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ITEM 35

REPORT OF PRELIMINARY EXAMINATION OF COPPER QUEEN AND JOHN BULL GROUPS, Near Luning, Nevada.

LOCATION:- The Copper Queen and John Bull groups of mining claims, also known as the Fermina group, are situated in the Santa Fe Mining District, ~~Esmeralda~~ mineral County, Nevada, some six miles east of the town of Luning on the Tonopah branch of the Southern Pacific Railroad. The group con-

CLAIMS sists of some sixty odd claims located upon the south-

ELEVATION western front of an extremely rough range, at an elevation of from two thousand feet at the northwest end, to three thousand feet at the southeastern end above the valley in

ORE OCCURRENCE which Luning is situated. Mineralization with copper min-

HISTORY erals has taken place along the contact of an intrusion of monzonite into limestone. For the past twenty years mining operations have been intermittently carried on, in a small way, at various places along the contact on small bunches of high grade oxidized copper ore. Nothing extensive has been done and all the work consists of gouging about at, or close to the surface by leasers until any one bunch was exhausted, or until any further depth necessitated a considerable outlay of money, when they would move on to another. The grade of this ore was very good, ranging from 10% to 30% copper, depending on how closely it was sorted. During the past year the high price of copper has greatly stimulated this work and the leasing has been carried on

more extensively, and at the present time there are some ten leasers working at as many different points along the contact. The ore is hauled to Luning by wagons at a cost of between $1.50 and $2.00 a ton and shipped either to the Western Ore Purchasing Company at Hazen, or directly to the International Smelter at Salt Lake City. Though no definite

PRODUCTION: figure on the amount of ore shipped is available, it probably aggregates a thousand tons or more.

WATER Water is very scarce at this property and leasers upon the northwest end of the group haul their supply out from Luning. However, on the southeast end, on the Emma Claim, there are two small springs which supply sufficient water for domestic purposes at small camps established there and for watering a few head of stock. Under proper development the supply from there could be materially increased.

## GEOLOGY.

GEOLOGICAL FORMATIONS The geology of these claims is quite simple and consists of two formations. The older of these is a coarsely crystalline, pure white to bluish gray limestone. This rock is very pure and massively bedded. It has been greatly disturbed from its original attitude and the strata, complexly folded and distorted, are now inclined at all angles and the whole mass is greatly fractured.

Into this limestone has been intruded a mass of medium grained, light gray monzonite. This work is every-

where fresh and hard and composed chiefly of plagioclase feldspar and biotite with some orthoclase present and a total absence of quartz crystals. The rock as a whole shows no indication of any mineralization by metallic minerals either primary or secondary. Erosion has stripped off considerable of the limestone and the monzonite and limestone are exposed in contact as indicated on the accompanying map.

The igneous intrusion into the limestone resulted in the extensive recrystallization of the latter and in the formation of a rather common contact phenomenon, namely, a garnet rock zone. The contact between the monzonite and limestone, as now exposed, aggregates several miles in length on these claims and practically throughout the length a narrow garnet rock zone has been developed in the limestone. The formation of this zone was also accompanied by silification of the limestone, and wherever the garnet is not found at the contact, the limestone is at least partially silicified into a hard dull gray quartz rock.

## THE OCCURRENCE OF COPPER MINERALS.

Pratically throughout the whole laggth of the contact is found a narrow zone carrying oxidized copper minerals. These minerals occur chiefly as malachite and chrysacolla, with lesser amounts of azurite and occasionally cuprite and melaconite, and rarely small specks of native copper associated with cuprite are found. With one exception on the St. Patrick claim, which will be mentioned later, these minerals occur in a narrow zone on the contact as small veinlets and stringers ramifying in an irregular network through the gar-

net rock or in the quartz silicified limestone, or occasionally in the pure limestone. At a few points stringers of these minerals occur at some distance from the contact in the pure crystalline limestone, but these occurrences are quite the exception. They are not found in the monzonite.

A very common occurrence of the malachite is as flat boitryoidal masses or frequently small geodes of azurite are seen with the hollow centers partially filled with extremely delicate radiating fibrous masses of crystalline malachite showing the action of the water in their deposition. Another occurrence, not so common, is of light green fibrous malachite filling tiny seams with the fibres arranged at right angles to the walls of the seam. This mineral was at first thought to be brochantite, resembling very much specimens of this mineral from other localities. All of these minerals are doubtlessly a replacement of the limestone in part and in part a precipitation and filling in of cavities and factures in it by downward migrating waters carrying the oxidized minerals.

