REPORT
ON
PALACE GROUP MINES
BY
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1905
LOCATION. What is known as the Palace Group of Mining Claims is located on Michigan Hill on the westerly side of Silver Creek at a point about 1 1/2 miles from its junction with north Clear Creek, and is in Lake Mining district, Gilpin County, Colorado.

PROPERTIES. The above mentioned group consists of ten claims; the "Palace", "Pied Piper", "The Two Fifty", "Poor Man", and the "Highlander," which are titled by United States Patent, the remainder consisting of "Palace Number Two", "Chieftan", "Cranaman", and "Minstrel" are unpatented.

PHYSICAL CONDITIONS. The properties are connected by an excellent wagon road with Black Hawk on the Colorado & Southern Railway, a point seven miles distant. Timber and water for all practical purposes is within easy reach of the properties.

In addition to the present methods of transportation it may be stated that the Colorado & Southern Railway are at the present time locating a line from Black Hawk directly up the north fork of Clear Creek to reach the mining camp of Apex, and in several preliminary lines already run one of these makes a wide detour up Silver Creek in obtaining grade, and reaches a point about midway between the mouth of Silver Creek and these groups of properties. Active surveys are now in progress, and everything points to a hasty construction of this branch.

 GEOLOGY. The general formation embracing the properties of these groups is that of the common place and wide spread field of rocks that covers the great area upon the eastern slope of the front range, viz. metamorphic granites presenting a multitude of changes; at this particular point however, being more or less hornblendeic and stratified.

DEVELOPMENT. The development of this property consists of a shaft sunk from the summit of Michigan Hill and upon a vein to a depth of 175 ft. connecting at bottom with a tunnel 625 ft. in length, driven the greater portion of the way upon the same vein presented in shaft mention-
ed. The mouth of this tunnel is started upon still another vein which it follows for a distance of 40 or 50 ft., then cross-cuts irregularly to the left and encounters the vein upon which shaft is sunk.

At a point 300 ft. from the mouth of tunnel, and upon last mentioned vein, there is found the junction of still another vein cutting this at a very acute angle, wherein at a point near the shaft in tunnel this cross vein should occur some 60 or 70 ft. perhaps to the right or in the hanging wall. At a point 25 ft. before reaching shaft the cross-cut has been started in search of this vein which has now reached a length of 50 ft., and near its breast is encountered still another vein whose alignment would pass the shaft at a point close to its opposite side from that of the tunnel.

The intersecting vein referred to forming the acute angle has been driven upon the distance of 50 ft., the breast still being some 250 ft. distant from the point where the cross-cut mentioned will intercept this vein. This constitutes practically the entire development of this property at the present time.

VEN AND ONE. The veins are all fissures in the formation described. Each of them so far as disclosed occupies a nearly vertical position, dipping slightly in a westerly direction. The course of the main vein or that upon which shaft has been sunk and tunnel run, is approximately north 50 degrees east magnetic meridian. The vein described as crossing this at an acute angle has a course some 10 or 15 degrees more westerly, while the vein spoken of as that upon which tunnel was started and projected some 40 or 50 ft. has a course more northerly than that of the so-called main vein. While the vein described as being intercepted in cross cut has a north westerly course.

The main vein and also the one crossing it and for which cross-cut is being run, and practically the only ones upon which any considerable amount of development work has been done are strong, well defined veins somewhat ribbon structure, their filling or matrix being of a silicious character, and at places assuming somewhat the structure of the surrounding formation.
The mineralization of these veins consists of sulphides of iron, pyrite, pyrrhotite, chalcopyrite, and sulphide of lead (galena) occurring in sporadic masses. A considerable occurrence of galena was encountered at about 300 ft. in the tunnel referred to, upon which a stop of limited dimensions has been made. At this point a change occurs in the formation, the dips passing somewhat transversely to the line of tunnel beyond where little or no galena has been found. It is possible that this galena occurrence has passed into this vein through these planes of least resistance from the cross vein which parallels it but a short distance away. But 55 ft. has been driven upon this cross vein from its point of crossing, and has a cross-cut driven to intercept it near end of this tunnel has not yet reached it, and as cross-cut is some 300 ft. distant from the point of intersection of this vein it will be seen that there still remains about 250 ft. of un-opened ground between the breast of drift and a point where cross-cut will intercept it. This ground should be explored to as great an extent as possible amongst the first things undertaken.

