

REPORT
ON
STANDARD COPPER GROUP

BY
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R E P O R T

THE STANDARD GROUP OF MINES

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LOCATION. The Standard Group of mining claims are located in the Territory of Arizona, in Yuma County, at a point about nine miles easterly from the Colorado River. They are about fourteen miles from Quartzite Post Office, commonly called Tyson's Wells, about twenty-five miles from Ehrenberg on the Colorado River, and midway, via the River, between the Needles on the Atchison, Topeka and Santa Fe, and Yuma on the Southern Pacific Railway.

NUMBER OF CLAIMS. The property consists of fourteen (14) full claims, each 600, by 1500 feet, at the present time unpatented, though sufficient work has been done to secure patents when desired.

GEOLOGY. The properties are located in a small range of mountains, running nearly north and south, and parallel with the River. The formation has not yet been observed carefully enough to fully determine its true position lithologically; it is, however, a bedded or stratified formation, metamorphic at least, if not of true plutonic origin. At the point where the ore exposures occur there has originally occurred a huge, anticlinal fold of such sharp curvature, that the fracturing which ensued rendered it susceptible of erosion which has taken place well down upon either flank, revealing an eruptive mass or cone, having a conchoidal surface, and of unquestionable eruptive origin.

The beds referred to, flanking this central mass, of course dip in opposite directions. The portions which will be referred to herein are those which lie to the south and dip in that

direction. These beds or stratas are from 40 to 60 feet in thickness and of great numbers, breaking away to the south for several miles where one may walk along the crest of the range upon their upturned edges, and calculating their combined thickness, find represented a total of several thousand feet of strata. The dip of these sheets is, of course, greatest in those most nearly approaching the central mass referred to, and resting thereon where they reach an inclination of even 30 degrees from the horizontal. Passing to the south, however, this inclination grows less until some ten miles distant, where the range diminishes, there gaining a position approaching the horizontal.

CHARACTER & OCCURRENCE OF ORE. The ore occurs, embraced wholly, so far as can be observed, by one of the beds referred to, and that the lowermost exposed, where it rests upon the central mass referred to. This sheet has an average thickness of about 40 feet and is exposed from point to point, where it disappears beneath the talus on opposite sides of the range for a lineal distance of some 4500 feet. The character of material forming this bed or sheet differs materially, so far as observed, from those resting above, it being ^a highly silicious and feldspathic mass, jointed and fissured in every conceivable direction. It is along these joints, planes and fissures that the metal bearing matter occurs in the form of copper glance and massive bornite, with occasional occurrences of free gold. The mineral streaks filling these fissures vary in thickness from one-sixteenth of an inch to two or three inches, with an occasional stringer of even greater thickness; however, the great percentage of this ore occurs in stringers too minute to in any manner be separated from the parent matter in any way other than by comminution of the whole mass. The matter of deposition has not been observed fully enough, and too little evidence has so far been deduced either by careful and exhaustive examination or by actual

development to unqualifiedly pronounce its methods, yet from the superficial work done in this direction it would appear to be an injection along this plane, evidently being one at that time of least resistance, perhaps an incoherent mass, first silicified, then from cooling and subsequent movement became jointed and fissured, as described, when a second metal laden solution from the same source finding its way along these fractures healed them in the manner shown. That the present superincumbent sheets existed at the time of this deposition there is little question, and that the mineral matter was laid down from the original vapors and solutions, and is in no manner secondary is evidenced by their character. The grade of the mineral is high, a pure concentrate free from all foreign matter, will average about 7 1/2 ounces gold, from 60 to 70 per cent copper and from 100 to 300 ounces in silver. It is probable that the central mass, referred to, embodies the seat of this mineral occurrence, and that this sheet referred to is ^{mineralized} after the manner of a laccolitic intercalation, though so far as observed no similar feature has been detected in the formation dipping to the north.

VOLUME OF ORE AND METHOD OF TREATMENT, ETC. In the ore exposures made there may be conservatively and safely measured a volume of not ^{less than} ~~less than~~ three million tons; its grade is low, of course, but from the tonnage of material excavated, it is believed that there is an average of 2 1/2 per cent of mineral or thereabouts, involving a milling proposition of about 40 tons into one, and the production of a concentrate having a value of from \$300.00 to \$400.00. The observations made, were the extraction of the mineral from the total amount of material taken from a given tunnel, not by grinding and concentrating, but simply by cobbing or sorting. It will be readily understood from the descriptions hereinbefore given of the mineral occurrences that a very great percentage of the mineral could not be obtained by this method, it occurring in too minute quantities for such an operation, consequently, the deductions made must

necessarily fall far short of the practical results obtained through a proper reduction and separation. The following are two examples of such enquiries:

EXHIBIT NO. 1. A tunnel 7 feet by 4 feet six inches by 15 feet in length, produced 483 cubic feet of material, gross, or 37 tons, equalling 74,000 pounds. Ore extracted from this quantity of material amounted to 1700 pounds, or $2 \frac{3}{10}$ per cent of the whole.

