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

PRINTED: 08/08/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: SILVER BELL GROUP

ALTERNATE NAMES:
PATENTED CLAIM MS 3698

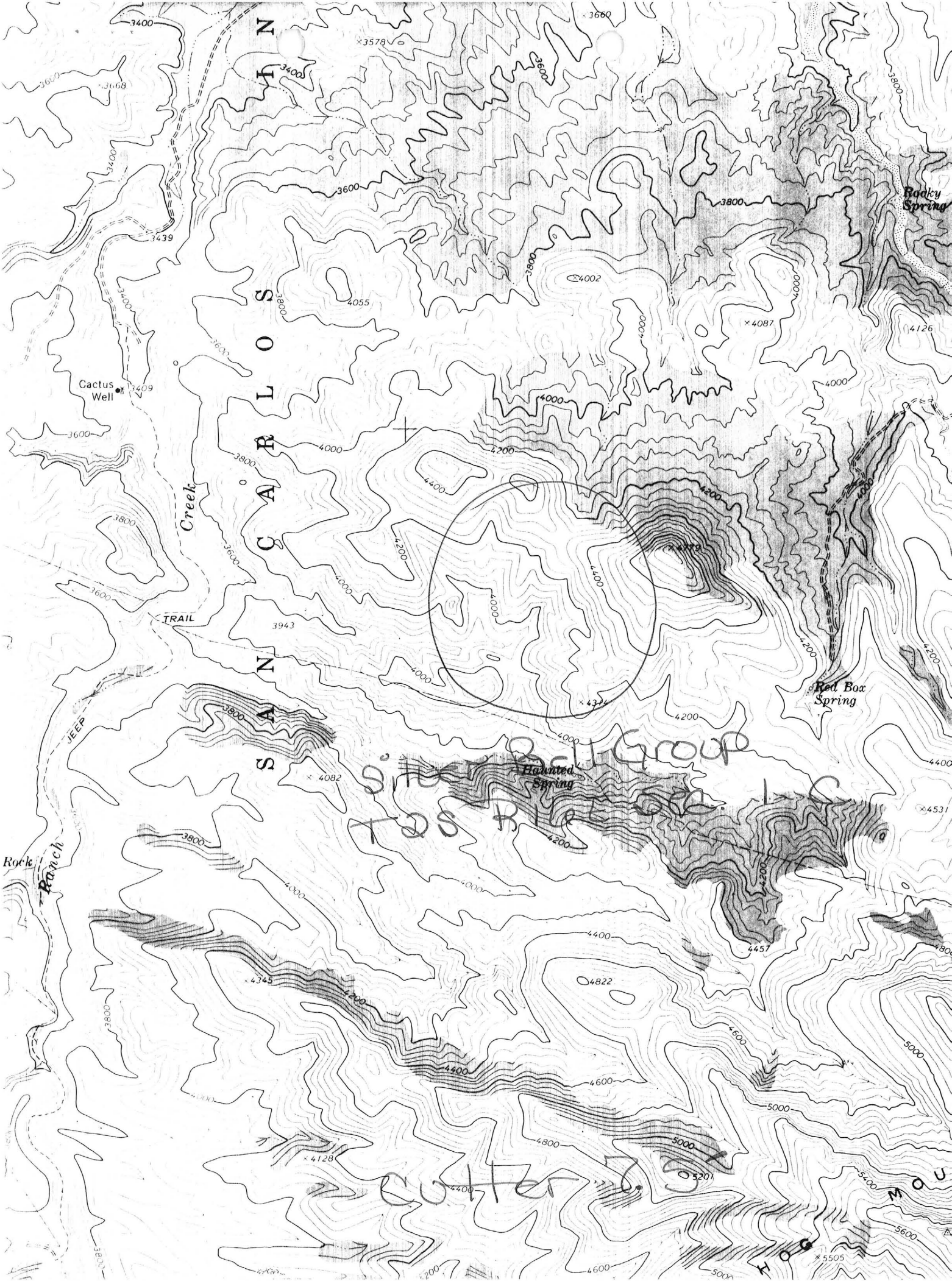
GILA COUNTY MILS NUMBER: 61

LOCATION: TOWNSHIP 2 S RANGE 16 E SECTION 1 QUARTER C
LATITUDE: N 33DEG 17MIN 00SEC LONGITUDE: W 110DEG 39MIN 40SEC
TOPO MAP NAME: CUTTER - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER

