



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the Cambior Exploration USA Inc. records

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

12/05/88

PREPARED BY: DIETZ AND ASSOCIATES, 4706 N. 31ST DRIVE
PHOENIX, AZ. 85017 PHONE (602)841-1744

PRIMARY NAME: SADDLE MOUNTAIN GROUP

ALTERNATE NAMES:

LOLA CLAIMS
DYE VEIN
GILA COPPER SULPHIDE CO. PROP.

PINAL COUNTY MILS NUMBER: 376A

LOCATION: TOWNSHIP 5 S RANGE 16 E SECTION 3 QUARTER NE
LATITUDE: N 33DEG 01MIN 50SEC LONGITUDE: W 110DEG 41MIN 35SEC
TOPO MAP NAME: CHRISTMAS - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

LEAD
ZINC
SILVER
GOLD
IRON

BIBLIOGRAPHY:

- ✓ ADMMR SADDLE MTN GROUP FILE
ROSS, CLYDE P., ORE DEPOSITS OF THE SADDLE
MTN AND BANNER MINING DISTRICTS, AZ., USGS
BULL. 771, 1925, P. 43-
- CLAIMS EXTEND INTO SEC. 34-T4S-R16E
- ✓ ADMMR U FILE, PINAL AG6

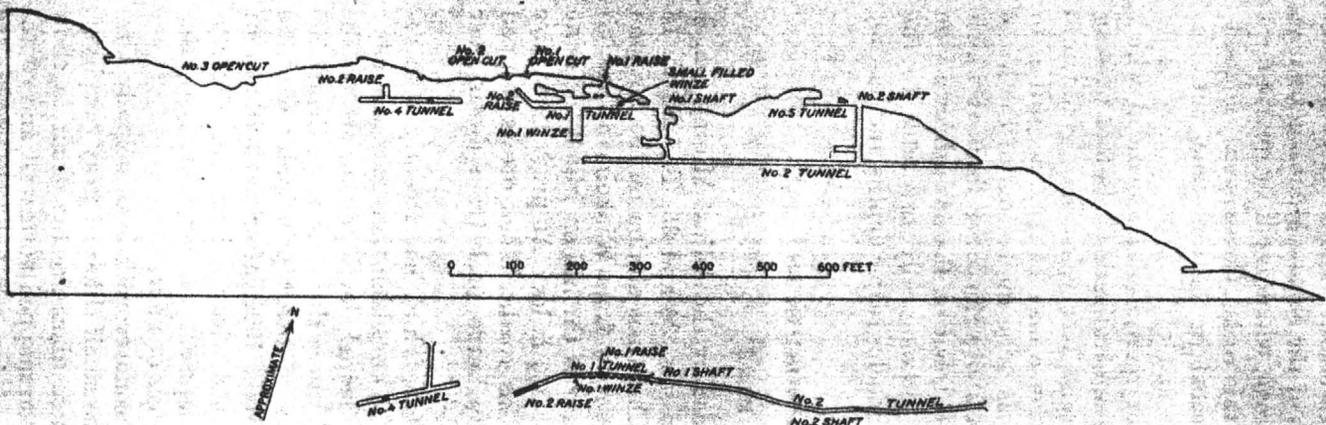


FIGURE 4.—Blue Bird workings of Adjust Mining Co.

the Blue Bird vein, has been developed to any extent. The Blue Bird vein has a proved length of nearly 1,500 feet and may be much longer. Its average strike is about N. 70°-80° E., but there are numerous variations beyond these limits. The dip is to the northwest in some places and to the southeast in others, but in general the vein is nearly vertical. The vein has well-defined and fairly continuous slickensided walls from 3 feet or less to as much as 7 feet apart. Between the walls there is altered and brecciated country rock inter-leaved with bands of vein matter. The amount of mineralization varies notably. There are considerable stretches in which the vein filling is of too low tenor to be regarded as ore, and in few places does ore fill the whole space between the walls. In No. 1 tunnel the well-mineralized part of the vein is 1 to 2 feet wide. In places in No. 1 shaft and parts of No. 2 tunnel the width is as much as 3 feet. Assays show that for a length of 200 feet in No. 2 tunnel ore of sufficiently high tenor to be profitably mined is exposed. This ore shoot is also exposed in No. 1 shaft and tunnel. In addition samples of satisfactory tenor from other parts of the workings have been assayed.

