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06/22/89

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: HOOPES MAIN QUARRY

ALTERNATE NAMES:

NORTH DOMINION COPPER

GILA COUNTY MILS NUMBER: 156B

LOCATION: TOWNSHIP 1 N RANGE 15 E SECTION 10 QUARTER NW
LATITUDE: N 33DEG 27MIN 00SEC LONGITUDE: W 110DEG 49MIN 25SEC
TOPO MAP NAME: GLOBE - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

COPPER SULFIDE
GOLD
SILVER
CALCIUM LIME

BIBLIOGRAPHY:

ADMMR HOOPES MAIN QUARRY FILE
WEED W H THE MINES HANDBOOK VOL XIII 1918
P 457-458
AZ MGN JRNL SEP 1917 P 21, DEC 1917 P 25
ELEVATORSKI E A AZ IND MIN ADMR PUB 1978 P 31
WILSON E D AZ NONMETALLICS AZBM BULL 152 1944
P 25

NORTH DOMINION COPPER MINING & DEVELOPMENT CORP.

GILA COUNTY

See: USGS P.P. # 342 p. 130 (Ramriez Property) No

Arizona Mining Journal Sept. 1917 p. 22
Dec. 1917 p. 25 Feb 1918 p. 7

GEOLOGIC EVALUATION

REPORT

on the

HOOPE'S LIMESTONE PROPERTY

in

Gila County, Arizona

by

R. E. Mieritz
Mining Consultant
Phoenix, Arizona

June 26, 1970

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INCLUDED MAPS

- Map No. 1 - INDEX MAP
- Map No. 2 - GENERAL GEOLOGIC MAP
- Map No. 3 - SURFACE MAP - Hoopes Main Quarry
- Map No. 4 - SURFACE MAP - Hoopes Early Operation

INTRODUCTION:

At the request of and authorization by Mr. G. A. Freeman, Home-Stake Production Co., Phoenix, the writer completed a geologic examination of the Hoopes Lime Plant limestone deposit in Parts of Sec. 31, T. 2 N., R. 15 E. and Sec. 6 T. 1 N., R. 15 E., G. & S. R. E. & M., approximately 5 miles by road from the junction of State Route 88 with U. S. Route 60-70, halfway between the towns of Globe and Miami, Gila County, Ariz.

The writer spent several days on the property examining the surface geology and mapping those areas from which limestone had and is being mined to supply the Lime Plant.

CONCLUSIONS:

Based on the information gained during the examination and the writers geologic knowledge of such deposits, the following conclusions are forwarded for your consideration:

- (1) - The limestone deposits are not developed by drilling, consequently no measured or assured reserves exist except those small amounts which are developed by the presently worked pit or quarry.
- (2) - It is estimated that the property has an inferred potential of 1.5 million tons of material suitable for lime production from the Escabrosa formation. It is also likely that an equivalent amount may exist in the Martin formation adjacent to the Escabrosa formation on the west.
- (3) - Exploration of the deposits by diamond drilling would be required to reclassify the estimated inferred tonnage of conclusion 2 to a more positive status.

PROPERTY, LOCATION and ACCESSIBILITY:

The property consists of two groups of Placer claims, one group is patented. The first group, patented, includes seven claims and the second group includes eight claims - or a total of approximately 300 acres. Mr. Hoopes has a print of a surveyed plat of the claims.

Travel to the property from the junction of State Route 88 and U. S. Route 60-70 is north on State Route 88 for 4.35 miles to a sign "Hoopes Lime Plant" on the left side of State Route 88. From this point it is 0.9 mile over a well maintained gravel road to the "workshop" area on the property. A network of roads lead to the lime plant, open pit quarries and underground mine operations. Travel over most of the property can be completed by automobile.

FACILITIES:

Hoopes Lime Plant is operated by "piped in" natural gas and "highline" electric power. Water, when needed, is hauled the short distance from Pinal Creek Valley to the property. A 3 inch water line is in place

from the workshop area to Pinal Creek and was probably used during the underground operation.

GEOLOGY:

The general geology of the area is that of the Escabrosa limestone, Naco limestone formation and Martin limestone formation with nearby exposures of dacite, diabase and two conglomerates, the Whitetail and Gila.

The area is also one of many faults creating tilting of the limestone formations as well as upward and downward displacements of the limestone formations which has had an overall effect of creating "islands" of limestone and presents a most difficult problem of attempting to determine depth and extension of the formations for the purpose of estimating tonnage.

The Escabrosa limestone in the particular area trends approximately N. 10-20° W. and dips 35 to 55° to the east. Part of the formation is indistinctly bedded, but most of it is quite thinly bedded, oolitic, fine grained to moderately crystalline, mostly medium gray and in some instances contains chert nodules which are sparse to abundant.

From the evidence at hand, it appears there is, within the Escabrosa formation, but one layer (composed of several beds), approximately 50 to 60 feet wide normal to the dip which is suited to the production of lime for use in the copper mills in the area. A second but much narrower zone might possibly meet lime production specifications. It is not possible, without petrographic study, to clearly determine the stratigraphic position of this former "good" layer within the formation. The writer suspects its position to be in the upper third of the formation, but can not be certain.

There are three exposures of the Escabrosa limestone formation within the property. The largest of these is at the location of the lime plant and extends westward and northward. This area, approximately 1600 feet long and 300 feet wide, probably exposes the full formation thickness (250 feet normal to dip) which strikes N. 20° W. and dips 25 to 30° E. Hoopes obtained limestone by underground mining from an area just west of the lime plant. See Map No. 4. The position of this layer is probably in the middle of the formation. This outcropping has not been prospected except by a few larger than normal surface pits along its strike. The outcropping formation must be drilled.

The second Escabrosa formation exposure is currently providing the "feed" to the lime plant. This exposure, approximately 600 feet long and 300 feet wide, striking N. 10° W. to North and dipping 40 to 55° E., may or may not represent the full thickness of the formation, but it does contain a 50 to 60 foot, normal to dip, thickness of limestone which is being mined. The writer suspects this "layer" is in the upper third of the formation. The footwall of the "good" bed is controlled by a bedding fault with a smooth wall. The underlying layer is siliceous and argillaceous.

The third outcropping is a very small faulted "block" or "island", approximately 300 feet southeast of the second exposure. Area-wise, it is too small for consideration at this time. It has not been explored.

The Martin limestone Formation crops out to the west of the Escabrosa formation currently being mined. (See Map No. 3) Sample #1092 indicates a good lime content with a silica content just under 2%. With adequate exploratory drilling it may be possible to indicate 1.5 million tons of near marginal specification limestone.

DEVELOPMENT:

To supply the lime plant, Mr. Hoopes has mined fair amounts of material from two large underground "rooms" in a canyon above, or west of, the lime plant, attempted excavation (removal of surface debris) in three separate localities and is currently obtaining his raw material from one 50 to 60 foot wide zone approximately 0.3 miles from the lime plant. (See Maps No. 2 and 3 and 4).

The operation at the latter has opened up a 50 to 60 foot wide "good" raw material for about 400 feet along the N. 10° W. strike. The zone dips from 40 to 55° E. Production comes from two benches or levels with an approximate 50 to 60 foot difference in elevation. The upper bench is approximately 50 feet lower than the surface at its northern face. In the vicinity of this operation, the "good" limestone zone forms part of the hillside and thus has a favorable mining situation, but extensions to the northwest and southeast "enter" the hill and could require overburden removal on the hanging wall to attain any great depth.

The footwall of the "good zone" is controlled by a "bedding fault" with a slick-smooth face and is quite continuous except where offset short distances by minor cross faults.

The hanging wall also appears to be a bedding fault. This is based on the results of sample #1083. The silica content increased a fair amount east of this fault. The dacite-limestone contact is about 50 to 60 feet east of the hanging wall bedding fault and the contact dip is 48° E. near the throat of the Pit.

SAMPLING:

To obtain some information as to calcium carbonate and silica contents of the raw material being mined, the footwall material and other portions of the Escabrosa formation, the writer took 13 samples. This figure includes other samples taken elsewhere on the property to aid the writer in determining the location and extent of the raw material which might be suited for lime production. The assay results and sample descriptions are as follows:

	<u>% CaCO₃</u>	<u>% SiO₂</u>
#1080 - Grab, below upper bench and west of Footwall.	99.1	0.90
#1081 - 40 ft. across "good zone", north face, U. B.	91.6	3.18
#1082 - 50 ft. along "good zone", east face, U. B.	93.2	5.36

	$\% \text{ CaCO}_3$	$\% \text{ SiO}_2$
#1083 - 40 Ft. across zone, north bank Pit throat, east of fault.	92.5	5.79
#1084 - 25 Ft. across F.W. zone, west of fault, L. B.	87.8	3.62
#1085 - 40 Ft. along F. W. zone, west of fault, L. B.	86.9	11.50
#1086 - Grab of muck being mined June 16, 1970, L. B.	96.9	1.08
#1087 - 50 Ft. across zone, north bank, L. B.	96.9	2.53
#1088 - 50 Ft. across zone underlying F.W. zone, West of Pit.	96.2	2.71
#1089 - Chip sample of large float pieces approx. 350 feet north of upper bench face, in saddle.	95.7	3.23
#1090 - 70 Ft. chip sample along west wall of south underground room.	99.4	0.43
#1091 - 70 Ft. chip sample along west wall of north underground room.	92.5	1.17
#1092 - 40 Ft. chip sample across south bank of Quarry, $\pm$ 600 feet west of present Quarry (Martin lms ?)	95.3	1.87

Note: - U. B. indicates upper bench.
 L. B. indicates lower bench.
 See Maps No. 3 and 4 for sample locations.

