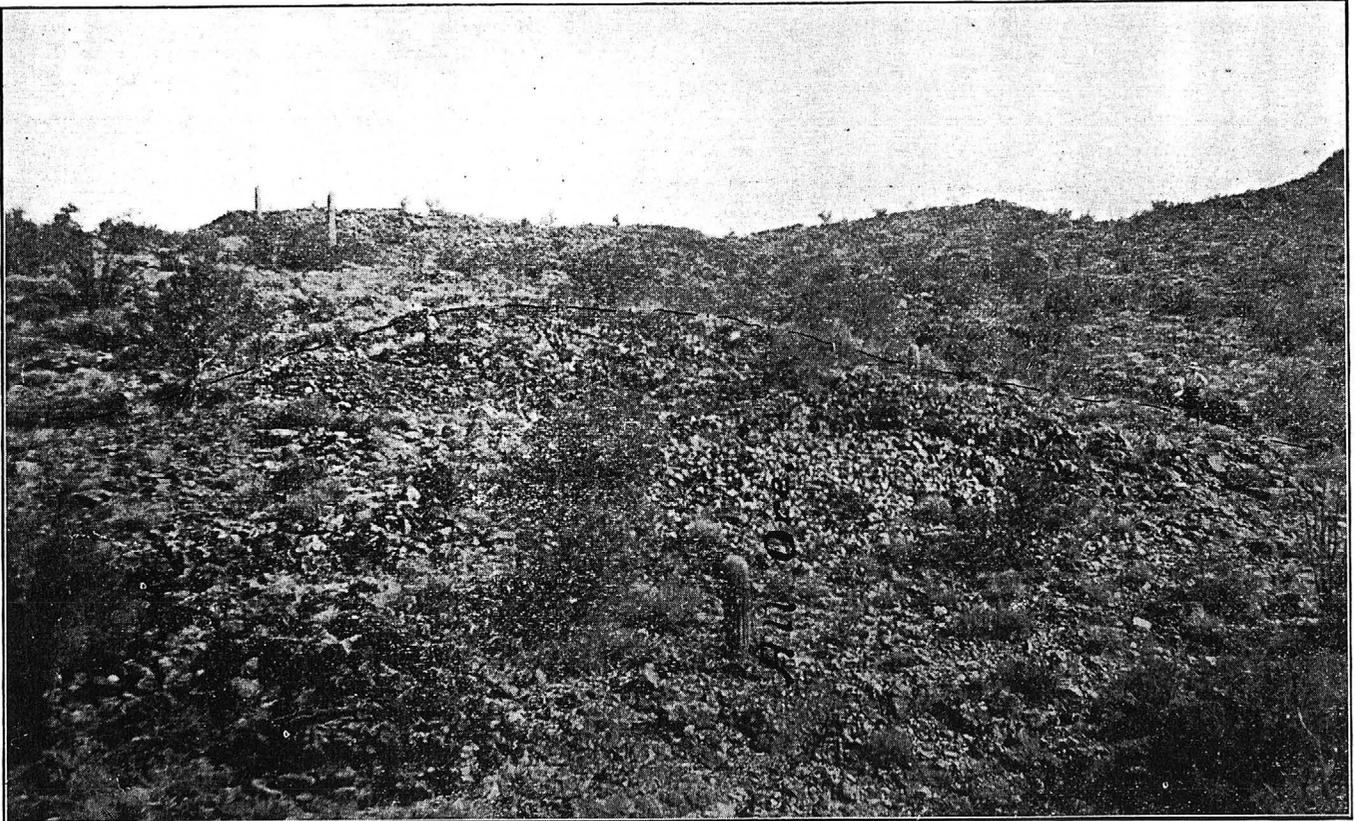
Thor Warner & C. W. Nelson, Mine Operators,

Central Building,

Phoenix, Arizona.