BIBLIOGRAPHY:
ADMMR SILVER BELL GROUP FILE
BLM MINING DISTRICT SHEET 698


SANTA CARLOS
Creek
Cactus Well
TRAIL
JEEP
Rock Ranch
Haunted Spring
Red Box Spring
Rocky Spring
HOG MOU
3400
3600
3800
4000
4200
4400
4600
4800
5000
5200
5400
5600
3578
3660
3668
3439
3409
4055
4002
4087
4126
4379
4314
3943
4082
4345
4128
4822
4457
4531
5505
Silver Bell Group
T25S R11E Sec. 1 C
Cutter 76

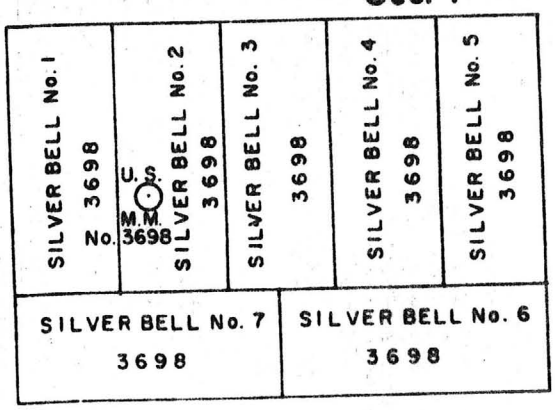
GLOBE DIST.

BLM Mining District
Sheet #698

NE1/4 T2S. R16E.
Globe Dist.

NE 1/4
GLOB

Sec. 1



Sec. 12

SILVER BELL GROUP
T2S R16E Sec. 1

GILA

3698

Copy of Sealed Original

H. W. KITSON
MINING ENGINEER
AND
GEOLOGIST
1209 MILLS BLDG.
EL PASO, TEXAS

T25 R16E
Sec 1

July 23, 1920.

Mr. F. A. Woodward, Gen'l Mgr.,
Iron Cap Copper Company,
Copper Hill, Arizona,

Dear Mr. Woodward:

At your request I made an examination on Sunday July 18th of the Silver Bell group of claims owned by G. W. Shute of Globe, et al, in the San Carlos Reservation, Gila County, Arizona, twelve miles south of Globe.

