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MORRO MINE Near Swansea

Tom Young called March 30th, 1937 with further information concerning this property which he had recently visited. He states that J. Paul Jones an engineer sampled a dump produced from the old workings which he estimated to contain 15,000 tons and average assay was \$6.05 gold and .75% copper. The workings from which this dump was produced constituted of a lot of old tunnels and high grade ore had been mined from veins and stringers and shipped crude.

There is in particular one vein 30" wide which contains copper carbonate and oxide with some visible gold and Young stated that some of this ore would run 1.8 oz. in gold and better than 30% in copper. He left me a sample.

The new owners have driven a long tunnel 375' on the other side of the hole (probably East side) which they have sampled in sections every five feet and they claim the average to be \$1.40 in gold and 4.58% copper. They have 200' of back above this tunnel and the ore zone has a width of 500'. They claim that this is all material of a similar grade, in which case the tonnage would be included in a block of ground 200 by 500 by 375. Obviously a lot of drilling and other development work would have to be done in order to justify any such estimate.

The Denver Equipment Co. made metallurgical tests on the ore and are said to have recover<sup>ed</sup> 91% of the values by flotation.

*Big Jim*           

MORRO MINE (Interview with Tom G. Young 3/15/37  
(c/o Palo Verde Commercial Co. Blythe, California.

Now consists of 8 claims being part of the old Morro group formerly held by the Swansea Co. but apparently dropped by them about 1925.

The present owners are said to have driven some 5000' of tunnels and put down numerous tests pits. Mine examined by J. Paul Jones, Mining Engineer of L. A. (not a member of the A.I.M.E.) who reported that there were 15000 tons of ore in the dumps and that he could estimate a blocked out tonnage of 2,000,000 with average grade \$6.00 in gold and 2% copper.

May soon be opened for purchase or long time lease.

My recollection of the Morro is that the ore which carried a little gold and copper carbonate only occurs in narrow veins or seams in the limestone and other sediments over the gneiss and conglomerate and that the rock between is practically barren and no large tonnage of ore is likely to have been developed.

Up to 1924 the assessment work which was annually done had failed to find anything of value and in 1922 and '23 we leased the claims to some miners who sorted out and shipped a few tons of ore but soon quit because they could not make wages.

It seems unlikely that the recent development work has changed this situation but it might be worth a casual inspection.

See description of property pages 65\*67 in Bancroft U. S. G. S. Yuma County.

*Lane (Supt at Swansea) confirmed my recollection that these claims are worthless. They were dropped by Swansea Co on his recommendation & nothing of value has since been discovered.*

hematite crystals, which are intimately associated with amphibolite. Pyrite and chalcopyrite are also present. Specimens from the dump show also some black oxide of manganese. An average assay of the deposit as exposed on the 145-foot level, in drift D 2, would perhaps run 2.5 per cent copper.

Evidences of extreme movement are noticeable, great slickensided surfaces and severe contortion having been observed in most of the underground workings. Viewed underground this movement appears more recent than pre-Cambrian.

Gneiss was found in crosscut No. 205, which is located 70 feet S. 70° W. of shaft No. 3 on level No. 2 and driven in a southeasterly direction, and amphibole was noted in drift No. 203, which is located 150 feet N. 70° E. of shaft No. 3 and driven in a northwesterly direction. This exposes the fault plane or contact of gneiss and the metamorphic series in a remarkably good manner.

As exposed on the surface and in the workings of the Signal mine the ore zone seems to be rather narrow and to be composed almost entirely of specularite, replacing the limestone, with here and there a scattering of chalcopyrite and a very small amount of pyrite. The shear zone, which is so prominent in the workings, is by no means thoroughly mineralized, and there is little probability that it will be found so at depth.

Other ore bodies, similar to those found on the 200-foot level, may be encountered as drifting in a northeast direction progresses. Concentration of ore along slipping planes of the amphibolite was noted in many places, and it is possible that future developments may expose other ore bodies which will prove extensive enough to mine.

#### ORIGIN OF THE ORES.

Doubtless the origin of the Signal ore body may be attributed to the same causes as those that formed the Planet deposits. In the Signal property later faulting and fracturing is evident, and chalcopyrite, pyrite, and hematite have been introduced in small quantities into the crushed zones of the country rock and in small cross fissures in the gangue and ore.

#### MORO PROPERTY.

#### RELATIONSHIPS AND LOCATION.

The property of this name is one of the group owned by the Clara Consolidated Company and its general geologic relationships and similarity of ore deposits are quite analogous to those of the Clara situated only 2 miles northeast. The workings of the Moro are situated in a small oblong hill about one-fourth of a mile wide and three-fourths of a mile long, the base of which is along a rising

contact between underlying pre-Cambrian granite gneiss and overlying probably Tertiary sandstone and volcanic tuff. Moro No. 1 tunnel is some  $2\frac{1}{2}$  miles southeast of Signal shaft No. 1 and 2 miles a little east of south of Clara Peak. This adit is on the southeast side of the small hill, and is at an altitude of about 1,650 feet.