VIEW OF
CLEOPATRA CLAIM

SHOWING FIVE OUT OF FIFTEEN ACRES OF
EXPOSED ORE



NOTE: THIS CLAIM IS ONLY ONE OF NINETEEN CLAIMS
OWNED BY THE

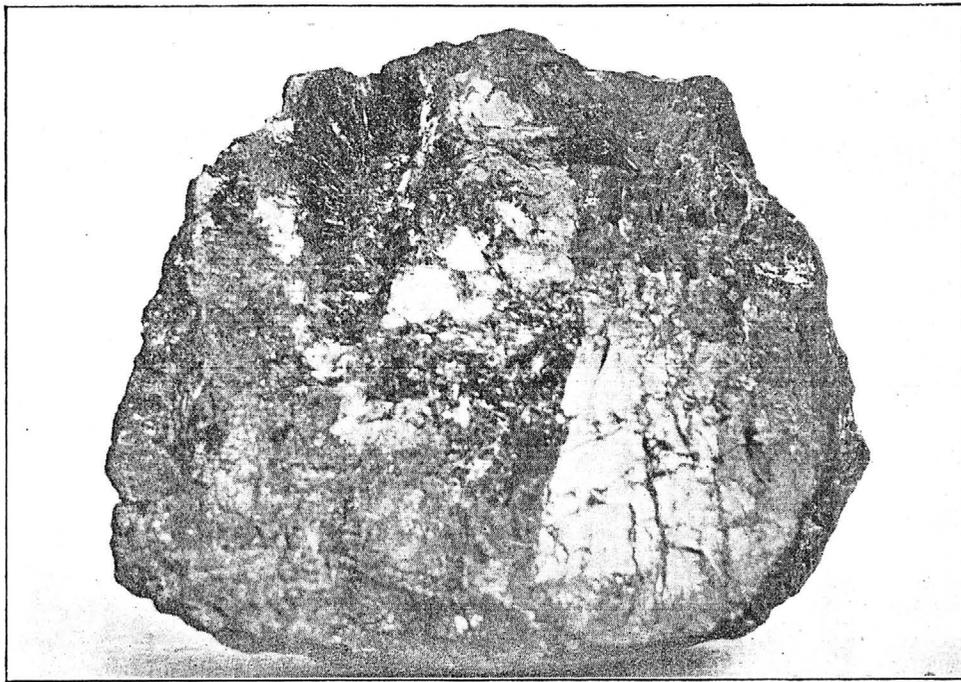
CLEOPATRA COPPER & GOLD MINES CO.

AND IS REPRODUCED TO SHOW THE POSSIBILITIES
AS A STEAM SHOVEL PROPOSITION

COPPER ORE

CHALCOCITE 75 PER CENT PURE

FROM CLEOPATRA



THIS CHARACTER OF ORE PRODUCES OVER ONE-HALF
OF THE WORLD'S OUTPUT OF COPPER

C O P Y
of part of report
made by
J. R. Adams

-oOo-

This property is a natural basin formed by nature, leaving by volcanic eruption a mammoth dyke, upon which the great deposits of mineral were found upon the "Cleopatra", "Keystone" and "Redbreast".

By the least calculation there is not less than 1,100,000 tons in sight of ore that will average 4 per cent copper, and \$7.00 per ton in gold. To handle this ore with economy, it will be necessary to build pumping plant on the River, convey water by pipe-line to the property, and erect mill on the property of a capacity treating at least 200 tons per day.

In taking samples all over this great body of ore on this mammoth dyke on the company's property, three hundred and eighty (380) samples assayed an average of 4 per cent copper, and \$7.00 in gold per ton.

The topography of this property is such that with a mill properly located on the property, this ore can be treated at less than \$1.00 per ton.

In giving a description of this property the object will be devoid of technical phraseology, to honestly state the reason and draw conclusions why, in my estimation, based on 25 years practical mining, this property possesses merit and gives evidence of there being a legitimate and paying investment to those who desire placing their capital in mining enterprises.

In conclusion, I would state that I unhesitatingly recommend the property as one of undoubted value; that its prospects of becoming a paying proposition are second to none in the district, and that every dollar expended in its development will return to the investors many times multiplied.