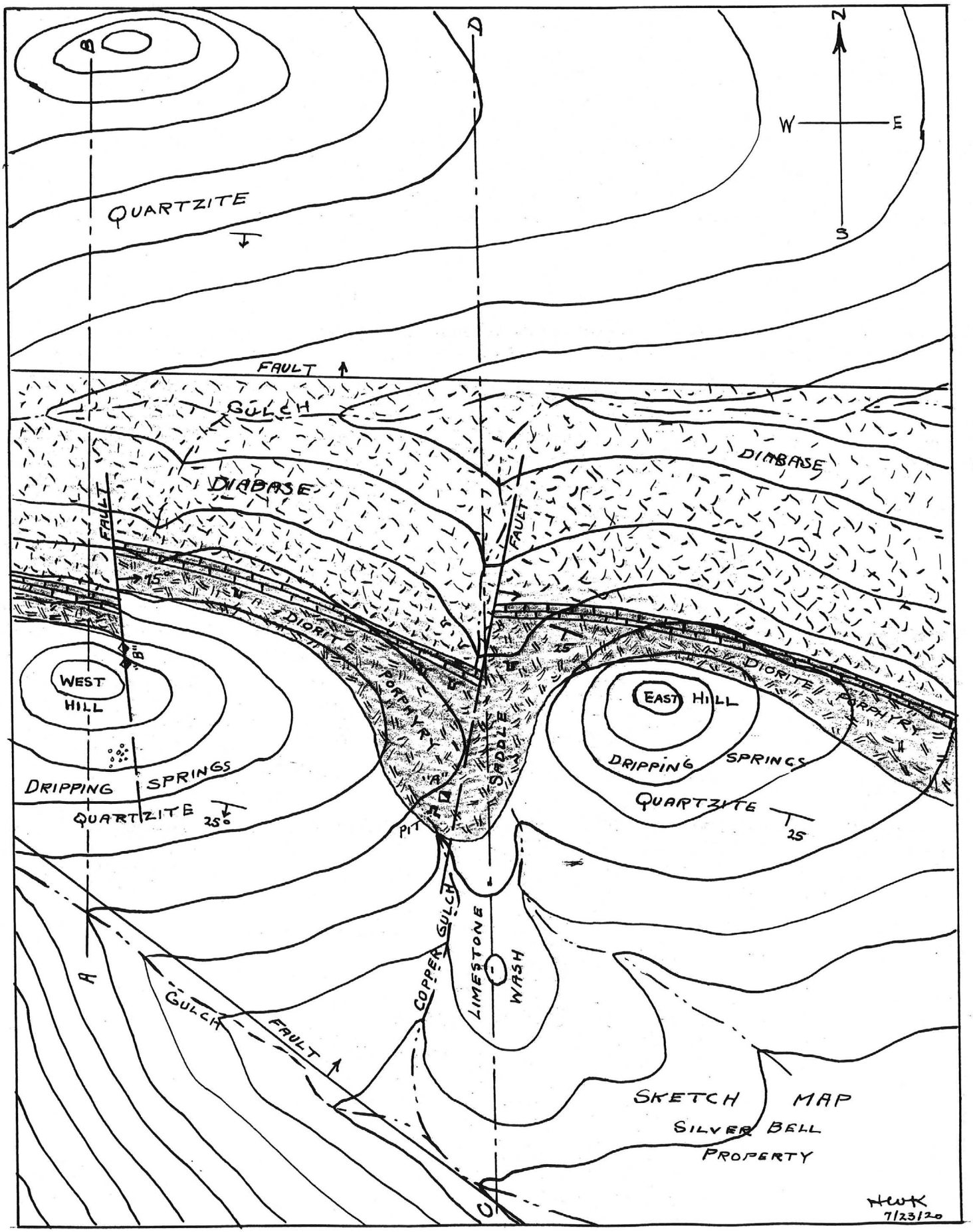
I enclose a sketch map and sections showing the geology and topography of the area examined. The main center of interest lies in the saddle between two hills and it is said considerable rich copper-ore float was at one time sorted and shipped from the wash on the south slope along what I have marked as Copper Gulch on the map. I saw a little of this float ore that had been found recently by digging, but apparently most if not all of the float lying at the surface has been removed. The character of the float is malachite which carries, according to recent assays, from 50 to 58% copper in the form of malachite. No silver or gold is reported. This float is said to occur in boulders from several inches up to a foot or more in diameter which indicates something of the width of the deposit in place; but from the specimens I saw there were no included fragments of gangue rock to give any clue to the character of the enclosing walls. The character of this ore,