SAMPLE COMMENTS:

Results of the 13 samples would indicate that silica is quite a problem - even in the present quarry operation which utilizes the "better" layer of the Escabrosa formation.

Samples 1086, 87, 81, 82 and 89 indicate there is a trend for the silica content as well as the R_2O_3 content, to increase to the north.

Samples 1084 and 85, taken in the Footwall material has high silica content as well as a high R_2O_3 content, particularly as shown in sample 1084 which cross cut the Footwall zone.

Sample 1083 represents the hanging wall material east of the bedding fault shown on Map No. 3. This material is also very siliceous, thus limiting the "good layer".

Samples 1080 and 1088 represent the material underlying the Footwall zone. The silica content of this material may be acceptable - but could be very erratic in distribution. This zone might well be the same zone that was mined by underground method near the line plant.

Sample 1092 could represent a portion of the Martin formation. The silica content is just within specifications, however, it appears there may be a 3% R_2O_3 content (aluminum and iron).

Samples 1090 and 91 represent a portion of the Escabrosa limestone mined by underground method. (See Map No. 4). It is thought that this zone is identical to the zone underlying the Footwall zone in the present quarry operation. The physical characteristics are similar and the chemical compositions compare favorably. (Samples 1080 and 1088).

RAW MATERIAL RESERVE:

In the vicinity of the present Pit, it is only possible for the writer to project the "good zone" approximately 300 feet to the north and 100 feet to the south. Depth-wise, below the present pit bottom, only a 40 foot projection is justified because of the inconsistency and geologic nature of the area.

This basically resolves itself into a block with dimensions of 800 feet long, 50 feet wide and an average of 120 feet high - or approximately 480,000 tons less approximately 125,000 tons which have already been mined which leaves a resulting inferred reserve of 355,000 tons.

If this same criteria for the "good layer" in the Escabrosa formation should exist in the exposure west and north of the lime plant, then 1.2 million tons may exist as a block 50-60 feet wide, 150 feet deep (down dip) and 1600 feet long.

Based on the results of sample #1092 and the area of exposure of the Martin limestone in the area, the writer could infer approximately 1.5 million tons of suitable limestone for lime production.

EXPLORATION:

The two main Escabrosa formation areas should be explored by diamond drilling as well as the Martin limestone exposure to the west of the present Pit.

In the main quarry area, two holes should be drilled between the north bank of the upper bench and the "saddle" to the north to determine the possible extension and grade of the zone being mined.

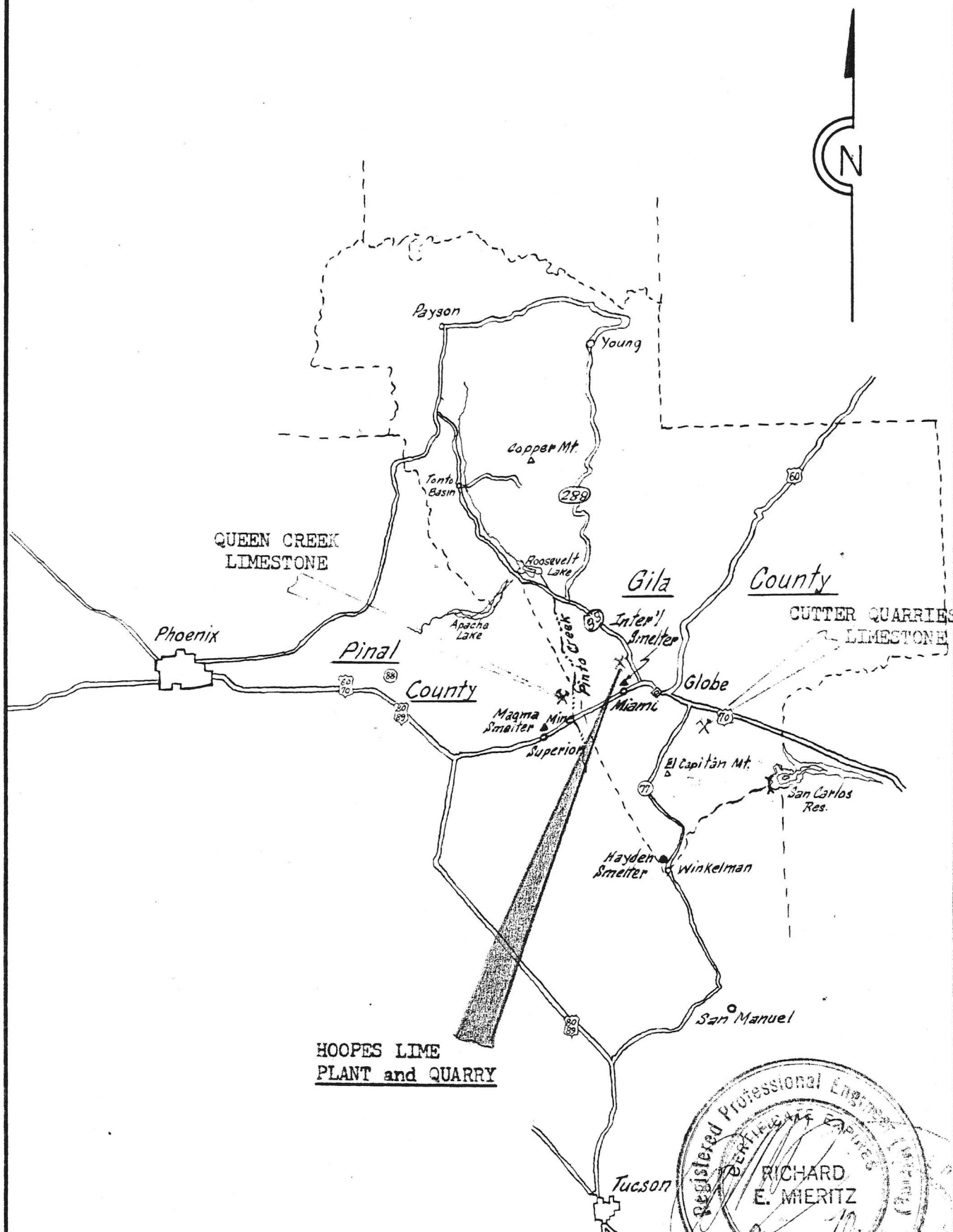
In the exposure west and north of the lime plant, two holes should be drilled at approximately 600 foot intervals to penetrate the full thickness of the formation to determine the presence of the "good layer" in this area as well as to test for the presence of the layer mined by underground method.

Several 300 to 400 foot drill holes would be required to explore the Martin limestone formation adjacent to and west of the present quarry operation.