Very truly yours,

(Signed) J. R. ADAMS,

Mining Engineer.

C O P Y
Of part of report
Made by
BYRON O. PICKARD.

GEOLOGY, ORE OCCURRENCES AND MINERALS:

Briefly and generally discussing this subject:

The basal formation of the property is a siliceous sericitic schist grading into a Gneiss of Pre-Cambrian origin. This is capped (showing only in a few places) by grey limestone which has been practically eroded away, exposing the schist. The limestone on the higher places is from one to twenty feet thick. These formations have been cut by dikes of quartz-porphyry, which have not cut through the formations continuously but outcrop in several places. The effect of this intrusion was to brecciate both the schist and porphyry and practically metamorphose the porphyry to quartz and form a large replacement zone in the schist near the contacts. These brecciated and replacement zones are irregular in shape, the main one being approximately rectangular in its surface showings and having an estimated length of 1,200 feet, and a width of 600

feet, giving an estimated area of 17 acres. This is found on the Redbreast, Cleopatra and Somerset #2 claims, being covered on the Somerset #2 by limestone and on the Roosevelt and Keystone by wash. Shafts on the Jefferson show the same formation occurring below the wash, making it probable that the zone is of greater extent than estimated.

Another smaller zone is shown by workings on the Jefferson claim.

These zones are highly siliceous and considerably stained with iron. Copper stains are everywhere in the main zone; it is unusual to knock off new surfaces without finding copper. It is locally known as a copper farm.

The minerals occurring in the mineralized zone are malachite, chrysocolla, chalcocite, gold, silver, quartz, hematite, limonite, feldspar and others, rarer and less important.

DEVELOPMENT, SAMPLING, ASSAYING AND CREE:

There are several shafts from 10 to 30 feet sunk for annual assessment work and to show up the ore, but in no place has any of them penetrated the ore-body to a greater depth than twenty feet, either being sunk through an overburden of limestone or wash where deeper than 20 feet.

These shafts all show ore in the bottom. A surface out in the center of the ore zone, 110 feet long and averaging 10 feet in depth, shows the brecciated zone to be persistent in this length and depth and the values to be fairly consistent. I took four samples in this out at a distance of twenty feet apart, the samples each representing a out of ten feet in width. These assayed:

#1	From face of out	Gold \$ 3.20	Copper 1.4%
#2	" " " "	30 " 3.80	" 2.1%
#3	" " " "	70 " 4.40	" 3.1%
#4	" " " "	100 " 10.40	" 0.7%

Composite of the four samples assayed, Silver \$.30; Gold, \$5.45, Copper 2.0%; Iron 4.5%; Insoluble 87.6%.

In reviewing the above composite assay, we find a very siliceous ore with gold and silver values of \$5.75 and two per cent copper. Taking a depth of ten feet, length 1,200, width 600,- 600,000 tons of ore of probable commercial value. If the depth extends to 100 feet, the figure approaches 6,000,000 tons. If the ore-body is larger than represented by the surface showing the possibilities are more extensive.

MINES IN THE VICINITY AND GENERAL REMARKS:

The Swansea Mines 14 miles; the Planet Mines (Lewi-ohn), 12 miles; McCracken Mine 8 miles; and the Centen-

nial 3 miles, are all old producers and are in the same schist zone. But none of them present the same surface showings as the Cleopatra.

Reviewing the preceding general information, we find the Cleopatra presents an exceptional proposition.

There is a very little over-burden to be removed; in the majority of the zone there will be no over-burden; making it purely and simply a steam shovel proposition.

It presents a system of cheap and certain development either by churn-drills or by many prospect shafts, preferably the latter.

The report is favorable, recommending its development, as it presents immense possibilities.

Respectfully submitted,

(Signed) BYRON O. PICKARD,

Engineer of Mines.

C O P Y
Of part of report
Made by
H. A. deRudio.