The gangue minerals noted are quartz, barite, and calcite. The sulphides are galena, sphalerite, and pyrite, with small amounts of

copper minerals, probably chalcocite and bornite. The andesite included in the vein is nearly everywhere thoroughly altered and largely replaced by vein minerals. The ore in places is stained with limonite, and the sulphides are partly or completely oxidized. The distribution of such material is irregular, but it appears that oxidized ore rarely extends much over a score of feet below the surface. Much of the ore mined contains about 30 ounces of silver and a small fraction of an ounce of gold to the ton, although ore containing more than 250 ounces of silver to the ton has been found. In 1920 325.11 tons of ore averaging 0.15 ounce of gold and 49.99 ounces of silver to the ton was shipped, and in 1921 298 tons averaging 0.15 ounce of gold and 48.46 ounces of silver to the ton.^a The shipments consisted principally of oxidized ore, more or less hand sorted. The ore which it is planned to develop in the immediate future is principally sulphide material. Tests made by the company's engineers on a composite sample of sulphide ore show that gravity concentration is hindered by the abundant barite, but flotation gives satisfactory results. To determine the distribution of the gold and silver, separate concentrates of the lead, iron, zinc, and slimes were made. It was found that the concentrates containing large proportions of lead, iron, and slime contained two or three times as much silver and gold as those high in zinc, but that the zinc concentrates contained too much silver to be discarded. These tests appear to indicate that most of the precious metals are associated with the galena and pyrite, but that some are too closely associated with the sphalerite to be separated by the methods of concentration used.

SADDLE MOUNTAIN GROUP.

Location.—The claims of the Saddle Mountain group lie north of Old Mill, on the ridge between Ash Creek and Deer Creek, southeast of the Adjust Mining Co.'s property.

History.—In 1900 the Saddle Mountain Mining Co. was organized by G. B. Chitenden, and a portable concentrating mill was erected on Ash Creek at the site of an arrastre put up by previous prospectors. The ruins of this mill still remain and the place is known as Old Mill. A little over \$120 a ton was paid by a smelter in El Paso for the first two carloads of concentrates derived from oxidized ore shipped. The ore concentrated assayed about 12 ounces in silver and \$1.50 in gold to the ton. A third car of concentrated sulphide ore was shipped. The concentrate in this car was found to average only about \$30 a ton, although the ore treated was about as rich as that from the oxidized zone previously concentrated. This result

^a Data furnished by Adjust Mining Co. from smelter returns.

^b Heron, C. M., letter dated July 12, 1922.

led Mr. Chittenden to believe that a smelter near by was needed in order to treat the Saddle Mountain Co.'s ore successfully, and he consequently took steps to obtain what is now the Christmas mine, where there were two small blast furnaces. (See p. 53.)

After this mine was acquired the company appears to have done more work there than at its original property near Ash Creek. The Gila Copper Sulphide Co. was organized in 1909 and took over the property of the Saddle Mountain Mining Co. at both places. Work has continued intermittently on the original Saddle Mountain group up to the present time, much of it being done by lessees. Ore has been shipped from time to time, but records of the amounts are not available. In 1922 the deposits of this group and an adjoining one were being worked under lease by O. L. Orem and T. S. Sanford. In the spring they did most of their work on the claims on the north side of the ridge above Deer Creek. In July they found and mined ore on the south side above Little Gold Gulch. Most of the ore mined by them is oxidized material.

Property.—The Saddle Mountain group comprises 15 patented claims and one unpatented claim developed by a number of short tunnels, shafts, and pits. Workings are reported to aggregate 3,450 feet.* These are scattered over the property, with no more than a few hundred feet of workings at any one place, and a considerable part of them are now inaccessible.