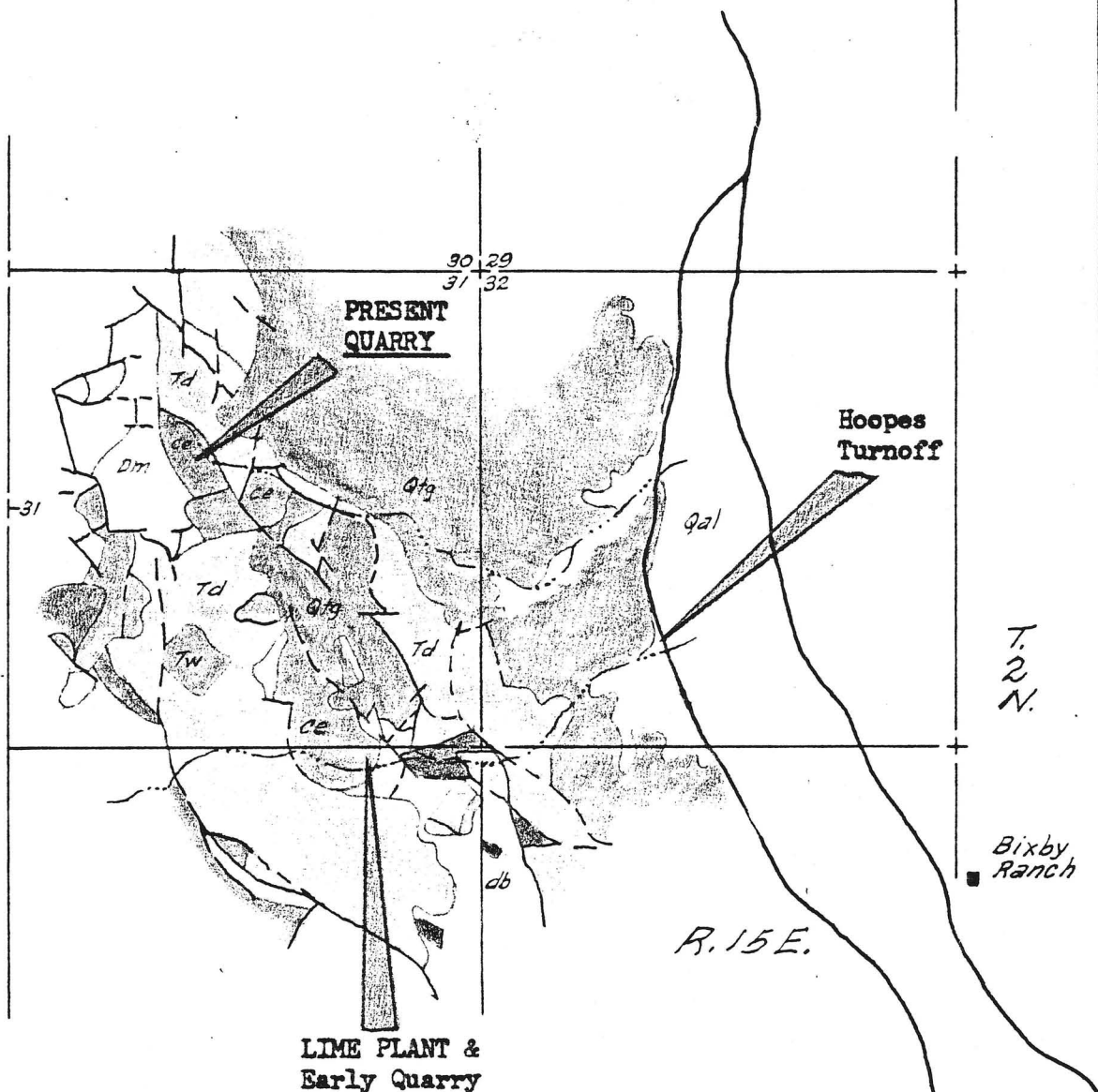
Respectfully submitted,

R..E. Mieritz,
Mining Consultant
Phoenix, Arizona

June 26, 1970

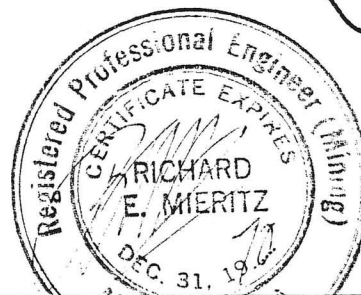


INDEX MAP
PORTION OF ARIZONA
SCALE
1 INCH = ± 21 MI.
MAY, 1970
R.E. MIERITZ



LEGEND

104	Qal	- Alluvium
117	Qtg	- Gila conglomerate
118	Tw	- Whitetail conglomerate
146	Cn	- Naco limestone
148	Ce	- Escabrosa limestone
149	Dm	- Martin Limestone
150	pEp	- Pioneer Formation
151	lgm	- Lost Gulch monzonite
152	Td	- Dacite
153	db	- Diabase