The formation is of the Silurian period. The underlying formation is a quartzite. This quartzite extends over a territory of some twelve square miles; in contact with this is a black dolomite lime, and seems to have been altered; in other words, metamorphic lime, highly impregnated with iron, also contains values in gold and copper.

This lime, in many places in this territory, shows to have been hundreds of feet thick. It is evident this same territory has been overlaid by a vast lava flow. On the Cleopatra the erosion has been much greater than in other parts of this territory, and has worn the upper part of the lime away and left a large body of quartz exposed.

There is in all probability 850,000 or 900,000 tons of pay-ore in this large deposit in sight.

CHARACTER OF ORE DEPOSITS.

For a few feet from the surface the ore has been under a severe leaching, caused by the percolating waters.

The gangue of the ore is quartz and the values are in gold and copper.

The gold values are nearly all in a fine state, a large percentage is in a free state and will amalgamate.

The copper values are mainly in a carbonate form; 98 per cent of these carbonates are malachite crystals. The remaining carbonates are Ozonite crystals.

Frequently there are small bunches of sulphides, in the form of Bornite, (Peacock copper) and Chalcopyrite, (copper pyrites) and often small bunches of Melacconite (Black copper ore); (Copper Glance) or chalcocite, is found where it has been protected from leaching process. These latter indications would lead to the theory that the copper values will be in the form of sulphides at no great distance under the surface.

VALUES.

From a series of grouped samples, each sample containing 10 lbs., making a total of 220 samples, the result was an average of gold .33, copper 4.9%, as sample sheet will show, although two high grade samples have been purposely left out in making up the average.

MINING.

The ore can be mined for some time at a cost of

not more than 25 cents per ton, when machine drills are used. This part of the operation will be the same as quarrying rock for concrete cement, and will be all open work for a few years, at the rate of 500 tons per day of 24 hours.

TRANSPORTATION.

The terminus of the Swansea and Arizona R. R. is about $14\frac{1}{2}$ miles south of the Cleopatra, on the south side of the Bill Williams Fork, and is a branch line from the Prescott Phoenix R. R. This branch is 21 miles from Bouse on the main line.

There is a wagon road from the property to Swansea, a distance of $14\frac{1}{2}$ miles.

The ore can be transported to the river by cable train at a cost of not more than 30 cents per ton, making the total cost of mining and transportation of the ore about 60 cents per ton.

SUMMING UP.

From numerous tests made by myself, I see no reason why the ore could not be concentrated to a high percentage. I do not believe that more than 2% of the concentrates would be lost. With the present all around discharge mill, and up to date concentrating methods, all of

the copper values (with the exception of a percentage of the axurites) can be saved and there would be comparatively no loss in the gold values.

Considering advantages and disadvantages, I can safely state that the Cleopatra property is second to but very few low grade properties in the U. S. A.

(Signed) H. A. deRudio, E.M.

REPORT ON THE
PROPERTY
OF THE
CLEOPATRA COPPER & GOLD MINES COMPANY

OWENS MINING DISTRICT

Mohave County, Arizona.

By C. H. JAMES, E. W.

March 16th, 1917.

-oOo-

THE PROPERTY.

The holdings of the Cleopatra Copper & Gold Mines Company comprise 19 claims, totalling 380 acres, in the Owens Mining District, Mohave County, Arizona, and situated six miles north of Bill Williams River. Swansea, the nearest railroad depot and smelting center, lies 14 miles to the south, and is the present terminus of a branch railroad of 21 miles in length, connecting with the Santa Fe Railroad System at Bouse.

The property is reached either by 14 miles of automobile road from Swansea; from Congress Junction on the Ash Fork-Phoenix branch of the Santa Fe System, a distance of 59 miles; or from Yucca on the main transcontinental line of the Santa Fe System, distant 56 miles by fair desert road.

A County road is in course of construction from Swansea and will pass within a mile of the Cleopatra ore deposits and this will afford the best transportation facilities pending future railroad connection.