The occurrence of iron shows strongest in the shaft which has, as stated, a depth of 175 ft. and in all probability will present a much better showing in the continuation of the tunnel beyond the shaft, although the tunnel from the point of intersecting shaft will gain no additional depth, but will remain constant for some little distance, when the mountain slopes in the opposite direction.

The vein referred to as having been followed for a short distance from its mouth and then departed from, cross-cutting to the vein upon which tunnel is run, has a course which projected, should at a point where cross-cut is being made near end of tunnel, very closely unite with the cross vein for which said cross-cut is being extended. Either of these veins are upon development liable to prove more extensively ore bearing than the one upon which shaft has been sunk and tunnel run.

IMPROVEMENTS. The improvements while all that is necessary in the projection of inquiry work are not of an elaborate or extensive nature, a log cabin of two rooms furnishes sleeping and cooking apartments for
the force so far required, while a blacksmith's shop of suitable dimensions well supplied with the necessary equipments covers the mouth of tunnel. The tunnel and dump are well equipped with track upon which is operated one modern dump car of the Truax pattern.

**Sampling.** No sampling whatever was engaged in at the time of this examination. Extensive samples made from time to time however during the development of this property numbering in all 50 or more, show values ranging in gold, silver, lead and copper from $7 per ton to $50 or more per ton, the average of the ore streak both lead and iron being with reasonably close sorting probably better than $30 per ton. The width of these streaks throughout the ground already opened runs in the iron sulphides as high as 8 inches of solid iron, while in the lead its maximum width is about six inches.

A quite considerable amount of the mineralized portion of these veins is not sufficiently intense for shipping material, and is not of a nature wherein it can be cobbled without great waste; hence when sufficient tonnage shall have been presented through future development, some arrangement should be made for the concentration of this material upon the ground.

Specimen assays taken from this property have shown several hundred dollars per ton in gold values, but such was not to be considered in any estimation in the mine's visible reserve, but was simply favorable evidences of promising results which may follow upon extended development of a property.

**Remarks.**

Before further steps are taken involving any considerable expense in connection with this property, development should be projected considerably beyond the point already attained until which time there is little reasonable necessity for greater outlay along the lines of improvements, and especially none in the matter of providing facilities for the treatment of any of the ores of this property upon the ground. This
is a universal error so frequently committed that no word of advice in this day should be required. So long as values of a commercial nature are being exposed in any property, development should first be continued to the extent wherein a visible and guaranteed product has been obtained which though no further values are ever found, this reserve alone warrants the construction of whatever plant may be agreed upon.

In this matter of further development, it is of course at the present time impracticable opening ground below the tunnel level owing to the volume of water produced through the past extraordinary season, yet above this there is ample territory, vein system, and "backs" to furnish stoping ground for large operation. The projection of the main tunnel past the shaft for a distance of 200 ft. or more should open more or less productive territory throughout. Reachable from this tunnel are at least three other veins of which at the present little is known. The cross-cut near shaft has not yet reached the cross vein referred to, while but 53 ft. of drifting has been done upon this vein from its junction with tunnel. Between the breast of this drift as stated and the coming intersection of cross-cut there exists 250 ft. of ground, the signs for which are favorable of a greater or less production, while the continuation to the southwest will furnish an added amount. The other cross vein already cut by cross-cut shows a mineralization which warrants the belief that it also will contribute something of commercial value. The vein upon which tunnel is opened for the first 30 or 40 ft. in its projection southwesterly should be found in close proximity to the present breast of cross-cut. So little ground has been opened along this vein having any depth, that only an imperfect opinion can be formed as to its nature; if however it has already not made a junction with the vein for which cross-cut is being run, a little further inquiry regarding its whereabouts should be indulged in through the further projection of the cross-cut to at least a distance of 10 or 20 ft. after cutting its objective vein.