Character of the deposits.—The country rock at the property consists principally of Cretaceous andesite and andesitic breccia cut by a long dike of quartz-mica diorite and smaller masses of the same rock, offshoots of another large dike a little farther south. The long dike has an exposed length of over three-quarters of a mile, extending somewhat beyond the borders of the group, and a maximum width of outcrop of over 30 feet. The average strike is N. 50° E, and the dip is variable but steep. Indistinct stratification in the andesite on the south slope of Deer Creek indicates that it lies nearly horizontal. A line of exposures which may be parts of a single vein extend northeastward from the streamway in Little Gold Gulch through the saddle east of mineral monument No. 2180 down to Deer Creek just upstream from bench mark 2215. The vein in most places appears to be on the northwest side of the long quartz-mica diorite dike and roughly parallel to it, but in the saddle the dike itself is mineralized. The vein ranges in width from 2½ to 5 feet, and the wall rock is mineralized for several feet beyond these limits. The average strike is about N, 50° E. The dip ranges from 60° to 90° and is toward the northwest in some places and the southeast in others.

About 3,000 feet east of the saddle, at an altitude of 2,700 feet on the south slope of the Deer Creek valley, another vein is exposed in a 90-foot tunnel and open cuts. This vein is called the Big Rock vein, from the claim in which the principal workings are situated. It is 2 or 3 feet wide, strikes nearly east, and dips 70°-85° S. (See Pl. XI, A.) The wall rock shows some alteration but little mineralization.

The two veins are of similar type. They have fairly well defined walls, in places with slickensides. Thin layers of gouge are present on parts of the walls. The unoxidized parts of the veins are made up of quartz, barite, calcite, galena, sphalerite, pyrite, chalcopyrite, and altered andesite or, in places, quartz-mica diorite. In many places banding is the dominant feature of the vein structure, but elsewhere the vein is a heterogeneous mixture of fragments composed of vein minerals and altered country rock. The wall rock in most exposures is mineralized for a few inches to several feet beyond the vein. The alteration consists in the development of chlorite, sericite, carbonate, quartz, and pyrite. Most of the pyrite noted is disseminated in small crystals in the wall rock. There are small patches of more massive pyrite in the veins in places, principally near the walls. Oxidation in these deposits is irregular and appears to extend only to shallow depths. The oxidized minerals are limonite and kindred iron oxides, anglesite, cerussite, gypsum, and small amounts of chrysocolla. Nearly all the oxidized material contains residual galena and sphalerite, but little pyrite remains in it. Gypsum occurs as flakes on tunnel walls, in small masses in the vein matter, and also as distinct veinlets, an eighth of an inch or less in width. In some specimens there are numerous veinlets of gypsum approximately parallel to one another and to the banding of the original vein matter.

There are workings on both sides of Little Gold Gulch at short distances above the streamway, at about the 2,550-foot contour. On the west side is a shaft on a vein in bleached and fractured gray andesite on slips that strike about N, 80° E, and dip 75° N. On the east side of the gulch is a 75-foot tunnel in similar rock. Various slips of widely variable strike and dip are exposed in it, with narrow seams of pulverulent white gypsum on them.

Much of the rock on the east side of Little Gold Gulch north of the large dike of quartz-mica diorite that crosses it is nearly black massive basalt. This is thought to belong to the Cretaceous flow, but its relations to other rocks are not clear, and it may be of intrusive origin. In Little Gold Gulch this rock contains rather sparsely disseminated pyrite, and in the upper part of the gulch above the 2,500-foot contour there are outcrops of similar rock

* Weid, W. H., Mines Handbook, vol. 15, p. 275, 1922.

reticulated with stringers of ribbon-banded quartz. On the upper slopes to the east the rock has a rusty color and is cut by a number of narrow shear zones containing some quartz and stained with limonite. There are a number of prospect pits here, and the shear zones are reported to contain gold. Several of the zones are offset by small faults. It is reported that one of them is cut by a small andesitic dike similar in appearance to those which cut the ore in the Christmas mine.

LITTLE TREASURE MINE

Location.—The Little Treasure mine is in the SE. $\frac{1}{4}$ sec. 35, T. 4 S., R. 16 E., and the NE. $\frac{1}{4}$ sec. 2, T. 5 S., R. 16 E. The property covers much of the northeast end of a mountain on the south side of Deer Creek and is about 9 miles by road from Winkelman and 3 miles by trail from Christmas station on the Arizona Eastern Railroad.