The Cleopatra property is situated in a highly mineralized region which has produced many profitable mining enterprises during the past forty years. Until recently, the economic working conditions of this section of Arizona necessitated operations being confined to more or less high-grade ores, but recent innovations in mining and metallurgical methods, particularly the treatment of lower grade ores by flotation processes, have attracted attention to the operation of the larger but poorer ore bodies of this region, and deep exploratory work has led to highly profitable operations in many mines in this section of Arizona.

This highly mineralized belt trends northerly through the Wallapai Range and extends to Chloride in the Cerbat Range, along which extent many profitable base metal mines are being operated. This mineralized belt also trends southerly and southeasterly from the Cleopatra, in which directions are situated the high-grade copper deposits of Cunningham Pass, the gold-copper deposits of the Harquhala Mine, and many other properties of past performance and prospective merit.

The Cactus Queen Company's property immediately to the southeast and shoots and bodies of high-grade sulphide and carbonate ores are being opened up by an extensive development policy.

ORE OCCURRENCES.

The ores of the region are broadly divided in the basic ores, high in iron oxide, which have mainly provided the shipping ores of the past, and which, to a more or less extent, have depended for their profit upon a high bonus for their fluxing contents; and silicious ores similar to those occurring in the Cleopatra property and which are valuable for economic concentration, leaching, or converter-lining purposes. These silicious deposits have greater promise for deep seated and permanent ore bodies and where, as in the case of the Cleopatra, they appear to be extensive, their exploration offers a very attractive opening for capital if correctly applied on sound technical lines.

So far as the writer is aware, no ore bodies of this class in the region approach the Cleopatra in size, evenness of mineralization and copper-gold content.

The main body so far exposed in the Cleopatra claims is a portion of a flat "wing" of silicious ore occurring as a replacement or overflow from an ore-feeding dike and

accompanying fracture zone, extending latterly through the greater length of the property. Although this body of exposed ore is of very considerable profit earning value as a leaching, flotation and cyanidation proposition, with promise of a long but unknown period of such operation, the future deep development of the probable ore bodies within the deep seated dike and accompanying fissure zone, constitutes the chief though less certain incentive for investment. The exploration of these probable deep seated ore bodies can only be proved by further exploratory work, by sinking, drilling, and, in the meantime, the further development and operation of the known bodies of quartzose ore, forms a sound working policy in connection with the development of these probable deeper-seated deposits.

For present purposes, these two factors of the Cleopatra should be regarded as separate units of a general policy for opening up the property to the best advantage. First, to properly operate the exposed and presumably lateral deposit of copper-gold ore formed by overflowing of copper-gold solutions from the main mineral bearing dike; and, secondly, to exploit this dike formation itself, with a view to opening up permanent and deep seated bodies of ore. Nearly all work on the property is shallow, and the

depth of the ore-croppings aside from the dike is problematic but may be great.

GENERAL GEOLOGY.

This consists of underlying basal masses of more or less altered and schisted diorite and micaceous rock, overlain by beds of finely chrystaline limestone, the former of unknown depth and the latter apparently of great original thickness.

The schisting of the underlying mass is complex, but the overlying limestone deposits are practically in the horizontal position in which they were originally deposited. Through the central portion of the Cleopatra holdings, there occurs a wide and well-defined dike and accompanying fissure zone - the intrusive rock being a fine-grained porphyry very similar to the ore forming porphyry intrusions in many of the large copper mines of Arizona. This intrusive fracture zone is highly silicified and carried copper contents at surface over its entire width.

The porphyritic intrusive occurs as interplated fillings and masses, and has evidently been forced up through the overlying schist formation along local lines of least resistance. This intrusive material is probably the direct

cause of primary ore concentration within the Cleopatra deposits.

The mineral-bearing dike has a general strike to the southeast, and dips at steep angles both to the northeast and southwest. On the eastern side of this dike, the mineralized solution has evidently overflowed and formed, by replacement, a lateral mass of silicious, copper-gold bearing ore of undetermined area and depth, though so far as can be seen, of an indicated length of over 800 feet, and an average width of over 400 feet, and an average exposed depth of over 9 feet, all of which dimensions are likely to be largely exceeded as the result of further surface and development work.