So far the development work of this property has been conducted
along rational and apparently economical lines; and in further procedure it is only necessary to continue development for the present along the lines herein setforth to the exclusion of other forms of expenditure.
REPORT NO. 2.

PALACE GROUP OF MINING CLAIMS.

Gilpin County,
Colorado.

Following the report of June 21st, 1905, I have made a second examination of the workings of the Palace properties, and find that since first examination the cross-cut being run from the vein which intersects the shaft to the westerly vein, has been extended some 15 or more feet since first examination, making a total length of about 70 ft. with no intersection with the vein sought, the work in this direction at present abandoned.

In the matter of the lead occurrence, beginning at a point some 75 ft. toward mouth of tunnel from bifurcation along easterly vein, some considerable work has been done below the floor of level since first examination, at which time this lead occurrence had been stoped upon at a point about 50 ft. southerly from junction of veins. The work since done consists of an underhand stope 31 ft. in length of an average depth of about 8 ft., and is directly beneath the stopes referred to.

In this underhand stope there is shown even at a limited depth, a vein of better proportions and more highly defined than in the stope above, although unlike the stope there is less occurrence of the solid lead streak of limited width there shown. The vein in this underhand stope is of an average width of more than two ft. and well defined, with good walls. It is mineralized throughout with lead, zinc, and iron sulphides, the latter sparingly. The whole taken together is however at the present time not more than a concentrating material, and that of somewhat low grade.

The work since done upon this lead occurrence is not of a nature to in any great degree furnish additional information regarding its merits or demerits; being a shallow excavation below the floor of tunnel. The lead in this property in so far as it presents itself is decidedly the most encouraging form of mineralization to
be found, and should have a fair degree of rational inquiry regarding its volume and values below the tunnel level. To this end, it seems advisable in view of what has already been done, to explore the same to a fair extent. And in so doing, there could be no better way than to sink a winze at the immediate bifurcation of the two veins, which by the way is nearly in the center of the lead manifestation. This winze should be sunk to a depth of not less than 50 ft., and as the ore shoot seems to be rising from the floor toward the mouth of the tunnel, should demonstrate its increased volume and percentage of values, provided such was to be found.

In sinking this winze at the point recommended, it will be quite possible to carry both walls of the unified vein with it, and to detect the course of the lead occurrence should it switch to the right and follow the easterly vein beneath the floor. This winze should be about 8 ft. in length along the vein, and as before stated not less than 50 ft. in depth.

The easterly or main vein from its bifurcation while nearly vertical, presents an average dip westerly of some 4 degrees, while the spur or westerly vein dips easterly, or toward the first mentioned vein at angles varying from 5 degrees at the point of bifurcation to 14 degrees at the breast. This condition if maintained, will of course unite the two on their dip at a limited depth.

In the sinking of the winze referred to, little or no expense need be indulged in, other than the actual cost of doing the work. The depth mentioned may be easily attained, or even double that depth with the simple use of a windlass, which with the use of double buckets, will render the handling of any probable volume of water that will present itself, an easy proposition, except possibly in the spring time when surface snows are melting rapidly and forming an uncommon amount of ground water.

In the additional inquiry work hereinbefore referred to and recommended, there is not the slightest occasion for the installa-
tion of a power plant of any kind, manner, or description other than the simple contrivance, a windlass referred to; and even this, should the work be contracted, the contractor in most instances provides for himself.

The ground so far as opened in this property along the veins shows itself to be of a nature easily broken, and the work should be done at a fairly low rate.

The vein matter and its casing or walls in immediate contact with same are in fact so soft and shaley, (as indicated in many places,) that a certain amount of fortification may possibly be necessary in sinking the winze referred to. It will however in all probability require at no point cribbing, and only collars or square sets about 5 ft. apart with lagging where required need be expected.

If the afore mentioned development work is to engaged in, there will be no time more favorable than the present in avoiding the handling of an excess of water, as this is the commencement of the season in which ground water will exist in the most limited quanti-

ties.

Dated
Quinn Cato
Sept 21 1905