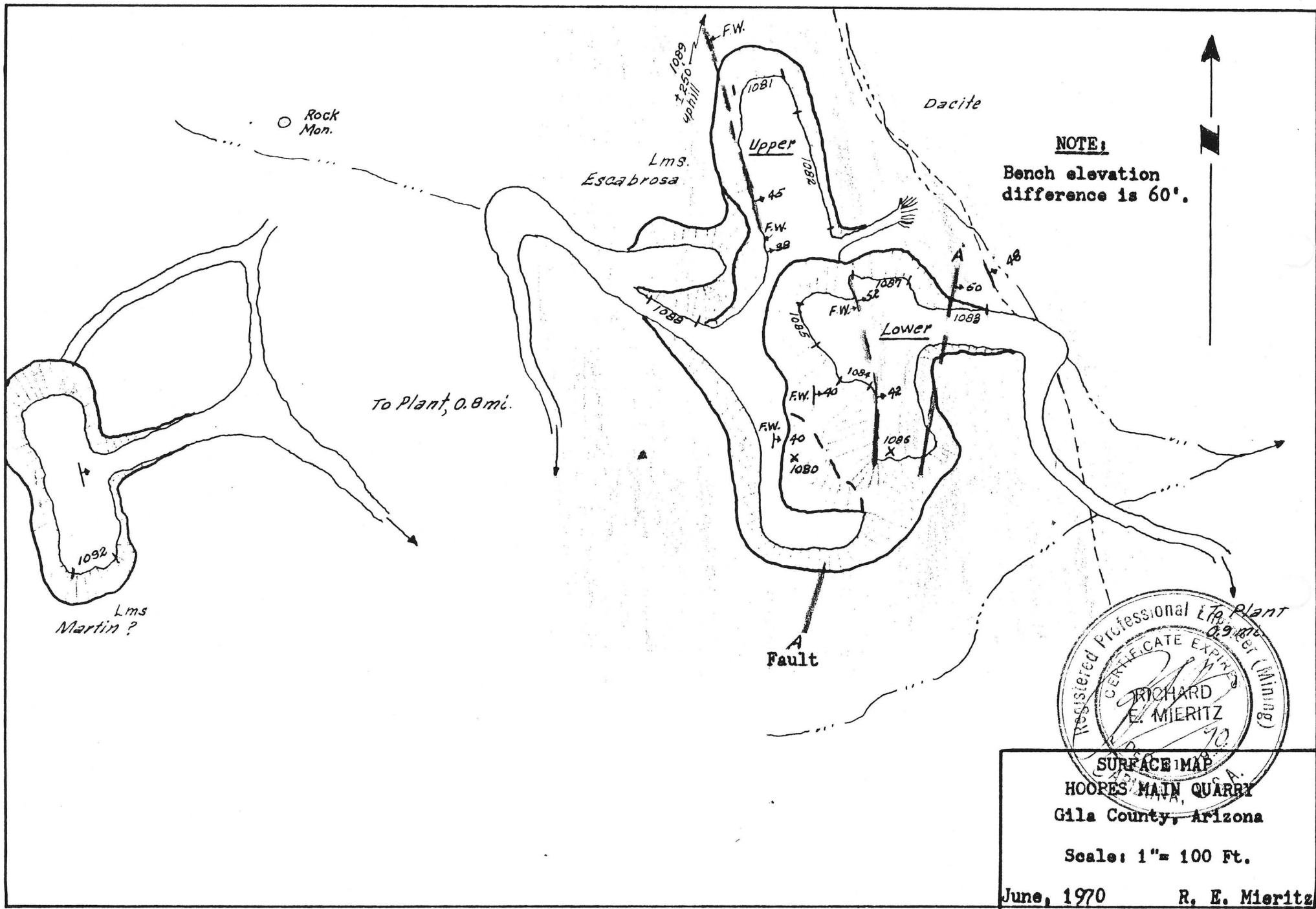


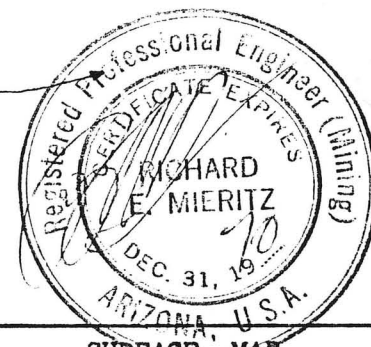
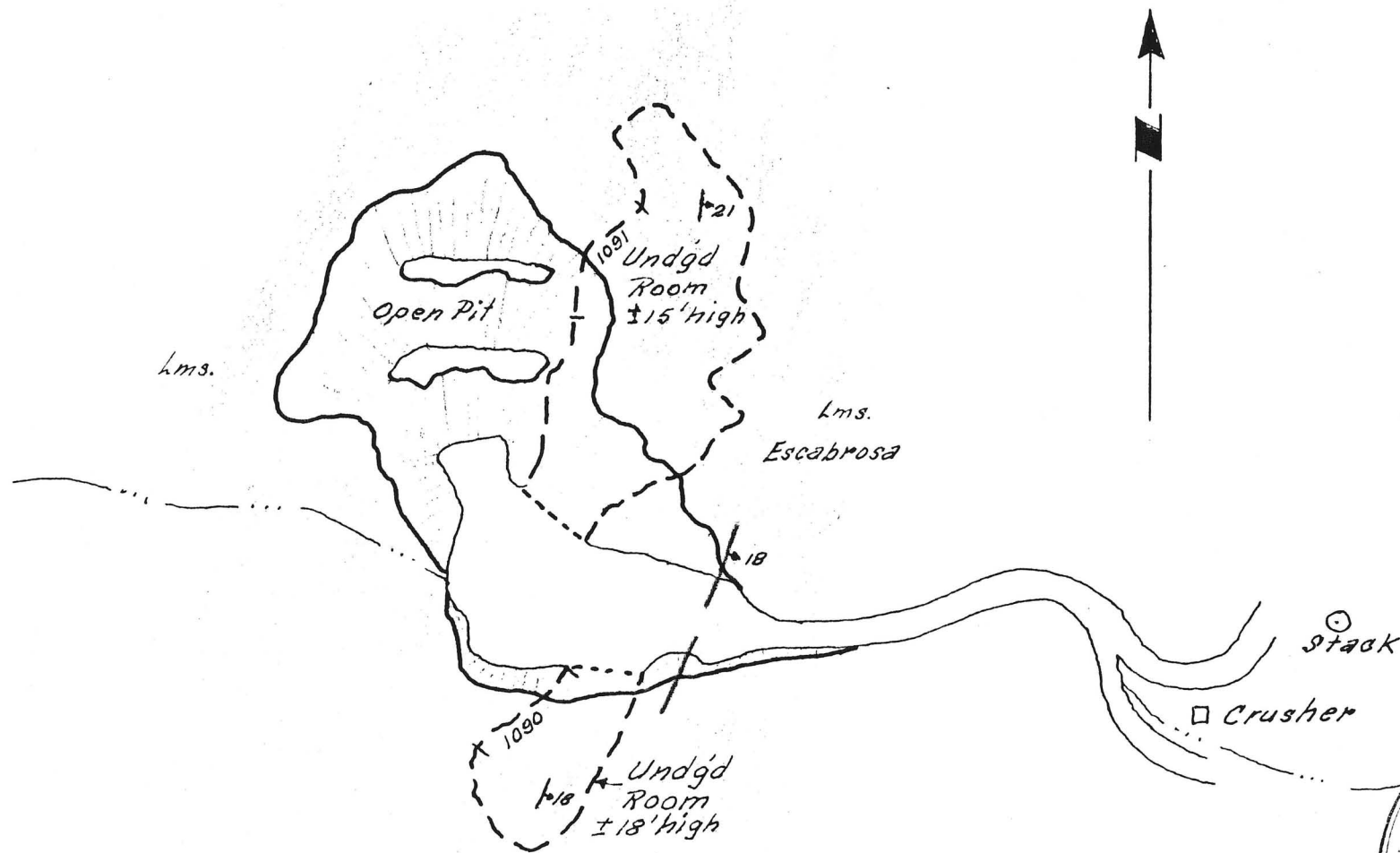
GENERAL GEOLOGIC MAP
HOOPES LIMESTONE PROPERTY
Gila County, Arizona
Scale: 1" = 2000 Ft.

June, 1970

R. E. Mieritz

MAP No. 2





SURFACE MAP
HOOPES EARLY OPERATION
Gila County, Arizona
Scale: 1" = 100 Feet.

June, 1970

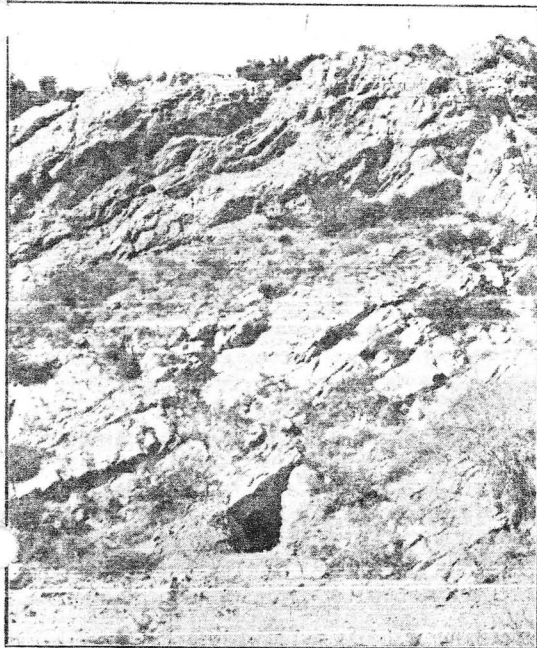
R. E. Mieritz

MAP No. 4

PROSPECTUS

NORTH DOMINION COPPER MINING & DEVELOPMENT CORPORATION

MAIN OFFICES, HAMIL BLDG.,
GLOBE, ARIZONA



SHOWING TUNNEL UNDER LIME LEDGE LEADING
TO LARGE ORE BODIES

"In the Billion Dollar Copper Belt of Arizona"

CAPITAL STOCK \$5,000,000.00
FULLY PAID AND NON-ASSESSABLE FOREVER

HISTORY OF LOCATING OF PROPERTY

Mr. W. H. Mercer, a North Carolinian and a man of fifty years' mining experience, was sent to Arizona a great many years ago by a party of wealthy Virginia capitalists to locate mineral lands. Mr. Mercer is the man who brought to the world's notice what is now known as the great Inspiration Copper Company property. About fifteen years ago Mr. Mercer located the property at Radium Station about three and one-half miles from Globe, which now comprises the North Dominion Copper Mining & Development Corporation claims. This property has been held by him for many years up until the time of the formation of our Company. Thousands of dollars have been spent by himself and family in developing and proving the existence of large bodies of ores on the property. Years ago before there were any railroads in this section, large quantities of silver was shipped from this property when it had to be hauled by wagons over the mountains and then shipped to San Francisco. It is estimated that more than a million dollars of silver ore has been taken out of this property and the mining of same was continued until silver was "demonetized." There are numerous shafts on the property ranging in depth from 20 to 115 feet, showing the existence of high grade copper, lead, silver and vanadium ores with some little gold deposit. Mr. Mercer, like numerous other practical mining men in this state, holds the opinion that this property will develop into one of the richest copper mines in the State of Arizona.

GEOLOGY AND EXTRACTS FROM REPORT OF J. E. HURD CONSULTING ENGINEER.

The formation of the North Dominion Copper Mining & Development Corporation group of claims is of the Pre-Cambrian period. The degradation of the surface having removed all traces of the later periods until at present the only formation is Archean.

Rocks found, generally over the surface, are the Diabase, Meta-diorite, Diorite, Porphyry and Basalt.

There are two large Fault systems extending from southwest and northeast across the group, while the second and minor system strikes from 30 degrees to 40 degrees towards the northwest and southeast from the main Fault system. Included in these are numerous Fault blocks, the throws of which are apparently not more than a few hundred feet. The general dip of the Fault planes is to the north, northeast, at an angle of about 15 degrees to 20 degrees from the vertical.

The veins of the North Dominion Copper Mining & Development Corporation group consists of the mother lode extending from southwest and northeast in about the center of the property. This ledge is easily traced from end to end and measures in width from 20 to 80 feet, being developed by numerous shafts, cuts, tunnels and trenches for its entire length. The minor fault veins occur as branches leading from the mother lode at an angle of 30 degrees to 35 degrees and are of countless numbers; fact is, the whole country being filled with veins secondary to the great mother lode.

The veins are filled with carbonates of copper, sulphides of lead and iron and in numerous places ledges of siderite, a fine fluxing material. The coppers consist almost entirely of oxidized material and carry associated with them the silver, gold, and vanadium bearing ores. Numerous as-

says taken at different points across the entire ledge reveal the fact that the whole vein is mineralized and in many places so heavily mineralized as to be profitable to smelt the entire width, while in other places the commercial value of the ore is confined to streaks of from 2 to 5 feet in width, but at no place in the entire group of claims has there been found a barren streak unfit for profitable workings.

Walls are diabase, and ore bodies closely associated with diabase in this district have been found to be richer and deeper at 500 feet than at the surface, as at that depth the secondary ores are usually encountered.

The ores necessarily demand a smelting process for their extraction, but at no time except when sulphides are encountered will a concentrator be found to be profitable as an adjunct to the smelter.

The deposits of lime and siderite for smelting purposes are simply inexhaustable, which, with the iron and lead, make an ideal smelting material.

A word about the Globe mining district and its mines will not be amiss here. Globe district is now coming into her own. With the Miami Copper Company, five miles westerly, and which is one of the largest copper producing mines in the state; the Inspiration Consolidated Copper Company, a mine of larger proportions even than the Miami Copper Company; the Dominion Key stone, with its large bodies of ore; the Live Oak, which is west of the Keystone, having been a very large producer in the days gone by. These properties and the enormous bodies of ore they are developing, point to a very bright future for the Globe mining district; yet there is not in the whole district a property capable of producing a greater quantity of ore, rich in the metals, as the North Dominion Copper Mining & Development Corporation, which with careful management can be made to furnish work for several thousand people and to pay yearly very large dividends, for a great number of years on the large and rich bodies of ore known to exist. The character of ores found on this property will call for a smelter for which there is an ideal location in close proximity to a very fine lime ledge of mammoth dimensions.

TOPOGRAPHY.

The topography of this property consists of rolling hills extending from Pinal Creek towards the east, being cut by arroyas and small ravines which drain from the summit toward the west into Pinal Creek. The surface is now covered with a light growth of brush and cactus. Whatever timber the tract had years ago, has been cut and used in the mining operations in the early days of the district. The water supply is confined to some springs on the east end of the tract and the waters of Pinal Creek on the west end, where an abundant supply of excellent water flows continuously. The water on these claims is sufficient to supply all the needs of mines, smelters and the town which we will develop on a beautiful location adjacent to Radium Station.

ROADS.