ASSAY VALUES AND QUANTITIES.

Several previous reports on the property by examining engineers have been made available for the writer. These contain statements of assay values of several hundred samples taken within the ore bodies and a number of general averages are reported, ranging from 2% copper and \$5.45 gold per ton, to 2.5% copper and \$4.00 gold per ton, while other reported averages from a large series of samples are given as considerably higher.

For purposes of this report, the writer sampled in 10 feet sections, the principal trenches across the dike, and

western limit of the exposed deposit, and these samples showed an average at those places of 2.92% copper for sampled total widths of over 70 feet.

As local enrichments of chalcocite and a little chalcopyrite occur at frequent intervals over the surface of the main ore-area as veinlets and concretions in the quartz fracture-planes, and as none of this material was included in the sample cuts, it may be safely predicted that the average copper contents (gross) of a large portion of the exposed deposit will average fully 2.8% copper, plus appreciable gold values, which latter are referred to elsewhere.

The downward extension of the exposed ore-body, or its average thickness where opened up, have not yet been determined. Placing most conservative limits to the principal ore area actually exposed by the cuts and shafts, in the Cleopatra claim alone, as 800 ft. long and 400 ft. broad, each foot in depth would equal over 22,857 tons, and, taking the average grade in accordance with results of trench sampling at 2.8% copper, which, taking copper at 18¢ per lb., equals \$10.08 per ton, or \$230,396. 56 (gross) for each foot in thickness, without allowing for additional gold values that may be recovered.

The several trenches, cuts and pits within the main

area of exposed and partly exposed ore show a thickness of at least 8 ft. with ore showing underfoot in all this development and prospecting work, so that it is safe to estimate in this one area, at least 182,856 tons of ore down to only 8 ft. deep, as reasonably in sight and assured, and having a total gross copper value of \$1,843,188.48, with copper at 18¢, and not taking into consideration the gold values which are appreciable and often high.

That this ore-area will in all probability be found to extend a considerable distance northerly; and as the depth is obviously much over 8 ft., the above figures afford only a good indication of the enormous quantity of similar ore that may be looked for from further development.

That easily mined siliceous ore in such quantities and carrying over 2.5% copper per ton can be operated at a big profit has been amply demonstrated in several copper mining centers in Arizona and elsewhere, though in few of the cases is the grade above 2% copper; and that these large and partly opened Cleopatra deposits can be made to yield handsome profits, is a matter beyond question. To estimate such profits and ore quantities at this time, is beyond the scope of this report, as extensive treatment tests and a fuller knowledge of the ore deposits at depth is required for a basis

Apart from the surface-croppings and probably bedded ore deposits covered in the foregoing, the main dike system that has probably produced these lateral wing replacement deposits, remains to be noted. Its development will no doubt prove it an additional and greater asset to the Cleopatra Company.

The schist and contained porphyritic intrusions are fissured by a number of highly mineralized but small and irregular veins, particularly in the vicinity of the main dike and fracture zone in the Cleopatra claim. Their appearance and genetic condition indicate a heavy sulphide mineralization below, and as the typical sulphides of the region are usually of fairly high grade, there is a reasonable expectancy of finding additional permanent and profitable ore-shoots by the development of the dike and vein system in the basal schist mass. All indications point to the copper and gold values having come from below, and the deeper exploitation of the latter offers an exceedingly good chance to develop deep-seated ore bodies. A series of churn drill or diamond drill boreholes would speedily and cheaply explore the ore body. In view of the presence of small amounts of sulphides in isolated spots at and near surface, it seems probable that primary sulphide ores will be found at comparatively moderate depth.

The results of drilling would, of course, govern the location of future development work.

Other ore exposures at widely scattered points on the property show promise of ore bodies below, but are of secondary importance at the present time.

