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1906
MR -73

The State of Wyoming.

Office of State Geologist,
Cheyenne.

GEOLOGICAL SURVEY OF WYOMING

A REPORT

ON

THE CHARTER OAK-PUZZLER GROUPS.

NEAR

ENCAMPMENT, CARBON COUNTY, WYOMING.

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SITUATION.

The Charter Oak-Puzzler Groups are situated in Sections 23,24, 25 and 26, Township 15 North, Range 85 West, at a point about eight miles northwest of Encampment in southern Carbon County, Wyo.and forty-Two miles south of Walcott Station on the Union Pacific Railroad,the nearest railroad point.

EXTENT AND TITLE.

The Charter Oak Group consists of four claims held under United States patent, as follows:

The Charter Oak Claim.
" Taurus "
" Iroquois "
" Sirius "
" Charter Oak Mill Site.

The unpatented claims, or Puzzler group, consists of ten full claims and two fractions, held by location and discovery under the laws of the United States and the State of Wyoming, as follows:

The Florence Claim.
" Lincoln "
" Terror "
" Torpedo "

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The Cyclone Claim.

" Little Johnny Claim.

" " Joe "

" Tornado "

" Hurricane "

" Puzzler "

" Sirius Fraction.

" Hurricane "

The acreage is, Patented, 84,766 acres
Unpatented, 283.5 "

317.266

OWNERSHIP.

The above groups are held as described by Jos. B. Hassett, Saratoga, Wyoming and worked by the Copper Bar Mining Company under bond and lease.

Geology.

The country rocks in the vicinity of the Charter Oak are principally schistose granite and diorite, the latter being both schistose and massive, and is intrusive into the granite mass.

At this point the trend of the formation is northerly and southerly, varying locally at points at and near the workings, and the dip of these formations is generally towards the east.

The Charter Oak vein is a fissure, formed by fracturing and a number of minor faults having a similar northerly and southerly direction have been found in the present workings.

The Charter Oak vein is a fissure vein, the vein filling being quartz mineralized with iron and copper oxides at the surface and showing high grade copper sulphides associated with the oxidized ores at the present depth of workings. The ore is principally a brown, silicious carbonate of iron, with deposits and spots of iron oxides (hematite and limonite) throughout the vein mass.

The copper minerals show as green and blue carbonates of copper (malachite and azurite) and spots of red oxide of copper. Copper glance is noted in the surface ores and the deeper workings show chalcopyrite and bornite in masses, the full extent of which have not yet been demonstrated.

The "brown ore" of the Charter Oak is a peculiar ore in this district and carries a higher percentage of copper than usual in these oxidized iron ores. It is evidently due to the presence of minute particles of copper glance throughout the ore mass, and in the sulphide ores, this glance is also noted.

OUTCROPS.

The ore outcrops at the Charter Oak shaft and may be traced along the groups by outcrops and various cuts and surface works for a distance of over two miles, being covered by wash and surface soil in many places, but picked up further on, as above.

The width varies at different places in this outcrop, but shows from about fourteen feet wide at the shaft on the surface to nearly one hundred feet wide as indicated by the surface matter at others.

The wide bodies show a series of spurs, bands and stringers of ore, waste and low grade material making up the ore body or mineralized zone, but the present work has all been done on one of these ore streaks or veins of high grade ore, the larger masses being as yet undeveloped.

As may be expected in an outcrop of this character and extent, the wall material and adjacent formations often show a marked difference in appearance and composition and it is therefore not considered necessary to go into the details of this matter, as the present interest centers in the formations at the present workings, which are listed below:

WORKINGS.