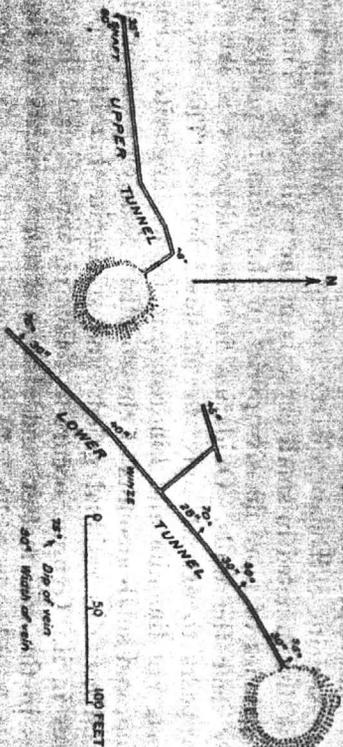


FIGURE 5.—Plan of principal workings at Little Treasure mine.

History.—The claims were located by N. H. Mallor, of Winkelman, about 1901 and have been controlled by him since then. He built the road from Dudleyville south of Winkelman past this property to the coal prospects in Reed Basin in 1904 at a cost of \$3,000 and has kept it in repair as far as his mine. A few carloads of ore have been shipped.

Property.—The property comprises six unpatented claims. The principal workings are on the southeast side of the mountain, at an altitude of about 2,700 feet. They consist of two tunnels roughly 240 and 150 feet long with a shaft about 55 feet deep connecting with the upper and shorter tunnel at its face. In the lower tunnel there is a winze and short crosscut. (See fig. 5.) There are other small workings on the property, but recent work has been restricted to those described.

*Mallor, N. H., personal communication.

Character of the deposits.—The country rock of the tunnels is a massive black basalt. This rock is doubtless of Cretaceous age and is thought to be of effusive origin. In the valley to the south a large dike of quartz-mica diorite which extends east from the Two Queens mine fingers out in a group of narrow dikes, of which the larger ones are shown somewhat diagrammatically on Plate I.

The vein developed by the lower tunnel in the Little Treasure mine has an average strike of N. 30° E., dips 55°–75° NW., and has a width of 30 to 40 inches of brecciated and altered rock between fairly definite walls, of which the hanging wall is the more pronounced. The part of the vein that is thoroughly mineralized has a width of less than a foot. A small amount of sulphide is contained in the oxidized ore exposed at the mouth of the tunnel, and the proportion of sulphide increases until at about the position of the winze there is almost no visible oxidation. Another vein exposed by the crosscut to the northwest strikes about N. 70° E., dips nearly vertically, is 15 inches wide, and contains unoxidized sulphide ore.

The vein in the upper tunnel has an average strike of about N. 75° E., with considerable variation. The dip ranges from nearly vertical at the mouth of the tunnel to about 80° S. near the face. The width of vein breccia exposed is 3 to 4 feet; the walls are somewhat less well defined than those in the lower tunnel. The ore near the tunnel mouth and in the upper part of the shaft is oxidized, but at the bottom of the shaft there is some unoxidized sulphide. The vein structure is similar to that of the Big Rock vein and others of that type on the Saddle Mountain, Adjust, and neighboring properties. The hypogene minerals found are quartz, barite, calcite, galena, sphalerite, and pyrite. Oxidation was noted only near the mouths of the two tunnels and the upper part of the shaft, and even in these places it is far from complete. Specimens of ore from the lower part of the shaft and from the upper tunnel show some evidence of enrichment by descending water. There are small cavities lined with wire silver and black films on galena and sphalerite and black stringers through the gangue which resemble argentic, although the amount in the specimens collected is too small for conclusive tests. Some of the ore contains dark-red grains that are probably pyrrargyrite.

LEE GROUP

J. W. Lee has claims covering most of the irregular area southeast of mineral monument 2180 bordered on the northwest and south by the claims of the Saddle Mountain group and on the northeast by the Little Treasure property. He also has some claims between Pool's mine and the Carmichael group. There are several tunnels, other workings, and trails on these claims, made in the course of

REPORT ON
THE SADDLE MOUNTAIN GROUP OF CLAIMS.

LOCATION-

This group consists of 15 patented mining claims, situated in the Saddle Mountain mining district, Pinal County, Arizona. It is located two miles southeast from the Arizona Eastern Railway at Finney which is 5 miles by rail from the smelter at Hayden. An eight mile road connects the property with Winkelman which is reached by rail from Phoenix or by state and county highways from Tucson and Globe.