MINING, TRANSPORTATION &C.

The large exposed deposit could be cheaply mined by a series of open faces (long-wall) and steam shovels used. Transportation of ore would be governed by location of the treatment plant; if the latter is erected at the mine, a series of "flying-fox" cable haulage ways from the several points of quarrying would concentrate the broken material at one point and tramway would then convey it to plant.

If the plant is located at the river, which does not appear advisable, a good route and gradient can be had for an aerial tramway.

TREATMENT OF SURFACE CARBONATE ORES.

This is largely a matter for extensive laboratory and working tests to ascertain which of the several feasible treatment processes is most profitable under the conditions.

The ore consists mainly of quartz carrying varying amounts of iron oxide, copper carbonate, &c., with occasional bunches and streaks of copper glance. The exposed areas of

ore are for the most part free from limestone and a good copper extraction would probably be yielded by acid leaching, with or without subsequent fine grinding and cyanidation of the residues, or sulphadizing flotation may be advantageous in event of appreciable quantities of limestone being broken with the quartzose ore.

WORKING CONDITIONS.

Transportation: Freight from Swansea should cost under \$5.00 per ton, and probably less in the case of back loading of smelting ores.

Power: The hydro-electric power installation being completed for the Western Power Company interests at Burro Creek, a permanent tributary of the Bill Williams River and distant about 16 miles from the Cleopatra property, will supply current for power for any future working scheme, one of the service lines will probably pass close to the property and another will traverse the vicinity of the Bill Williams River.

Power for initial development can best be provided by oil or distillate engines.

Water Supply: Water for present camp purposes is obtainable from wells in the vicinity. An unlimited supply for all future requirements is available by pumping from the

Bill Williams River, a distance of from 4 to 6 miles, according to site selected, and with a rise in elevation of about 600 feet.

RECOMMENDATIONS.

Development: A series of prospecting shafts or boreholes should be sunk at suitable intervals over the exposed ore-areas to further determine its extent.

This pitting or boring where the deposits are thickly overlain by sedimentaries, should be extended until the outer limits of the ore has been determined in all directions.

The dike formation which apparently has been the main source of mineralization, should be tested at depth by core-drilling, followed by a development shaft, drifting, &c., the disposition of which permanent work would be guided by the data furnished by the boreholes.

Detailed and fully illustrative sections and diagrams should be kept of this work in progress, for future guidance in operating these unusual ore-bodies.

CONCLUSIONS.

The Cleopatra copper-gold deposits, although only partly prospected and developed, contain very large, but undetermined quantities of assured ore of profitable grade, easily

mined and undoubtedly amenable to successful treatment by one of several processes now operating on this class of carbonate ore in Arizona.

The large tonnage of proved and partly proved ores in the surface exposures are only a moderate proportion of the additional ore that may be expected from the proposed exploratory work.

The development of the copper and gold bearing dike and fissured zone also promises to result in the opening up of profitable ore-bodies at depth, and the whole project provides an exceptionally sound mining and metallurgical undertaking of magnitude, promising large profits to the operators.

(Signed) C. H. James,

9 Central Building,
Phoenix, Arizona.
17th March, 1917.

To

Messrs. Thor Warner &
C. W. Nelson,
Phoenix, Arizona.

Supplementary

Prescott, Arizona, April 16th, 1917.

Cleopatra Copper & Gold Mines Co.,
Kingman, Arizona.

Gentlemen:

This is to certify that we have looked over the abstract of your title and find the same as follows:

The property consists of three groups of claims, the first of which is known as the;

CLEOPATRA GROUP, being composed of three claims, to-wit: the Cleopatra, Red Breast, and Keystone Lode Mining claims, all being located in the Owens Mining District, Mohave County, State of Arizona.

These claims were located in 1901 by C. E. Price and C. F. Duval, and in 1907 Price forfeited Duval's interest in said claims, because the latter failed to pay his portion of the assessment work. Said forfeiture being by publication according to United States Statutes, in such cases made and provided.