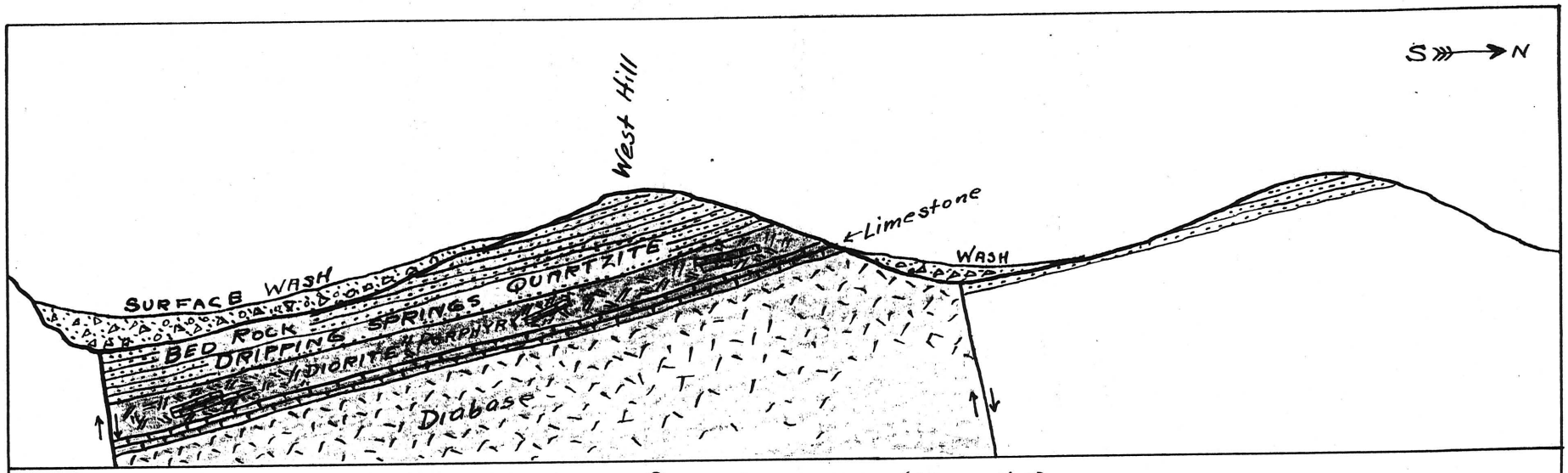
however, suggests a replacement in limestone.

On the south slope of the saddle there is an 18 ft. shaft marked "A" on the map. The shaft is altogether in a quartzite wash. From the bottom of the shaft a hole was drilled down 12 ft. and did not penetrate the full depth of the wash. In drilling, the hole passed through several inches of malachite, probably a boulder of the same character as the float described.

South of the shaft, several yards down the slope, a pit shows decomposed porphyry close to the surface. This rock resembles diabase but probably isa phase of the diorite porphyry to be mentioned subsequently. I did not see any evidence of mineralization in this pit.