HISTORY-

This group of claims was among the first claims located in the district. They have produced considerable high grade ore in the early days. The shipping records are not available and the only evidence we have at present are assays taken while mining on the claims and the tales of old timers of the district.

The entire material from one 60 foot shaft on the Lola claim was packed a mile by burros to Ash Creek and put through a small gravity concentrator. Mr. N. H. Mellor, who was present when this mill was in operation, says the table at times showed considerable quantities of gold, indicating that very rich pockets of gold were taken from this old shaft. A few samples taken from the sides of the shaft and from the old mill tailings showed that only a portion of the gold and silver was removed by this method of extraction and degree of grinding. Mr. Mellor later cyanided one dump on the Philadelphia claim which averaged \$20 per ton in gold and silver. Many small lots of high grade ore have been shipped from the numerous surface ore lenses by lessees in the past and Mr. T. S. Sanford and the writer shipped approximately \$5,000.00 gross ore from such lenses during the past 18 months.

CLIMATE-

As this property is located in the Dripping Spring Range at an elevation of between 2000 and 3000 feet the climate is very mild and out door work can be carried on every month in the year.

GEOLOGY AND ORE DEPOSITS-

The country rock in this district consists of a volcanic complex, composed of a large variety of Andesitic flows, breccias, conglomerates and porphyries cut by later quartz-porphyrines and intrusive masses and dikes of diorite. These surface formations are held by F. L. Ransome, in Professional Paper No. 115, U. S. G. S., to be underlain by Carboniferous limestone at not over 1000 feet depth.

The veins are persistent fault fissures in the andesite. Two, however, lie partly in the quartz-porphyrine and partly as contact fissures between the porphyry and andesite. The veins are numerous and many of them are easily traceable on the surface for several miles. They vary from a few inches to large altered, impregnated masses, 40 to 50 feet in width.

The ores so far exposed are mostly oxidized siliceous ores that carry silver, gold, lead, zinc, iron and copper. Silver and gold constitute the main values and as the silver occurs mainly in the sulphide form, reasonable rates are obtained from the copper smelter at Hayden, who desire the ore for its silica content. The gangue minerals are quartz, calcite, siderite, oxides of iron, gypsum and small amounts of barite. The oxidized zone is shallow, varying from 25 to 50 feet in depth, although a little oxidation is found two hundred feet under the surface in some of the workings in

the district. Below the oxidized zone, some of the oreshoots are composed largely of sulphides of lead, zinc and iron that carry gold and silver. Some of the veins are entirely quartz with disseminated sulphides scattered through them, while others are chiefly altered andesitic material either carrying the sulphides in small lenses through it, or as brecciated pieces, the total forming an ore vein breccia. Some of the veins show post mineral movement.

Accurate ore tests have been run on the sulphide ore of the district. They show that selective flotation gives a very high total recovery, 98% of the gold, 96% of the silver and 92% of the lead being extracted.

Plenty of water could be developed for milling purposes. An old shaft on the Concord (see accompanying Patent Plats) on Deer Creek has furnished plenty of water, even during the driest seasons when all the creeks were dry; Should sufficient milling ore be developed to warrant a large mill, ideal mill sites are available on the Gila River and railroad which could be connected with the property by an aerial tramway an airline distance of one mile with a drop of 600 feet.

ASSAY VALUES, DEVELOPMENT WORK AND POSSIBILITIES.-

Every claim shows numerous small prospect shafts; cuts and tunnels. Only the more important ones will be mentioned here. Nearly all the work was done on the high grade ore lenses by lessees with the limited means and when the high grade ore lenses pinched or were faulted the work stopped.

The Concord claim has one 30 foot tunnel, the face of which samples \$30 in gold and silver across one foot. All along the surface the ore has been stripped from this vein by open cutting. Two shafts that were under water were not sampled. One 150 foot tunnel and 30 foot winze from it show ~~xxxx~~ narrow high grade lenses and 2 to 3 feet of lower grade ore. Another 30 foot shaft on the upper vein showed 6 inches of 60 ounce silver ore in one lense. The three veins on this claim all show narrow lenses of ore that are generally very high grade. Samples carrying as high as 900 ounces silver have been taken from this claim.