From Globe to the westerly end of the North Dominion Copper Mining & Development Corporation group of claims is a first-class wagon and automobile road, and from the westerly end to the easterly is located a fine wagon road with easy grades of ample width, which is maintained by the county, and sufficient for hauling in mining timbers, machinery, etc., that may be required in the operation of our mine, and for the hauling of ores at the lowest possible cost to the railroad, until such time as tramways and our smelter can be erected.

LOCATION OF THE NORTH DOMINION COPPER MINING & DEVELOPMENT CORPORATION

The property owned outright by this Company is located three and one-half miles from Globe directly in the Globe mining district of Gila County, Arizona, and lies directly in what is called "The Billion Dollar Copper Belt of Arizona." It consists of 37 claims making an acreage of nearly 800 acres, one of the largest acreages in this state for mining purposes. The Arizona Eastern Railroad runs through one section of our property and their station, Radium, is on same, which makes our shipping facilities all that could be desired.

Our property is joined on one side by the Dominion Keystone property and on the other by the Inspiration Consolidated Copper Company's property.

MIAMI COPPER CO.

TO MIAMI

INTERNATIONAL SMELTER

4 MILES TO SMELTER

INSPIRATION
PROPERTY

PINAL CREEK

TO GLOBE 3 MILES

PUBLIC ROAD

ARIZONA EASTERN R.R.

5 MILES TO O.D. SMELTER

OLD DOMINION COPPER
MINING AND SMELTING
CO. PROPERTY

HALEY GROUP

BERRY AND BALLETT GROUP

HURCULES MINING CO.

BANKER CLAIMS

ASTONISHMENT
TRANSLATION
ORIENT N°1
ORIENT N°2
ORIENT N°3
RADIUM STATION

SILVER BELL N°4
SILVER BELL N°5
SILVER BELL N°3
SILVER BELL N°7
SILVER BELL N°6
CHAPARAL
SILVER BELL N°1

APEN
GOSSAN
LOOE
SILVER BELL N°2

APEX N°2

SILVER GIANT N°4

SILVER GIANT N°3

SILVER GIANT N°1

SILVER GIANT N°2

SILVER GIANT N°5

OPHIR N°3

CARNOLITE N°6

QUARTZITE N°3

QUARTZITE N°4

OPHIR N°2

OPHIR N°1

QUARTZITE N°1

QUARTZITE N°2

CARNOLITE N°5

QUARTZITE N°4

QUARTZITE N°3

QUARTZITE N°2

RHODOLITE

CARDOLINA N°4

SILVER GIANT N°1

SILVER GIANT N°2

SILVER GIANT N°3

SILVER GIANT N°4

SILVER GIANT N°5

SILVER GIANT N°6

SILVER GIANT N°7

SILVER GIANT N°8

SILVER GIANT N°9

SILVER GIANT N°10

SILVER GIANT N°11

SILVER GIANT N°12

SILVER GIANT N°13

SILVER GIANT N°14

SILVER GIANT N°15

SILVER GIANT N°16

SILVER GIANT N°17

SILVER GIANT N°18

SILVER GIANT N°19

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SILVER GIANT N°21

SILVER GIANT N°22

SILVER GIANT N°23

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SILVER GIANT N°27

SILVER GIANT N°28

SILVER GIANT N°29

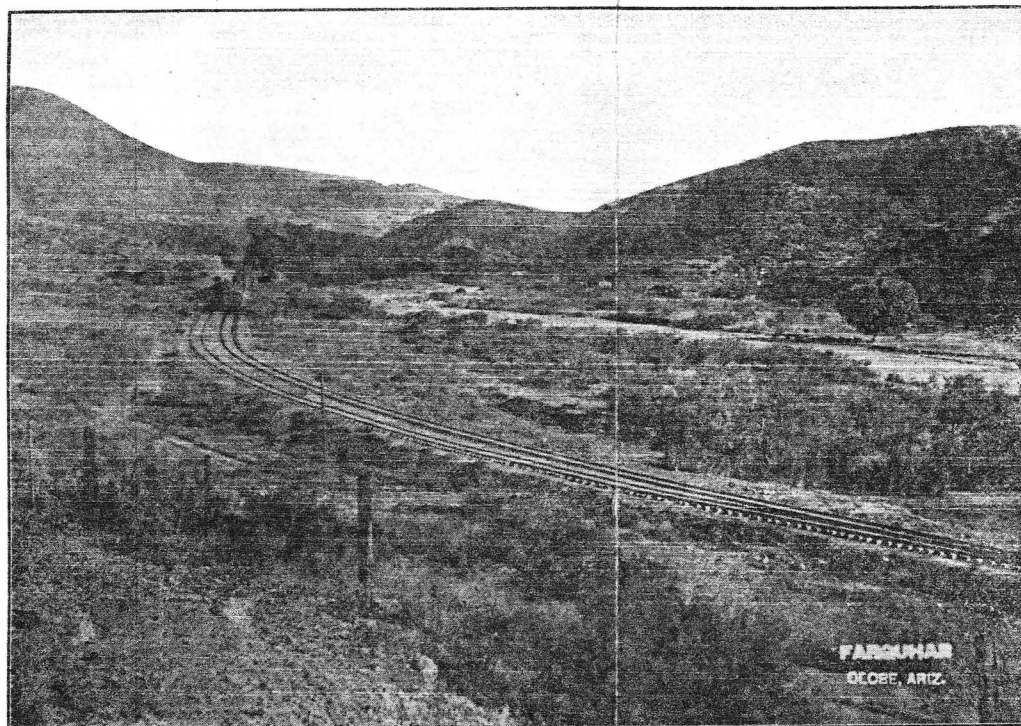
SILVER GIANT N°30

SILVER GIANT N°31

SILVER GIANT N°32

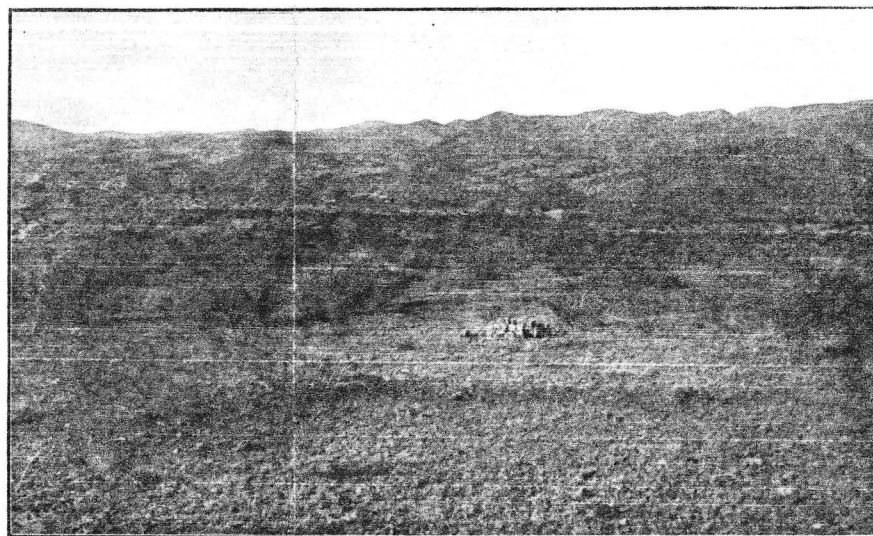
CRESCENT CONSOLIDATED
GROUP

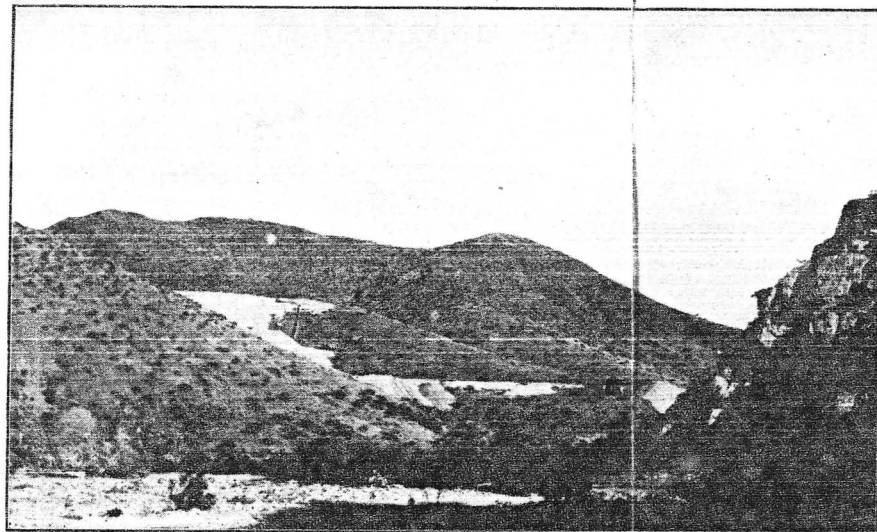
MAP
OF PROPERTIES OF
NORTH DOMINION COPPER MINING
AND
DEVELOPMENT CO.
GLOBE, ARIZ