The workings at the Charter Oak are as follows:-

Old Workings--	Shaft No. 1	414'	
	Drift from same	300'	
New Workings--	Shaft No.2	40'	
	Shaft No.3	305'	
	Drift #1 from #3	204'	at depth 77'
	Drift #2 " #3	68'	" " 204' N. E. Section.
	Drift #2 " #3	84'	" " 204' S. W. "
	Drift #3 " #3	50'	" " 300' S. W. "
	Tunnel (at Iroquois Claim)	107'	
	Total workings	1573'	

The first shaft or Shaft No. 1 was sunk by Messrs Jones and Williams a number of years ago to a depth of about 90 feet, and this was further sunk to the present depth by The Charter Oak Mines Company, Ltd. from whom Mr. J. B. Hassett purchased the property. This shaft, with the

with the levels run by the latter Company, amounting to 714 feet in all, constituted the development when the present owner took charge, and are useful in many ways both in operating (for air ways) and showing the faulting and other ore conditions encountered.

Shaft No. 2 was the first work sunk by the present owners reaching a depth of 40' and has since been connected with Level No. 1 from Shaft No. 3. This shaft showed a lense of high grade ore with the usual amount of the brown silicious low grade ore with it, the former showing up to three to four feet wide and the latter's width and extent not fully determined.

Shaft No. 2 indicated the real dip of the ore vein at this point, shaft No. 1 having been sunk at an angle across the dip of the vein.

Shaft No. 3 was then sunk at a point midway between Nos. 1 and 2 and sunk to the present depth of 305 feet following the dip of the vein and on the ore, the dip being about 31° for 225' then changed to 45° for the remaining depth, with levels on the ore at the points indicated in the above list of workings.

The ore continued in the shaft, varying in width from two to four feet with more or less low grade material on either side, to a point 288' down, where a fault was encountered and the ore cut off.

Smaller and minor faults were also encountered at points in the shaft and various levels and this present fault shows near the bottom of the old shaft and also shows the ore beneath it at the lower, or No. 3 level.

The ore evidently is below or west of the present shaft and a short crosscut under the inclined shaft to and through the ore will

determine its position and the point to which to extend the shaft, which then should be continued down on the ore, as before.

In a fissure of this sort, such faultings are common and usually of slight importance and do not affect the permanency of the ore, which should be kept in sight in all the workings where it is possible to do so.

The drifts run, as per above list, have been all run on the ore, which shows a width of from one foot up to seven feet of the solid ores and with a low grade ore material associated with the better ores, which have not as yet been fully developed.

TUNNEL. This work has been started where the vein crosses Cali Creek on the Iroquois Claim at a point 2280 feet distant from the No. 3 shaft and is being driven as a development work along the vein to cut this shaft at a vertical depth of 250 feet. It is at present in about 107 feet, the portal etc being substantially timbered and secured from surface caves etc., using 12"X 12" squared timbers. For the present the tunnel is being driven 6 1/2' X 4 1/2', using hand work.

This tunnel, being driven on the vein, will open up a large block of stoping ground, provide a drainage way and save a considerable pumping expense, as well as providing an entrance at the logical site of future reduction plant. As any other work than a development of the outcrops of ore north of the main shaft, this tunnel woud not be justified, but at the present stage of the property it is an important part of the development.

The tunnel has just cut into the ore matter at this writing and shows similar material to that at the shaft, but this has not been opened up its full extent.

No plant has yet been installed at the tunnel, but a tunnel house should be erected at once and provision made for compressor and drill plant.

The present working plant is situated at Shaft No. 3 and is maintained in first class shape and efficiency.

PLANT AND BUILDINGS.

The working plant is as follows:-

2 40 H.P. Boilers,

1 Laidlaw 12"X 12"X 8"X 12" Air Compressor,

1, M.& S.S.Co. 6"X 8" hoist.

Cable, skips, forge, tools and equipment.

The Buildings are:-

1 shaft house, frame, 28'X 44', at shaft No. 3.

1 Cabin, (Boarding house) log, 22'X 22'

1 " (Bunk house) " 20'X 22'

1 " (office) " 16'X 16'

1 " (on mill site) " 18'X 20', annex 10'X 14'

1 " (old shaft house) " 32'X 32' " 16 X 24

The hoisting and plant arrangement is very convenient and no extra space or work is required.