EXHIBIT NO. 2. A tunnel 4 feet six inches by 6 feet 6 inches by 15 feet in length, produced 439 cubic feet of material, gross, or 34 tons, equalling 68,000 pounds. Ore extracted from this quantity of material amounted to 1200 pounds or $1 \frac{7}{10}$ per cent of the whole.

It will be understood that this ore as extracted cannot be of as high a grade as a concentrate well made from the fact that no matter how cleanly it was sorted, more or less foreign matter must cling to it, yet at the same time it is equally evident that a large percentage remained in the waste, as before stated, the occurrence being in such minute form as to render it impossible of recovery by this process. This volume I believe to be nearly, if not quite, equal to the amount recovered.

The method of operating this property finally and fully will require much consideration.

The distance from the property to the Colorado River, as stated, is about nine miles. This is over an easy supported grade, the total elevation of the property above the river not exceeding 1000 feet. The character of the country is such as to render any form of construction desired most inexpensive. There is no timber or fuel on the property or in its immediate vicinity; there is also at present no water developed nearer than two miles; however, the conditions are such as present an opportunity for the most inexpensive operation imaginable.

First, for a limited time, and in the further development of

the property, a mill of limited capacity, at the river, would best serve the purpose and lessen the possibility of error in the construction of a final plant for operation; later the final plant may first be placed at the river, and the gross material transported thence, either by the erection of a tramway or by traction engines operated by one man, and hauling from 75 to 100 tons per load.

Second, the mill may be placed at the mine, and a pumping and power station at the river to deliver water at the mine and power for the operation of the mill, thus avoiding the transportation of any materials save supplies and the refined product.

The character of the mill for the treatment of this ore will be that of simple concentration, reducing with steel rolls, screening, hydraulic sizing and separation upon some form of table of large capacity such as the "Wilfley", "Cannet" or others, the ore being of a character that renders it ideal for concentration.

LABOR, FUEL, TRANSPORTATION, ETC. At the river, fuel (Mesquite and Iron wood), well-known for their steam qualities, may be obtained for not to exceed \$2.00 per cord in large quantities. The price paid by River steamers being \$1.75. Water, of course, is abundant as the Colorado River, a stream navigable for steamers and barges of 150 tons each, for a distance of 200 miles above this point.

Unskilled labor, by Mexicans and Indians, is obtainable at from \$1.00 per day for Indians to \$1.75 per day for Mexicans. As stated, the Colorado River is navigable for boats of large capacity at all seasons of the year, the result of which is, that the business of the Company operating this property may be transferred with equal convenience to either of the two trans-continental lines of railway, hereinbefore referred to, thus bringing them into direct competition with each other, and providing in the operation of this property the utmost benefits in the way of transportation.

MINE TIMBERS. Very little timber will be required in the operation of this property. As represented, it occupies largely the position of a coal vein or seam and may be extracted after the same method upon ~~the~~ pillar and stall or other plans requiring no timber save for the support of the roof of the rooms where same is shaley, which may be removed before drawing the pillars and caving the ground and ~~used~~ for the same purpose elsewhere. Such timbers, however, may be procured at reasonable expense from the forests at Flagstaff, Arizona, on line of A. T. & S. P., or Santa Fe Pacific, as it is called, transported by rail to the Needles or the river crossing then floated down the river to the mine station, thence transported the nine miles referred to.

RIVER FACILITIES. There ~~are~~ at present upon the river, stationed at Yuma, two steamers, each of 150 tons capacity, with barges of the same capacity, anxious for any business of this nature which may present itself. However, they are of old pattern and the Company operating extensively might determine it to be to their advantage to own their own boat, one built upon modern lines and having greater efficiency.

SUMMARY. In view of all the conditions which surround this proposition, and of the nature and value of the material, so far as intelligent enquiry has gone, together with the further evidences presented in the successful operation of ~~xxx~~ properties of a similar character, but of vastly lower grade, in other localities, it would seem there could be no possible question as to the merits of this proposition. It is an established fact that properties are being operated in the United States to-day under conditions, upon the whole, ~~no~~ less favorable than is here presented, ^{and} which contain upon an average less than one-fourth the average values firmly believed to exist in the ores of the Standard group. The ores of the great

Calumet and Hecla property, though averaging $3 \frac{1}{4}$ per cent of native copper, carrying no gold or silver, forms a product ~~even~~ less in value than that contained in the ores of this group, averaging but $2 \frac{1}{2}$ per cent.

Dated —
December 24th 1900 —

A. M. Wells, Esq.