Later, one John Barnes, instituted suit against Price for an undivided one-half interest, and this was finally settled by Price deeding to Barnes and one J. W. Morgan an undivided one-quarter interest. At the same time Price deeded another one-quarter interest to Le Roy Anderson. Subsequently Price deeded his remaining one-half interest

to Robert Schwartz, who in turn deeded it to the Cleopatra-Arizona Mining & Milling Company, which in turn deeded its one-half interest to your Company, deed being recorded April 11, 1917. Of the one-quarter interest deeded to Barnes and Morgan, J. W. Morgan retained an eighth interest which he has deeded to your Company, Barnes deeded his eighth interest to Mrs. E. F. Thompson, who has deeded to your Company, Le Roy Anderson deeded his quarter interest to E. F. Thompson, of which Thompson owned an eighth and Le Roy Anderson owned an eighth, both of these parties have deeded this one-quarter interest to the Company. Deed from E. F. Thompson, Mrs. E. F. Thompson, J. W. Morgan and Le Roy Anderson recorded April 12th, 1917. This gives your Company full title to the Cleopatra, Red Breast and Keystone Lode Mining claims, free and clear of all incumbrances.

The second group of claims is known as the CLEOPATRA EXTENSION GROUP, and consists of four claims, to-wit: the Jefferson, Somerset No. 2, Roosevelt and White Horse Mining claims. The Jefferson was located by Peter Miller and Jack Barnes, the Somerset No. 2 by Peter Miller, the Roosevelt by Peter Miller and Jack Barnes. Later Miller and Barnes deeded to J. W. Morgan an undivided one-third interest in these three claims. The White Horse claim was located by J. W. Morgan, Peter Miller and Jack Barnes, which gave these three each an undivided one-third interest in these four

claims.

Subsequently Jack Barnes died, leaving all of his property by will to J. W. Morgan and Harvey Hubbs. J. W. Morgan having assigned all his interest in said estate to Harvey Hubbs, this left J. W. Morgan, Peter Miller and Harvey Hubbs, each owning an undivided one-third interest in the above claims.

These three parties have made a deed covering the four above claims to your Company, which was recorded April 11, 1917, giving your company title to the Jefferson, Somerset No. 2, Roosevelt and White Horse Lode Mining Claims, free and clear of all incumbrances.

The third group is known as the PALO VERDE GROUP, consisting of twelve claims, known as Palo Verde and Palo Verde 1 to 11 lode mining claims. These twelve claims were located by W. E. Sirbeck, who deeded the same to Thor Warner and C. W. Nelson, who in turn deeded the same to your Company, which deed was recorded April 11th, 1917, giving you these twelve claims free and clear of all incumbrances.

The above opinion is based upon certificates of the Recorder of Mohave County, dated April 12, 1917, showing certified copies of the various instruments on file in his office concerning these claims. Also upon certificates of the Clerk of the Superior Court of Mohave County, dated April 11, 1917, which state that there are no suits pending against any of these claims.

We have no certificate from the Tax Collector's Office, but as these are unpatented claims and there are no improvements thereon, they have not been assessable.

It is, therefore, our opinion that your Company now has a good title, free and clear of all incumbrances to the nineteen claims above enumerated.

Very respectfully,

(Signed) Le Roy Anderson,

By Geo. W. Nilesen.

I, W. D. O'Neil, Stenographer, do hereby certify that the following 29 pages constitute a true and correct copy of the documents handed to me by Thor Warner and C. W. Nelson on the 20th day of April, 1917.

W.D. O'Neil

State of Arizona,)
) SS.
County of Maricopa.)

Before me, M. A. Pickett, a Notary Public, in and for the County and State aforesaid, on this day personally appeared W. D. O'Neil, known to me to be the same person who signed the foregoing instrument and acknowledged to me that he executed the same for the uses and purposes therein mentioned.

Given under my hand and seal of office this 20th day of April, 1917.

M. A. Pickett
Notary Public.



My commission will expire
February 16, 1920.