At numerous localized points along the contact, and also away from the contact in the limestone, bunches of this material have been gouged out and by careful sorting a high grade of ore obtained.

These oxidized copper minerals are the only minerals seen over the greater part of the contact. However, in addition to these at a few localities, occurs a low grade sulphide ore carrying chalcopyrite and pyrite sparingly dis-

seminated, and as very tiny stringers in the siliceous limestone and garnet. It is occasionally associated as tiny stringers in the oxidized ore being surrounded by the latter, but more frequently is free from it. This sort of material is not uniform over any distance, but distributed about here and there in bunches. Its general occurrence is confined to the southern end of the group and it was noted in the tunnel on the Emma Claim. Here tiny specks of chalcopyrite are disseminated in the siliceous limestone below a body of oxidized ore worked on the surfance. A sample (No. 4) of this material ran 1.3% copper. Another occurrence, where the sulphide is associated with oxidized ore, is in a small pit on the end lines between the Dandy and the Sally claims. A third is in a short tunnel driven on the garnet rock along the contact on the Dandy claim. Two samples were taken here, Sample No. 1 over a distance of thirty-five feet in the garnet rock gave 1.6% copper. Sample No. 2 is material from shallow winze at the mouth of the tunnel and now full of water. The material was rich in pyrite and gave 0.8% copper. These sulphides are primary mineral and show no evidence of secondary mineral or any enrichment.

One of the striking features of this property is the total absence of, with one exception on the St. Patrick claim, of any leached gossan. The copper minerals everywhere cometto the very surface in rocks which are entirely unaltered and showing no evidence of oxidation. The exception noted on the St. Patrick is the best showing on the property and even that is rather small. Here there is an oxidized

iron cropping some two hundred feet in length and from ten to fifteen feet in width, the croppings being scattered intermittently over this distance. Some irregular open cut workings have been made for twenty feet below the surface on this and below this a fifty foot shaft has been sunk and short drift made. The work reveals the fact that along the contact both the lime and monzonite, for a zone fifty feet in width, have been greatly leached and altered and oxidized. This whole decomposed mass is filled with tiny seams of oxidized copper minerals and below the surface in the drift the oxidized iron mass is spotted here and there with tiny vests of malachite and azurite connected by tiny veinlets of the same minerals. In the bottom of the shaft there is a narrow rich streak, ten inches in width, of soft high grade ore carrying azurite, malachite and brown mela conite. A sample of this streak (Sample #5) gave 19.0% copper. This streak is being worked by leasers at the present time. A sample of the soft, pale bluish green decomposed lime and monzonite forming the footwall of the rich streak, was sampled over at cut of 8' in the drift near the bottom of the shaft (sample #6) and gave 4.3% copper. Sample #7 is a 13' cut of the brown iron oxide in a crosscut in about 25' from the shaft and at a depth of fifty feet. This gave 3.0% copper.

As already stated, this is the best showing on the property. It is possible that at depth below this oxidized zone a body of enriched sulphide ore might be encountered.

However the depth, size and quality of such a body is very problematical. A considerable tonnage of this oxidized ore exists here and there and might justify the expenditure of the money necessary to properly develop it, to be mined and treated by leaching. However it is not believed that anything of any large extent exists and that no mining operations of large scale could be carried on.

As an aid to the forming of a conclusion on this point, conditions in the Calavada Mine, on the adjoining group of claims, indicated as the senior Girouz group on the map, may be cited. On this property the geological conditions are identical with those on the Copper Queen. The surface showing of the Calavada, though similar to the St. Patrick, is very much more extensive and on the whole better. A one thousand foot shaft has been sunk with crosscuts to the contact and about a mile of underground workings. At the greatest depth they are still in the zone of oxidized minerals, occurring in stringers along the contact and as small veinlets and replacements in the limestone at some distance from the contact. Deepening of the shaft will probably be prosecuted in an endeavor to find a body of ore at still greater depth for the oxidized zone is not considered as consisting of a workable mine.

Taking the Copper Queen and John Bull groups as a whole, a cursory glance over the very numerous showings along the contact might lead one to believe that their existence presaged the occurrence of copper in quantity beneath

extent of mineralization in the first place been greater, the concentration product would have been greater, and it would doubtless have paid now to explore the region beneath in search of probably a good enriched zone or even the primary minerals, which even if low grade it would perhaps have paid to mine if occurring in large masses, but so far as conditions now show, it is believed that they point to the conclusion that the exploration of this property would not be fruitful of results and the undertaking of work on this property is not recommended.