No. 2 tunnel is a short distance farther up the hill at an elevation of 1,700 feet, and this, as are the others, is located near the contact of the gneiss with the tuff.

No. 3 tunnel is on the west side just below the northwest end of the hill at an elevation of 1,750 feet.

*Development.*—In April, 1909, the following development work had been done on the Moro group:

Moro No. 1. Adit about 200 feet long and a very short crosscut on a small transverse fissure cutting across the adit.

Moro No. 2. Inclined shaft 50 feet deep, dipping  $20^{\circ}$  SE.

Moro No. 3. Adit 200 feet long with drifts at right angles to end, one 20 and the other 50 feet long.

No production from the property is known.

#### GEOLOGY.

As already stated, these deposits occur near the contact of granite gneiss and beds of tuff and sandstone. The relation between the two is unconformable, and they are separated by wide geologic epochs, the gneiss being pre-Cambrian and the sediments no doubt being late Tertiary or Quaternary. Between Moro No. 2 and the divide near the top of the hill, a thin band of probably pre-Cambrian limestone was observed, which is analogous to the covering of limestone on top of the granite gneiss back of the Signal office. At the Moro workings the plane of the eroded surface of gneiss dips southeast, but this dip is only local and was caused by former drainage. At an elevation of 1,900 feet, at the base of the sedimentary series which forms Clara Peak, another band of limestone (probably pre-Cambrian also) was seen overlying the granite gneiss.

#### ORE DEPOSITS.

The ore occurs above the gneiss in and above the conglomerate which marks the base of the tuff and the sandstone sediments. Scant deposits of the silicate and carbonate of copper, with here and there a little leaf gold, have been made along the joints and small fissures in the sediments. Calcite is abundant in the openings in the rocks and quartz is present in small quantities. A little copper glance was noted in Moro No. 2 and besides the calcite some gypsum. Specularite was not seen, although the red oxide of iron (hematite) is present in many places. The deposits are small, and mineralization is limited.

## CLARA PROSPECTS.

The Clara deposits are very similar to the Moro deposits. They are located 2 miles southeast of Clara Peak at an elevation of about 1,450 feet, just west of one of the main washes in the vicinity draining into Williams River. A section from Clara workings to Clara Peak and thence to the limestone hills south of Signal office is given in figure 12. The workings consist of a short adit tunnel at an elevation of 1,450 feet, a shaft some 90 feet deep at an elevation of 1,475 feet, and an adit about 100 feet long with a 10-foot winze at the end, located at an elevation of about 1,500 feet. These developments are all located within a short distance of each other on the east side of a hill about 1 mile wide and two-thirds of a mile long, near the contact of volcanic tuff and sandstone with the older underlying granite gneiss. The first opening shows several parallel joints which form small fissures running north-south and dipping about  $80^{\circ}$  W., with little or no mineralization. The shaft passes through 20 feet of sedimentaries, dipping slightly northeast, and the remaining 70 or 80 feet is in hard granite gneiss showing no mineralization whatever.

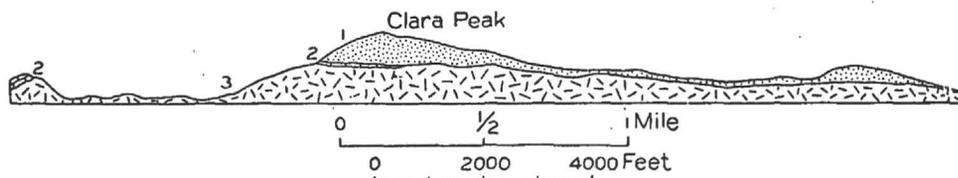


FIGURE 12.—Ideal section from Clara workings to Clara Peak and thence to the limestone hills just south of the Signal office. 1, Volcanic ash and sandstone; 2, pre-Cambrian limestone; 3, gneiss.

The third opening is practically on the contact between the two formations and shows jasper with a little silicate of copper, some minute particles of chalcocite, and iron stains fairly prominent at the breast of the adit. Specularite was not observed in the workings. Here the sediments dip  $15^{\circ}$  SW. Leaf gold has been reported from these properties; none was in evidence, however, at the time of the writer's visit.

Probably both the Moro and the Clara deposits have resulted from a secondary deposition of material derived from the older underlying rocks which contain the hematite-copper deposits worked in the Signal mine and elsewhere.

## DEPOSITS ALONG COLORADO RIVER.

The deposits which are to be described under this heading are more or less scattered and are not of one type, although some similarity exists in the geological sections of the different localities. Of these properties three are on the California and four are on the Arizona side of the Colorado.