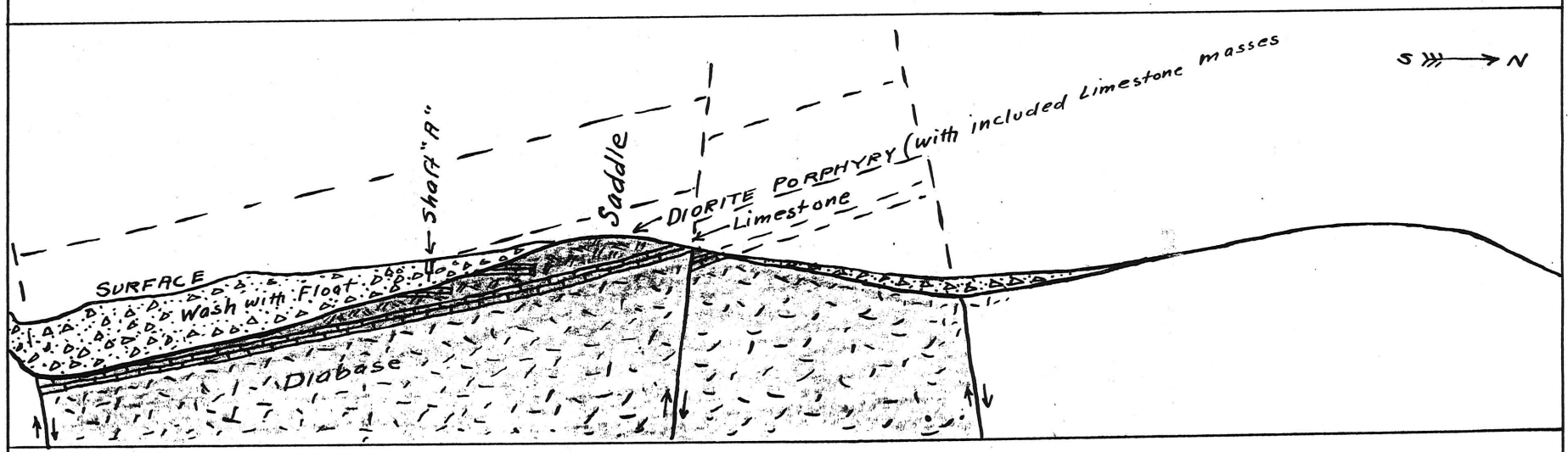
North of the saddle and along the outcrop of the limestone shown on the map are several shallow pits and trenches showing a little copper near the upper contact of the limestone and an overlying sill of porphyry. As can be seen from the pits and elsewhere along the outcrop, the limestone shows metamorphism for several inches below its contact. The effect of this metamorphism is to have altered some of the limestone to epidote and to have developed calcite, garnet, specular hematite and magnetite. With these minerals there is some green copper stain but nowhere exposed along the contact is there enough copper ore in place to correlate the contact as a source of the large boulders of float. The metamorphism was undoubtedly effected by hot mineralizing gases and solutions


B
D
N
W
E
S
QUARTZITE
FAULT
GULCH
DIABASE
DIABASE
FAULT
FAULT
15
DIORITE PORPHYRY
15
DIORITE PORPHYRY
"B"
WEST HILL
EAST HILL
DRIPPING SPRINGS
DRIPPING SPRINGS
QUARTZITE
25
QUARTZITE
25
"A"
PIT
SPRALE
COPPER GULCH
LIMESTONE WASH
A
GULCH
FAULT
C
SKETCH MAP
SILVER BELL
PROPERTY
HWK
7/23/20



SECTION AB (West Hill)

Note possible Limestone masses in Diorite porphyry sill.



SECTION CD (saddle)

Note: float of malachite found in wash on South slope above Limestone.
Restored formations shown by broken Lines.

HCK
7/23/20

eminating from the overlying sill during the process of cooling subsequent to its intrusion as a molten magma. The original copper minerals deposited at the time of the metamorphism were probably sulphides, but no sulphides remain where the contact is exposed, these, if once present, having been altered by oxidizing surface waters to malachite and chrysocolla.

Structurally the area is one of well defined fault blocks of which an east-west system of parallel gravity faults is most prominent. Several north-south faults of the same type are evident but appear to have caused less displacement of the rocks than the former. By this faulting the region has developed a mountainous topography of the monoclinal type in extension of the Mescal Range, the faults marked by gulches and the ridges by gentle dip slopes to the south and relatively steep fault slopes to the north.

Stratigraphically, the formations outcropping in the area, range from the pre-Cambrian granite a mile or more to the north to the upper Paleozoies on the South and the Pioneer Shales, Dripping Springs Quartzites, Mescal Limestones and Troy Quartzites are exposed successively by faulting across the dip. In a range to the south and west the Carboniferous limestones appear and the debris from their erosion has filled the fault valley south of the property leaving hog-backs and low hills of this material by subsequent stream erosion.