The shaft heads at the western side of the shaft house, proper gallows frame and automatic landing stage being provided for landing and dumping the hoisting skip and the shaft is substantially timbered to a point below the surface, loose material and all being made secure.

The ore and waste is trammed to separate dumps but no attempt was made to measure or value the amount of ore in these dumps.

The cabins and other buildings are all substantial and well constructed, well suited for the purposes of the camp, but a new bunk house will be necessary with a larger force.

THE PUZZLER GROUP.

The situation of this property in relation to the Charter Oak group, its extent and mineralization make it a natural part of the latter group and the two form a valuable property.

The trend of the ores now being explored in the present Charter Oak shaft workings and tunnel is directly into the bodies of ore indicated by the recent work at the Puzzler shaft and open cut, as nearly as can be traced by the outcrops, cuts and holes on the vein between the two points.

An open cut has been made near the top of the "Puzzler Hill" showing a huge ledge of mineralized diorite much leached and altered, with stains of copper carbonates and iron oxides throughout the mass, making a characteristic outcrop of these copper deposits in this district.

A shaft has been sunk at this point to a depth of 72 feet and similar conditions noted therein, with sulphides of copper and iron in addition to the copper carbonates found impregnating the vein matter.

The work to date has merely outlined and indicated the proper course of development for this deposit and shown the extent of the mineralization of this vicinity, as well as the fact that extensive bodies of ore may be expected with depth and development.

The workings on the other claims are surface works and need not be taken up in detail, the property being chiefly valuable, at the present time, for surface and other works and insuring a full and free

operation of the more valuable ground without contest or conflicting claims.

GENERAL CONDITIONS.

There is no more favorable situation in the Encampment District for economical working than that of the Charter Oak, located as it is on the west side of the North Platte River Valley at an altitude of 7500 feet above sea level, with roads, water and timber supply convenient and climate conditions etc. all in its favor.

There is no timber on the group, but it may be had for $4.00 per cord for fuel, and for from $14.00 to $18.00 per M for lumber and shaft timbers etc., delivered at the mine.

Supplies etc. may be had at Saratoga (18 miles) and Encampment (8 miles) stores and warehouses and the roads are open the year round. A prosperous ranch and farming locality in the Platte Valley insures steady supply of all food and feed products.

Under these conditions the property may be developed with less expenditure for things other than the actual mining (which usually form a considerable part of the expense) than in many of the older and more developed districts, where road building, rigorous climate and outside expense made the actual mining work very costly.

The construction of the Saratoga and Encampment railroad from Walcott to Encampment, now under way, will materially reduce the expense of putting machinery, sulpies, fuel etc. on the gound and is an important item to be considered in the development of this property.

FUTURE DEVELOPMENTS.

The Charter Oak-Puzzler properties are considered first class development propositions, suitable for development on a large scale,

and to justify their rapid opening up and equipment in the shortest commercial period for profitable and economic production of ore.

To this end it is recommended that that the present working force (9 men) be at once increased, that development work, especially at the tunnel and shaft be pushed, working at least two shifts per day and preparations made for an active working campaign on the ore.

Such a campaign would develop a great amount of available ore and by the time the transportation question is solved, would be in shape to produce ore steadily for a smelter.

The Charter Oak ores are practically self fluxing ores, containing within themselves the elements required for easy smelting and the other materials are near at hand.

A fifty ton capacity per day smelter, smelting to a copper matte, should be erected at first, partly as an experimental plant, and would pay the expenses of development and operation and point the way for future enlargements and treatment methods.

The Calf Creek site, above referred to is ample for such a plant and affords all necessary facilities, water etc. for convenience and economical operation.

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The Charter Oak Mine is a first class proposition and properly handled and managed should become a commercial producer in a short time.

Respectfully Submitted,

Henry G. Beeler

State Geologist.

Date of Examination
June 18-19-20, 1906.

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