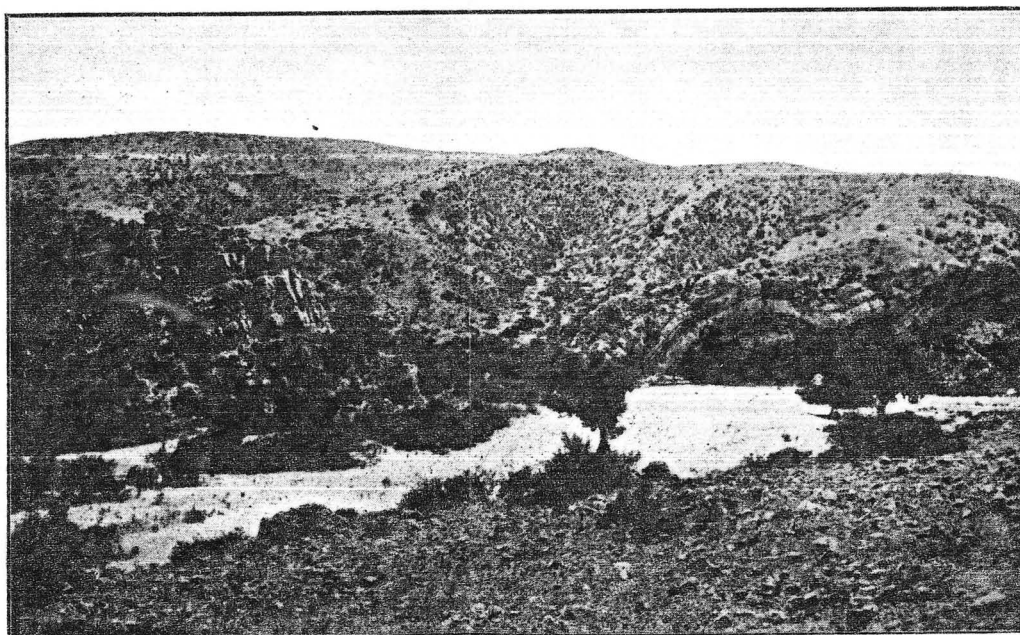
Arizona
Eastern Rail-
road Which
Runs Through
Our Property,
and on
Which Is
Located
Radium
Station.

This photograph shows an excellent townsite of approximately 125 acres of practically level ground, with enough gradual slope to give it good drainage. This splendid townsite is situated on an elevation high above the creek bed, and adjoins the railroad station of Radium, all of which is on our property, and on which we expect to erect dwellings within a very short time.

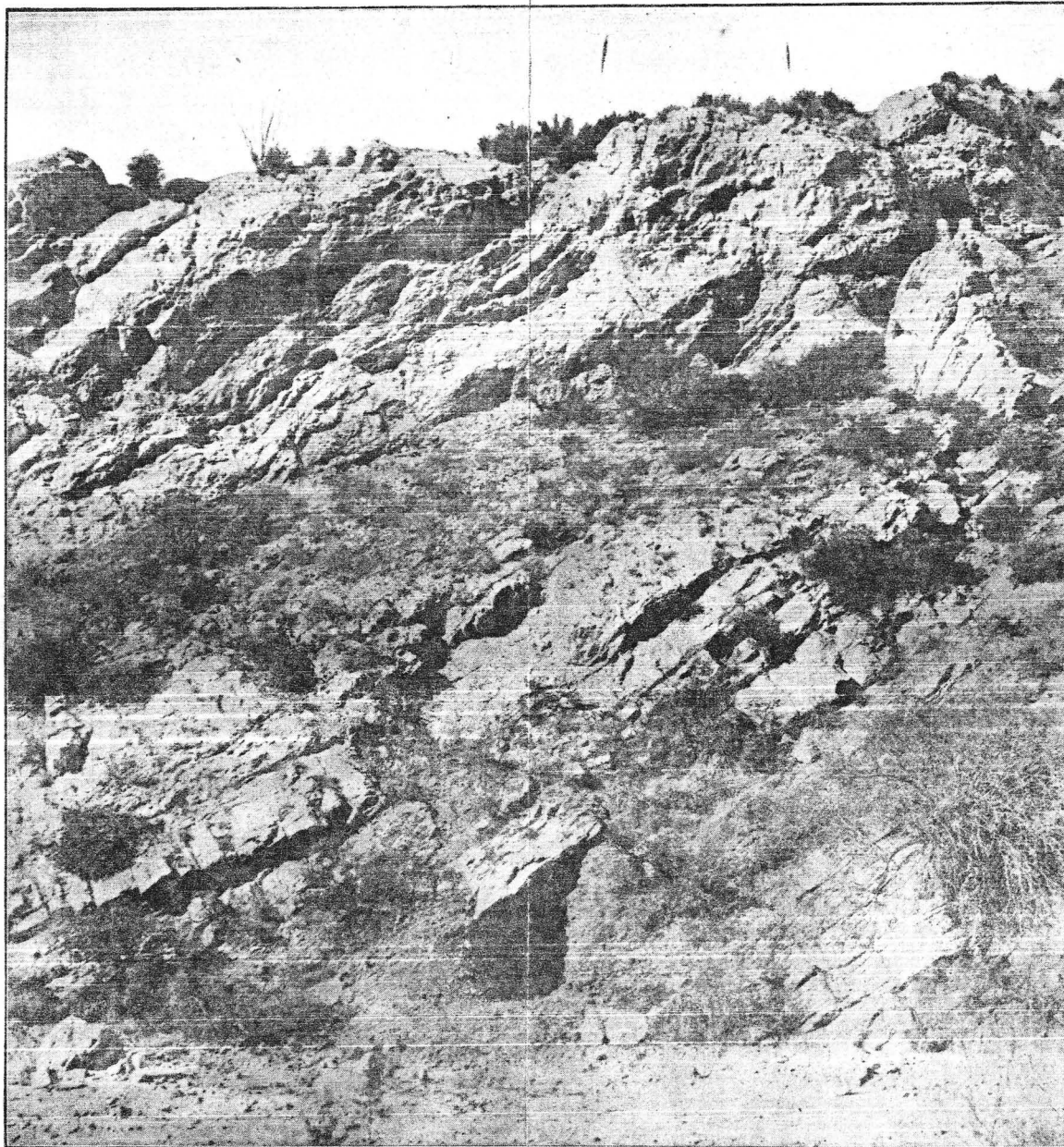




Showing Shaft on Our
Property Which Is Now
Sunk to a Depth of 115
Feet. We Expect to Be
Shipping Ore From This
Shaft Within a Very Few
Months. In the Back-
Ground Is Shown the
Dominion Keystone
Property.



Lime
Ledge
on Our
Property
From Which
We Can Take
Millions of
Tons by the
Simple Pro-
cess of Blast-
ing as the
Entire
Ledge Is
Exposed
to View.



Above Photograph Shows Tunnel Under Lime Ledge Leading to Large Ore Bodies

CAN YOU FIND IN ARIZONA A MINING MAN OF ABILITY WHO HAS EXAMINED OUR PROPERTY AND WHO IS NOT LOUD IN HIS PRAISE OF SAME?

IF YOU CAN, WE WOULD LIKE TO MEET HIM.

Now is the time to invest a few hundred dollars in our stock and expect big returns.

Our property is developed to the extent that we will be able to ship high grade ores within a very short time, and then our stock will be worth many times the price for which you can buy it today.

Private holdings of stock of individuals composing the company are pooled, and cannot be offered for sale until treasury stock is disposed of.

Men of splendid mining and business ability are connected with our company and our aim is to develop one of the largest copper mines in Arizona.

"Buy now at the lowest price—the opportunity will not last long."

DEVELOPMENT WORK DONE ON OUR PROPERTY IN THE PAST TWELVE YEARS

Thirty-seven cross-cuts of ore bodies.

Six tunnels driven to cross-cut ore lodes.

Shafts Sunk on Following Claims:

Silver Giant No. 3, shaft.....	90 feet
Silver Giant No. 4, shaft	115 feet
Silver Bell No. 2, shaft.....	20 feet
Silver Bell No. 3, shaft.....	45 feet
Rhodonite, shaft.....	50 feet
Iron Chief No. 1, shaft.....	20 feet
Orient No. 3, shaft.....	80 feet
Orient No. 3, shaft.....	40 feet
Carolina No. 4, shaft.....	110 feet
Carolina No. 4, shaft.....	30 feet
Carolina No. 4, shaft.....	35 feet
Quartzite No. 5, shaft.....	30 feet

Majority of above shafts are well timbered.

An excellent wagon road extends from railroad the entire length of property and cost several thousand dollars; same is now kept in repair by the county.

OFFICERS AND DIRECTORS

The officers and directors of the North Dominion Copper Mining & Development Corporation are men of sound business experience and in the main of wide practical mining knowledge. They are:

PRESIDENT—L. L. LICHTFIELD,
Globe Merchant and Practical Mining Man.

VICE PRESIDENT—A. BILLARD,
Mining Man Formerly of Mexico.