On the Big Rock claim one shaft, 150 feet deep but open only to the 60 foot level, shows 18 inches to 4 feet of ore the full depth. Eighteen inches of this ore was mined from the surface by an open cut, 12 feet deep by 50 feet long, and averaged 20 ounces silver and \$2 gold per ton. A large number of samples were taken during the mining on this claim and some showed the presence of rich gold pockets, but the ore as shipped averaged only \$2 or \$3 gold per ton. Deeper in the shaft the ore contained lead, zinc and iron sulphides that only assayed 6 to 10 ounces silver and \$1 to \$3 gold. A short distance to the east of this shaft a 100 foot tunnel has produced considerable ore 20 years ago and one car of \$33 ore last year. Some of this ore was of very high grade. One width of 8 inches assayed 400 ounces silver and many samples over a foot width assayed from 40 to 100 ounces silver. An incline slip or fault along the vein cut off the ore 15 feet below this tunnel level and two shallow winzes failed to relocate it. This vein averages 4 to 8 feet in width and the bottom workings show 3 to 4 feet of milling ore that will average 10 oz silver and a small amount of gold. A 60 foot crosscut on the hillside below will, if extended 100 feet, intersect this vein 200 feet below the surface under the 150 shaft, or a 700 foot drift along the vein from the ravine east of the present workings, would give 300 or 400 feet depth. Such a tunnel would develop the milling ore in the shaft and explore a long distance of vein that shows numerous surface lenses.

The Pittsburg claim which overlaps the Big Rock shows several good lenses on the surface. The 100-foot shaft contained water and was sampled only near the surface. It showed from 1 to 3 feet of ore assaying 23 oz silver and \$10 gold.

The Trenton claim has one 400 foot tunnel which cuts an ore shoot 75 feet long, assaying 15 oz silver and \$1 gold. It shows much lead, zinc and iron sulphides and is 2 feet wide in the center of the tunnel level and tapers to either end. A winze on this ore lense may open up considerable milling ore as the tunnel seems to have cut near the top of a lense. One 30 foot open cut, 500 feet below this tunnel level, yielded eight tons that averaged slightly under \$100 per ton; values varied from 30 to 168 oz silver and \$7 to \$14 gold. A 200 foot shaft on the summit above the 400 foot tunnel has produced one or two small shipments of very high grade ore. The veins are wider to the northwest and show milling grades of ore over fair widths where sampled on the surface and in small cuts.

On the claims west of the Trenton there are a great many small surface workings. One of the more important of these is a 70 foot shaft, sunk along the foot wall of a 30 to 40 foot vein. On the 70 foot level the vein is crosscutted and a 60 foot drift to the west driven along the hanging wall. Above this lower drift a 20 foot shaft has been sunk from the surface. This vein in these workings shows from 3 to 8 feet of lead, zinc and iron sulphides that carry from 2% to 15% lead, 4½ oz silver and \$1.20 gold per ton. The large altered mass between the hanging and foot wall lenses contains smaller amounts of sulphides disseminated thru it. One 60 foot shaft, 500 feet east of these workings, has from one to three feet of ore assaying from 7 to 18 oz silver and \$1.20 to \$10 gold. The entire material from this shaft was packed to a small concentrator on Ash Creek, one mile below. East of this shaft a long crosscut tunnel has been driven to connect with an 80 foot shaft on a vein 3 to 5 feet in width that has produced several small shipments averaging approximately 60 oz silver and small amounts of gold.

The lower group of claims has many small veins that show fair gold and silver values on the surface but the main vein on which this group is located shows a quartz vein of 3 to 20 feet wide, which has produced several high grade ore shipments from the surface lenses. The Sleeper has one 150 foot shaft which has caved to the 50 foot level. Above this level three cars of ore averaging 23 to 30 oz silver and \$2 to \$3 gold were shipped last year. In places the higher grade ore was 4 feet wide and assayed \$40 in gold and silver. The ore was soft and was mined almost entirely by picks with an occasional light blast in the harder ribs. On the side of this higher grade ore occurs one to three feet of lower grade material assaying from 9 to 18 oz silver. The shaft and tunnel on the Philadelphia claim show 18 inches of 18 oz silver ore, smaller widths of higher grade ore and several feet of lower grade sulphide.