(Samples Nos. 3 and 8 were not mentioned in the foregoing. The former is from a pit on the Honduras claim from which ore was shipped and represents some of the better grade of material left in a few small piles. It showed 9.5% Cu. No, 8 is from a fifteen foot shaft, north of the St. Patrick shaft, where a leaser is now working on a small good streak. It is a sample of the unsorted material from the streak ~~of~~ and shows 12% Cu.)

Respectfully submitted,

A. Warner Lawson

June 27, 1916

THE COPPER QUEEN PROPERTY.

The Copper Queen property, consisting of the St. Patrick group of twenty one locations, the Emma group of twenty one locations, the Dandy group of seven locations and the Tobo or John Bull group, is situated in the Santa Fe Mining District, Mineral County, Nevada.

Title to the property is vested in the estate of Fermina Sarrias, now under the administration of J.H. Miller, of Hawthorne, Nevada. The property is nnt patented.

Two springs on the Emma group supply sufficient water for camp and mining uses. The surface bears no timber suitable for fuel or mining purposes.

Roads suitable for truck and team hauling lead from various parts of the property to Luning, the supply and shipping point for the district, a station on the Southern Pacific about seven miles to the southwest.

Sedimentary beds, deposited probably after the Carboniferous period, have been tilted and broken by a granitic intrusion. This intrusion shows principally as monzonite tho in places the original magma has altered to a quartz-diorite. Subsequent intrusions of a porphyritic character have further faulted and broken the sedimentaries and were doubtless responsible in part for the mineralization. Broad ly stated, the ore occurs in an epidotized or garnetized lime along or near the monzonite contacts. At two points however the intrusive is mineralized. Copper occurs as the primary sulphide and in the various forms usually resulting from the oxidization of this mineral. Gold and silver, in small amounts is generally associated with the copper.

The strongest mineral showings are found on either side of a monzonite dike traversing the property in a southeasterly direction, from the St. Patrick group on the northwest thru the Emma Group, to the Dandy, on the southeast. On the St. Patrick this contact is particularly well mineralized and and the mineralization of the intrusive is strong enough to make it a commercial ore. The surface ores have been leached to such an extent that very little, if any, of the primary sulphide is discernible. The monzonite here forms the apparent foot wall of the deposit. The surfact of the line on the hanging wall is covered by a heavy gossan. At a depth of fifty feet a cross cut from the shaft, under this gossan, has opened twelve feet of iron ore carrying commercial values in copper, gold and silver. The face of the cross cut is still in this material. A lease on this section is now producing about three tons of five per cent copper ore per day. This tonnage could be readily increased by the installation of a small hoist or by driving a short cross cut tunnel. On the Emma and Sally lodes these contacts have been exploredd by adits and surface cuts and trenches. The deposits are large and well defined and considerable tonnage of low grade has been developed. Aside from this ore small tonnages of a

"NORTH STAR", "NORTH STAR EXTENSION", "CALIFORNIA", "CALIFORNIA EXTENSION", "TOM MOORE", "TOM MOORE NO. 2", "DENVER", "JUPITER", "JOHN BULL", "TOBO", "CALIFORNIA FRACTION", "JOHN BULL NO. I", "JOHN BULL NO. 2", "JOHN BULL EXTENSION", "TEACUP", "TEACUP EXTENSION", "TOBO FRACTION", "COUPRITE" and "NEVADA" mining claims, all of which said lode mining claims are more particularly described in the certificate of locations thereof now on file in the county recorder's office of the County of Esmeralda and in the county recorder's office of the County of Mineral,

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interest in and to all those certain lode mining claims located, recorded and known as "WILD ROSE","CAMBRICA EXTENSION", "MAGGIE" "LIZZIE", "CORNUCOPIA", "VALLEY VIEW EXTENSION", "VALLEY VIEW NO. 2", "SALLY EXTENSION", "SALLY", "EMMA", "EMMA EXTENSION", "PROSIPINO", "PROSIPINO NO. I", "VALLEY VIEW NO. 3", "MINERVA", "ABBIE", "ATERNO", "CAMBRIDGE", "BISBEE", "BISBEE NO. I","DIANA" "ST. PATRICK", "WHITE MOUNTAIN", "BLUE LIGHT", "CAMBRICA", "JENNIE NO. I", "SAN BERNARDINO", "GENERAL GRANT", "RED LIGHT", "RED LIGHT EXTENSION", "JENNIE", "ARCHIE", "NELLIE", "VALLEY VIEW", "ASTOR", "HONDURAS", "HONDURAS EXTENSION","COMBINATION", "VALLEY VIEW NO. 4", "MORNING GLORY","DANDY","DANDY EXTENSION"