The accompanying sections show the rock outcropping at the property on the hill to the west and the saddle between that hill and a lower hill to the south. Both hills are capped with

Troy Quartzite striking S 70 deg. E and dipping from 20 to 30 deg. SW. Below the quartzite is a porphyry sill (possibly the diorite porphyry mapped and described by Ransome on P. P. No. 12 and P. P. No. 115). I could not find any exposures of sufficiently fresh rock to identify this formation but it differed from the diabase and did not resemble the Cambrian basalt I have seen elsewhere, although ti occupies the stratigraphic position of the latter. Provisionally I am calling it diorite porphyry which it resembles in its altered phases. This formation is important as the probable source of the mineralization. The thickness of the sill appears to be from 50 to 100 ft.

Below the diorite porphyry sill and in contact with it without any apparent sheet of the usual basalt is a shell of Mescal Limestone having the same general dip as the Troy Quartzite. This shell is only 10 or 20 ft. thick and probably represents the upper beds of the Mescal formation which elsewhere has a total thickness of from 200 to 250 ft. The contact metamorphism of the limestone and the overlying poyphyry has already been described.

Below the limestone there is a sill of typical diabase the thickness of which I did not determine as it extends to the gulch on the north of the property. The contact of this sill and the overlying limestone is sharp and the limestone shows no evidence of metamorphism from its intrusion.

The outcrop on the saddle as shown by section C-D is probably diorite porphyry but this is covered by a mantle of quartzite debris which as shown in shaft "A" is at least 30 ft. deep on

the south slope. A north-south fault of small displacement crosses the saddle and is evident on the north slope by displacement of the limestone. The gulches on the north and south slopes of the saddle probably indicate its general strike and the shaft at "A" cannot be far from it although bedrock was not yet reached.

A parallel fault of small displacement also occurs across the west hill, and near the summit two shafts marked "B" on the map were put down on the fault fissure to shallow depths. On the dumps of these shafts some copper ore consisting of chrysocolla and malachite is to be seen and I judge it to have a grade of from 10 to 15% copper. The wall rocks at the surface are the Troy Quartzite and the ore is highly siliceous in character. This work was done by Wes Goswick for Judge Shute and he describes the ore as occuring along the hanging wall in a well defined seam. Work was suspended on account of caving of the ground but he states there is considerably more ore in the bottom of the shaft of the character I saw on the dumps. On account of the caving I could not see what was at the bottom but at the top of the shaft where the fault structure is quite plain I could not detect even a trace of mineralization and the breccia was gougy and unconsolidated. As an outcrop of a strong ore body I was not impressed and while there may be some ore in this fissure that which lies on the dump is secondary in origin and representsa superficial concentration in a post-mineral fissure from another source than the vein itself. The outcrop shows none of the usual signs of primary hydrothermal deposition.

On the south slope near the crest of the west hill fine conglomerates and grits occur, and in places these rocks are less vitrified than usual in the Troy members and the former pores have been impregnated with copper salts. This mineralization does not appear important in quantity nor does it correlate with the float found in the draw on the slope below.

Summarizing the evidence described, there are two obvious facts upon which the merits of the property depend. First, there has been a definite mineralization producing copper ore, and second, the primary source of this copper comes from the mineralizing action of the diorite intrusion. A third fact is that the faults crossing the saddle and the west hill cut and displace the diorite porphyry and are therefore subsequent to the primary mineralization. While the limestone would be the formation most favorable to primary deposition and in fact gives ample evidence of this as described, its thickness is not great and its position below the source of mineralizing agencies does not promise the proper degree of opportunity for deposits of more than a few inches or a foot or two in thickness although it has a considerable extent in area. What is possible, however, and of common occurence elsewhere, is that at the time of the diorite porphyry intrusion masses of limestone may have been detached from the contact surface of the limestone and become isolated in themagma of the sill where the greater intensity of miner-