Many of the veins on this property offer an opportunity to develop considerable tonnage of milling ore with the additional assurance that such development will result in opening up many high grade ore lenses. There has been developed no deep systematic development work. Each lessee abandoned his workings when it no longer showed a profit from the higher grade lenses. Such lenses are characteristically irregular. The property should be developed on the basis of the milling grade ore. The high grade lenses when encountered would then be velvet. The lessees had insufficient operating capital to work on this basis. The Adjust Mine, adjacent to this property, has shown the ore and values to extend at least 200 feet below the surface in this district. The quartz-dioritic porphyries in this

district can be followed across the Gila River to Christmas and on over towards the 79 mine showing that they cut the carboniferous limestone below the andesitic surface formations. This is important when considering development possibilities with depth, as these porphyries on the above mentioned properties are held to be genetically responsible for the large replacement deposits formed in the carboniferous limestone. The iron pyrite in the deeper workings of the district has been found to carry the highest gold content. Assays of the solid iron sulphide from several of the veins on this property and the Adjust vein, both on the Adjust property and on the Ryan claim, showed values varying from \$35 to \$72 gold and 50 to 172 oz silver per ton. This will become an important factor with deeper mining as the pyrite will be the more persistent mineral with depth. The veins near the surface contain considerable gypsum which has been formed by the action of the surface waters on pyrite, indicating the former presence of considerable pyrite in the original sulphides.

MINING METHODS AND PRODUCTION COSTS.-

The district has produced approximately \$300,000.00 of gross ore up to date, practically all of which has been high grade lenses that have been worked by selective mining and careful hand sorting. The costs by this method vary greatly according to size, width and value of the lenses mined. A milling grade of ore could be mined from most of the veins in this district for a small fraction of the costs of selective mining the higher grade lenses. The vein material is soft and easily and cheaply mined. The ore has been packed to the railroad on burros and has cost an average of \$4 per ton. By constructing an aerial tramway this cost could be reduced to \$0.15 per ton. Freight to the smelter has averaged \$0.40 per ton and the smelting costs \$5.50 per ton.

RECOMMENDATIONS.-

Considerable development work should be done to determine the extent and value of the many surface bodies. While these ore bodies offer many promising opportunities and should be developed, the real need of this property and district is some deep development work. If possible a three compartment shaft, centrally located, vertical, should be equipped and sunk to the 500 foot level, and this large fissure vein system crosscut at this level. Adequate ore and waste pockets should be excavated and the shaft continued to the 1000 foot level and the vein system again explored in the favorable limestone horizon on that level.

Altho this would require considerable expenditure it will prove by far the most economical development program in the end and may place this district well up on the list of Arizona's important producers.

Before such a program is carried out adjoining properties should be tied up under option if possible for such development program, if successful, will increase their value many times.

CONCLUSION.-

This property contains sufficient surface ore bodies of a shipping and milling grade, that under competent management, with a progressive development policy, should produce sufficient ore to at least warrant a small modern plant that will be very profitable to its owners. There are many excellent tunnel sites that make cheap development of those surface ores possible.

The property is readily accessible, being situated close to transportation, smelter and power facilities.

Limestone below the surface and the limestone below the surface
over which the limestone is shown that they are the characteristic
district can be followed across the Gila River to the west and on

There are always definite causes for the deposition and concentration of ore. The chances of developing ore of commercial grade and quantity are determined by certain well defined characteristics. From the experience gained while working on the surface ore bodies of many of the veins of this district, the writer has become impressed with the potential opportunities it offers to open up an important commercial ore body at depth.

It has an extensive and well mineralized network of strong persistent fissure veins that have already produced considerable quantities of high grade ore. It lies in a mining country that is noted for deep-seated mineral deposits, and is underlain by sedimentary formations at moderate depths that have proven some of the most attractive and productive ore horizons of the southwest. It contains igneous intrusions that are responsible for large and important ore bodies in these sedimentary beds in the adjoining districts. The surface and geological indications on this property warrant the assumption that an extensive development program will, with reasonable certainty, develop sufficient ore to bring substantial returns on the investment.

(Signed) C.L.Orem