SECRETARY-TREASURER—
SAM SUTHERLAND,
Formerly Sec'y - Treas. Rountree
Sutherland Cherry Corp., and
Sutherland & Cherry, Corp.

DIRECTORS—

L. L. LICHTFIELD,
A. BILLARD,
SAM SUTHERLAND,
WILLIAM RICHARDS,
Practical Mining Man of Morenci,
Arizona,
W. H. MERCER,
Practical Mining Man of Globe,
Arizona.

**North Dominion Copper Mining
& Development Corporation**

Main Offices, Hamil Bldg.

P. O. BOX 2289

GLOBE, ARIZONA

FROM REPORT OF J. E. HURD CONSULTING ENGINEER

Numerous assays taken at different points across the entire ledge reveal the fact that the whole vein is mineralized and in many places so heavily mineralized as to be profitable to smelt the entire width, while at other places the commercial value of ore is confined to streaks of from 2 to 5 feet in width, but at no place in the entire group of claims has there been found a barren streak unfit for profitable workings.

HOW MANY PROPERTIES ARE THERE
IN THIS OR ANY OTHER STATE OF
WHICH THE ABOVE CAN BE SAID?

We solicit the investigation on your part of our property and the men behind same. A few hundred dollars invested by you in stock of the North Dominion Copper Mining & Development Corporation of Globe, Arizona, should bring you big returns within a reasonably short length of time.

**North Dominion Copper Mining
& Development Corporation**

Main Offices, Hamil Bldg.

GLOBE, ARIZONA

Copy 508

LETTER OF TRANSMITTAL.

To The
President
and Board of Directors,,
North Dominion Copper Mining
and Development Corporation.

Inv. Co. No.

Gentlemen:

In accord with your resolution appointing me to examine and report on your mining property, in the Globe district, Gila County, Arizona, I beg herewith to tender my report, which I trust may meet with your approval.

I am indebted to Mr. W. H. Mercer, original locator and former owner of the property, and to Mr. Sam Sutherland, Secretary-Treasurer of the North Dominion Copper Mining & Development Corporation, for valuable aid in my work of examination.

Very respectfully,

Wm F. Wilson

San Francisco, Calif.,

April, 1917.

R E P O R T.

GEOGRAPHIC POSITION AND APPROACHES.

The property owned by the North Dominion Copper Mining & Development Corporation is situated in the Globe district, Gila County, Arizona. The tract is about $3\frac{1}{2}$ miles north of the city of Globe. On its southwestern end the property is traversed by the Miami branch of the Arizona and Eastern R.R., which is a subsidiary of the Southern Pacific Railway system. A station known as Radium is maintained on the tract by the Arizona and Eastern R.R., which furnishes regular and efficient transportation from the property to all railway points in the United States.

TOPOGRAPHY AND CLIMATE.

The dominant features of the topography consist of rounded hills with the main Pinal mountains in the background trending Northwesterly and forming a bold serrate range culminating 7900 ft., above sea level, and about 4300 ft., above the city of Globe.

The topography is characteristically hilly, but showing soft rounded contours. The hills are separated by long branching arroyos with gravelly, sandy beds. Rock in place is very rarely exposed in the bottom of the channels, and being practically dry for the greater part of the

year., they form the natural roads intersecting the district.

Pinal Creek is the master stream in the region flowing northward and draining the district into Salt River., with the exception of the timbered slopes of Pinal Mountains the surface of the region is almost destitute of soil.

The hills and ridges are frequently covered with desert shrubs including giant cactus (Sahuara), prickly pear, and other cacti., Mesquite, ocotillo, yucca and agave also occur.

The climate is arid, and this is shown by the character of the vegetation. The mean annual temperature is about 64° with an extreme range from 21° in January to 108° in July. The hottest weather at Globe is usually during June and July. The elevation at the property range from 3300 to 4000 ft., above sea level.

GEOLOGY. The rocks embraced within the area of the North Dominion Copper Mining & Development Corporation's property include igneous, sedimentary and metamorphic rocks. Excluding recent alluvium the sediments of the region may be classified as pre-Cambrian and, presumably Algonkian age.

If one stands on the top of one of the high hills that dominate the Globe district, and looks northward or eastward over the hilly country spread out before him, he is struck with the apparent chaotic distribution of the various rocks, as indicated by their respective and characteristic tints

in the landscape. Here and there patches of limestone gleam white through the thin screen of scanty vegetation, while areas of quartzite are indicated by a reddish color, and masses of diabase by a dull-olive tint. The beds show no traces of folding, and one looks in vain for any persistent or regular structure that may account for this rocky patchwork.

Probably few equal areas of the Earth's surface have been so thoroughly dislocated by an irregular network of normal faults, and at the same time exhibit so clearly the details of the fracturing. In traversing the property there is a bewildering frequency from quartzite to limestone, or diabase, the line of separation being often defined by fault breccia forming a bold outcrop that may be followed for miles.

There are shales, conglomerates, and quartzites which are thought to be probably of Cambrian age. Overlying this group is a series of limestones with an observed thickness of about 400 ft. These limestones are fossiliferous and were intruded by diabase. Subsequent to the intrusion extensive erosion took place during which the rocks were so faulted and dislocated that for a considerable part of the area regional brecciation perhaps most aptly describes the actual condition there found. Figures 2 and 3 accompanying this report are a generalized geological section of the region and attempts to show the rocks as they occur on the surface and in cross-section.

It is generally accepted theory that disturbed and extensively faulted regions are favorable localities for the deposition of ore.

HISTORY OF MINING
DEVELOPMENTS IN THE
GLOBE DISTRICT.

The following description of the mining development in the Globe District has been compiled from various sources.

Prior to 1874 the desert isolation of the mountains of Central Arizona, and the predatory Apache Indians who lurked within their rocky fastnesses, appear to have been obstacles from which even the proverbially hardy prospector shrank. But in that year a temporary subjection of the Indians opened the way to the more adventurous spirits, and a party of prospectors, having crossed the Pinal Mountains, from the West, located the Globe claim, now part of what is generally known as the Old Dominion Mine. The Silver King mine, lying about 19 miles south-southwest from the present city of Globe, was located by members of this same party.

Other discoveries rapidly followed and small settlements sprang up at various points. One of the first of these, known as Ramboz Camp, was founded by Henry Ramboz in 1875. The ruins of this camp and some neglected graves of its pioneers may be seen about 4 miles Northeast of Globe at the foot of Ramboz Peak. It was the base whence active

prospecting was carried on in the Globe hills during the seventies, when some mines, such as the Fame, Centennial and Rescue were opened and produced silver ore in commercial quantities. Although the Globe claim, (at present known as the Old Dominion) destined to afterwards become the greatest copper producer in the district, was the earliest location, it attracted but little attention for several years, owing to the greater interest aroused in silver ores, and the success that was attending their exploitation in the Silver King Mine.

Some time prior to 1878 the principal settlement of the district was transferred from Ramboz to Globe. In 1880 the (original) Old Dominion mine was prospected, and it would appear that the future prominence of copper as the principal product of the Globe district was unsuspected, in spite of the strong surface indications of copper ore, and the Old Dominion mine, which subsequently has become a princely copper producer, was at one time worked for silver, and not considered of very great value.

The largest productive mines in the Globe district at the present time are the Inspiration, Miami, and Old Dominion mines, probably their combined output of copper exceeds that of any like number of mines in Arizona.

HISTORY OF THE
NORTH DOMINION COPPER
MINING & DEVELOPMENT
CORPORATION.

In 1904 Mr. W. H. Mercer, a mining man from North Carolina of wide experience, acquired the property under discussion by location and purchased and expended about \$25,000.00 in development work and better-

ments. The property remained continuously in Mr. Mercer's possession until July 1916, when he transferred it to the North Dominion Copper Mining & Development Corporation. In his efforts to hold the large area of land under his control Mr. Mercer was obliged to scatter his energies over a wide territory, with the result that he was unable to perform enough development work in any given locality to reach the sulphide zone.

Realizing that his energies had been expended in desultory work, which, if continued, would bring him no adequate returns, he decided to dispose of his holdings to your company.

On several occasions Mr. Mercer received flattering offers for the property from mining men of financial standing and responsibility, all of which were refused, Mr. Mercer preferring to retain the property and become identified with its future development.

VEINS AND ORE
DEPOSITS.

The ore bodies of the Globe district are of various forms, and as is usual in such cases are not sharply distinguishable from one another. They may be classed as follows: (1) Lodes, (2) masses in limestone, and (3) irregular mineralizations of shattered rocks.

The ore deposits of the tract occur with few exceptions in veins of simple structure and are post-dyabase fault fissures. The veins are not confined to any one rock

formation, but occur most prominently in the diabase, limestone and quartzite. The trend of the fissures follows in general the trend of the containing rocks, the dominant trends being N.E. and S.W. with dips ranging from 40 to 90 ° from the horizontal. The fissures are generally well defined, the vein filling being cleanly separated from the walls. The vein stuff is generally quartz of a ferruginous nature. In most of the openings on the tract which allowed of a satisfactory study of the ores, the vein filling indicated lenslike bodies, which on the edges are composed of silicious matter, and increases in oxides and carbonates of copper toward the thicker central parts.