alization could effect replacement of the limestone mass wholly or in great part by copper sulphides. If such masses were exposed by erosion under the wash in the saddle, oxidation of the sulphides would produce malachite in sufficient quantity to account for the float found; and the horizon of such eroded masses would account for the relative position of the float as found in the wash material above the apparent limestone-porphyry contact under the south slope in Copper Gulch. The fact that this float is found higher up than the limestone contact in the immediate vicinity casts a doubt upon the probability that it was derived from that contact. This suggestion is merely one possibility as nowhere did I discover any evidence of the existance of such masses of limestone or replaced limestone outcropping in the diorite porphyry. This does not preclude the possibility, however, that such masses did exist and have been entirely eroded, the float found representing the last remaining portions. Portions of such masses may still exist under the surface mantle rock but only luck or a considerable number of small shafts could find them. The Hardscrabble mine in the Magdalena District, New Mexico, is a typical example of a mass of detached limestone floated and consolidated in a surrounding laccolith of monzonite. The entirely surrounding contact was highly metamorphosed and replacement deposits of lead-zinz-copper sulphides subsequently exposed by erosion and to oxidation produced rich carbonate deposits that were mined profitably for a number of years.

A second possibility and that which seems most likely locally is that at the time of the porphyry intrusion mineralizing

gases and solutions permeated the overlying quartzites through permeable beds, joint cracks and bedding plane channels, depositing sulphides by cooling in contact with the colder rock and reduction of pressure. This type of deposit would tend to produce a disseminated mineralization in the quartzite as well as a more concentrated deposit along the limestone contact below. Subsequent faulting such as described and progressive erosion would in time enable surface waters to penetrate the surface rocks along the old channels of circulation and by leaching the sulphides carry the copper in sulphate solution toward the deeper seated fault fissures where by virtue of the percipitating properties of kaolinitic and limey gouge material malachite and chrysocolla ores would be deposited. This would explain the occurance of oxide ores in the fault fissure on the west hill and suggests the possibility of similar conditions in the fault that crosses the saddle. In either case the amount of deposition would be probably confined to small pockets or shoots in the faults and while the ore so occuring may be rich the promise of a considerable tonnage is limited. Where limestone constitutes the walls of the faults the richest ore might be expected and it would probably be mostly if not altogether malachite. Where the walls are quartzite the copper will consist largely of chrysocolla with more or less malachite and on the whole I would expect lower grade ores. I would not consider the faults to be especially promising where the walls are porphyry or diabase although prospecting along

the vein through porphyry walls may reveal truncated masses of replaced limestone as previously suggested. In brief, one or both of the above possibilities exists as a source of the float ore that occured at the surface.

My conclusions are that it would take considerable work underground to establish the worth of this property by opening up ore in place. The nature of the ore occurence does not promise that the property will ever be anything bigger than would interest a leaser with limited capital. I can conceive of small rich pockets of copper ore being opened up within a couple of hundred feet from the surface or less and on a leasing basis the property might yield enough to make attractive profits for a few individuals but I cannot recommend it as a company enterprise on account of the limited possibilities for tonnage.

From a leasers standpoint I would have a stadia survey made along the limestone porphyry contact as far as it can be traced for a distance of a mile along the north slope of the two hills. From this survey a dip and strike can be established and a contour survey over the surface at the saddle and in the draw south of the shaft would indicate the depth to the top of the limestone. If the shaft appears by survey to be on the line of the fault as nearly as the latter can be approximated I would deepen it through the wash and porphyry to the limestone contact and then cross cut to the fault through the limestone. If the survey indicates too great a depth necessary, a more reasonable depth can be established from the

survey higher up on the saddle along the line of the fault but it should not be too high to enter the limestone too near the surface where thorough leaching may have removed all or most of the copper. I would consider this work more important than work on shaft "B" for the present as it offers promise of richer ore and may throw more light on the nature of the ore occurence.

I enjoyed the visit to the property and the outing it afforded. Mr. Burgess' correlations and geology and his appraisal of the possibilities were quite in accordance with what I found and enabled me to view the situation with greater readiness than otherwise.

Yours truly,

H.W. Kitson