The copper ores in this tract may be divided on practical grounds into (1) oxidized ores, and (2) sulphide ores. To the former division belongs nearly all of the ore produced in the district to the year 1897. Sulphide ore, on the other hand, is of comparative recent discovery, and is the factor of increasing importance in determining the future of mining operation.

The metalliferous contents of the veins were probably derived from the deep seated rocks of the region, and were deposited from ascending solutions of originally meteoric water, which had become charged with ore forming constituents in the course of a slow and devious underground circulation.

No sulphides are liable to occur in the limestone, but the pyritic ores will occur permanently in the diabase. In

the diabase it is probable that oxidized ores will prevail down to the depth of 600 to 700 ft.

The ores compromise gold, silver, chalcocite, chalcoppyrite, and tetrahedrite. The non metallic minerals observed and recognized are quartz, tourmaline and hornblend. Of secondary minerals formed in the second zone of weathering the more important are siderite, pyrolusite, native copper, superite, malachite, chrysocolla and covellite.

The surface zones of these deposits are indicated by silicious rocks, at times honeycombed, pitted, and sometimes copper-stained.

Although the lodes often contain excellent ore of shipping value, it has not yet been found in such abundance as in the large masses in limestone of the Paleozoic group, mostly of the carboniferous series.

Veins wholly in the diabase, or limestone, are usually not conspicuous, with the marked exception of a prominent lode entirely in diabase that strikes Northeast through Orient #2, Silver Giant #2,3 and 5, Ophir #3, and Quartzite #1, and 2 claims, a total distance of about 6800 ft.

This lode, which is designated as the mother lode, may be traced at intervals across the center of the property, and is of varying width, ranging from 5 to 40 ft., and has been opened by numerous shallow shafts, cuts, tunnels and trenches. Numerous minor fault veins cross and intersect the mother lode at many points, and contain copper carbonates, sulphides of lead and oxides of iron.

The copper minerals almost wholly of oxidized ores, and associated with them are ores of silver, gold and vanadium. The Mother lode appears to be extensively mineralized. The ores of the lode have such a wide range of values that the writer will not attempt to state what their average tenor is.

The surface ores are sometimes extremely high grade, running as high as 1000 oz in silver per ton. Lead ores vary from 15 to 65%, copper up to 24% , gold \$35.00 per ton and vanadium up to 15%.

The continuity of the mother lode is far beyond the confines of the tract; its banded structure, the varied contents of its filling, argue strongly for permanency to indefinite depths, and stamps it as a true fissure vein.

It is my opinion that this important lode should be systematically prospected as it is the most promising on the tract.

THE WORKINGS.

consist of cross-cut tunnels and numerous shafts; the latter aggregating about 650 ft., and ranging from 30 to 115 ft., in depth. The majority of the shafts are well timbered and sunk on ore.

It is proposed to sink a shaft on the Apex claim (see Fig.1.) near where a prominent crescent-shaped outcropping of quartzite occurs on the Northeast bank of Pinal Creek. The quartzite has been cut through from East to West for several hundred feet by the Arizona and Eastern Railroad.

exposing diabase on its North side; the quartzite curves to the Southwest and dips south under Pinal Creek towards a large outcrop of limestone that appears on the Southwest bank of the Creek; the limestone has been sharply tilted to the westward.

The quartzite is apparently divided by a profound fault, which on the surface appears to be over 100ft., in width with a Northeast-southwest strike. The writer believes that ores of commercial value will be found along this fault, especially where the quartzite and limestone contact, and as the diabase appears to be in the foot-wall of the quartzite it probably continues to the limestone, and it is intrusive in it as sills.

The writer, who examined the Old Dominion mines more than twenty years ago, observed practically the same conditions underground in that mine as apparently prevail in your property; in the Old Dominion the principal ore zone occurred along a displacement, having a N. W. S. W. strike with sharp dip eastward. The hanging wall was limestone and quartzite, with foot-wall of diabase., faulting evidently occurring before and after the intrusion of the diabase. The ore favored the hanging wall, occurring in lenses parallel to the bedding planes of the limestone and quartzite.

At the time of my visit the workings had reached the 1000 ft level and were still in the oxidized zone. I predicted in my report to Judge Jay A. Hubbell of Houghton, Mich., that the copper sulphide zone in the Old Dominion mine would, probably be encountered on or about the 1200 ft level of the shaft, then being sunk. I have since learned that chalcopyrite

ores were encountered in the east end of the mine at , or about, the 1200 ft level, and from the 1200 ft to 1600 ft., level in the west end, and that the workings have been in sulphides ever since.

As your property and the Old Dominion mines are in the same geological horizon, and the conditions at the Apex claim, where the new shaft will be sunk, have many points of resemblance, I am of the opinion that there is a strong possibility of finding ores of the same character, tenor, and possible size as those found in the Old Dominion.

As the elevation at the Apex claim, where it is proposed to sink the main shaft, is about 500 ft., lower than the collar of the Old Dominion shaft it is presumed that the sulphide zone will be encountered in your property sooner than it was in the Old Dominion.

It is probable that ores of silver-lead, oxides and carbonates of copper of varying values will be encountered soon after the shaft passes through the surface detritus and reaches the vein stuff. I suggest that the shaft be sunk to a vertical depth of 600 ft., with lateral workings, as may be justified by the conditions.

Drifting to explore the vein should be undertaken from each 100 ft. level of the shaft, and from the 600 ft level it would not be amiss to cross-cut southwesterly in the diabase, as my expectations are that profitable sulphide ores may be found in that direction.

PROPERTY AND
TITLES.

The property consists of 43 mining claims., aggregating about 850 acres (see fig.1.).

In 1910 six of the claims were patented, the remainder are held by possessory title. The mining Laws of the United States, and of the State of Arizona., relating to boundary monuments and annual assessment work, have been carefully observed, and all work duly recorded at Globe, County seat of Gila County, Arizona. The property is contiguous to the famous Inspiration Consolidated Copper Company.

In addition to the Mining claims there is an excellent town-site location near Radium Station, and, in due time it is planned to build a town to properly house the Company's employees.

ROADS.

From Globe to the Southwestern end of the property is a good road, traversed by wagons and automobiles, and from the Southwest end of the tract to its Northeast end there is an excellent county road with easy grades. Over this road ores and supplies may be hauled from and to the railway station at Radium.

WATER. ,

The water supply is sufficient for mining operations and occurs in Pinal Creek, which is a perennial stream. Springs also occur at the Eastern end of the property.

FUEL AND
POWER.

Fuel is obtained from abroad and consists of coal, petroleum, and wood. Electric power lines are within four or five miles of the tract, and it is probable that arrangements may be made to connect the property with one of those lines.

MILL AND
SMELTER SITE.

In close proximity to Radium Station an ideal Site for a concentrating mill and smelter exists. Large bodies of lime and other fluxing material occur at the site, rendering the erection of a custom smelter an extremely attractive, and no doubt profitable metallurgical venture and worthy of careful thought. Globe district produces thousands of tons of copper ores that must be shipped, at great expense, to remote reduction plants for treatment. The site possesses all the advantages for the economic reduction of the ores. The evidence all points to the crying need for a Smelter in the district; the location would be on patented ground, and no interference, on account of Smelter fumes, is possible.

CONCLUSIONS.

AND RECOMMENDATIONS.

The examination of your property indicates that it possesses undoubted merit, the conditions being favorable for the occurrence of copper sulphide and other ores of commercial value at a comparatively moderate depth. I do not anti-

cipate that the sulphide zone will be encountered before a depth of at least 600 ft is attained. For the reason that a change of depth is inevitable it is highly important that you should prove your property before forming a permanent plan of mining, smelting and financial conduct. This can be done in one way only-- by proving the ground. This proving may be done by drills. Drilling is a wonderful aid in exploring new territory, but, at best, it is only a blind man's buff. For a certainty the shaft, or tunnel, is the thing. In your case sinking is the proper course. This will determine the extent of the ore bodies and the nature of the unaltered sulphides.

Sometimes highly profitable oxides and carbonates of copper are replaced by sulphides of too low grade to work at a profit. As a rule the better a copper mine at surface, the better at depth; but there are so many important exceptions that development is the only safe guide. It must be remembered that copper mines are subject to greater changes with depth than mines of any other class.

While the mother lode on your property is interesting and warrants intelligent prospecting, it is inadvisable at this time. I strongly advise that you concentrate your energies on the proposed shaft on the Apex claim, and prosecute the work with vigor until the 600 ft level is reached.

Inveiw of the favorable geological conditions I believe the sinking of the shaft on the Apex claim is warranted, and there is a reasonable expectation of finding large and profitable ore bodies there at, or near, the depth indicated.

The exceptionally favorable situation of your property for economic development, the attractive physical conditions, as well as the similarity of the geological features to those of the famous Old Dominion mine of Globe, render your property of more than passing interest and indicate that proper development, under competent mining direction, will probable develop a mine of magnitude and importance.

Wm F Spilso

