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ITEM 107

-2-

work, building roads, etc.

- Since May, 1902, the Hickey adit level has been systematically developed and the entire property thoroughly and carefully sampled under the immediate charge of R. M. Gepport.

This recent work included no mining.

PAST PRODUCTION: No accurate or connected records are available.

Mr. Geppert examined all the old books of John Chiatovich and found fairly accurate records for 10,600 tons of ore milled, yielding as follows:

The final tails assayed \$2.50 to \$4.00. As Mr. Chiatovich paid a royalty of 10% of the plating values, this item could doubtless be checked up from data in the possession of the company.

The broad statement that the mine has produced about 50,000 tons of ore of \$20.00 per ton gross value, seems reasonable.

and considerable thicknesses of limestone were seen to the S. T.

of the mines. In the neighborhood of the ore-deposits, occur

granites (see Note) and calcareous schists highly metamorphosed
in places, and sometimes approaching a gneissoid structure.

Occasional purer limestones occur. Mearly all of the schists
effervesce strongly (with acid) but show a high percentage of
insoluble matter. The granites and schists often grade insensibly
one into the other without demarkation.

The ore-bodies form a zone of lenticular, quartz masses (partly auriferous) following the general dip of the schists (30° to 40° H. E.). Many granite lenses are seen in the schists, and

NOTE: -The granites are, for the most part, nearly free from dark silicates, and come under the head of binary granites or pognatites.

these quartz and granite lenses resemble in appearance the augen of a gneiss. The quartz lenses frequently overlap one-another, so that the general dip of the ore-zone is somewhat less than the dip of an individual lens. This flatness of the ore-zone may hinder the running of ore through chutes during the progress of mining.

Map 2 shows the geology in section. If the syncline seen to the N. E. of the mines extend to the depth of the ore, the tendency would be to flatten the dip of the ore-zone and bring it nearer to the surface, (This in connection with a possible deepshaft). The complex of above mentioned rocks is intersected by numerous diorite dykes of later origin than the ore-bodies. These dykes vary from an inch to 10 feet, or more, in thickness, and the walls usually show only slight movement. A fault of unknown throw is seen near the extreme Eastern end-of the Hickey adit workings (Maps 5 and 6). This fault dips under the richest oreshoot in the mine (Blocks D' and E'). In Block W, the values are bounded by vertical shattering of the quartz at the Eastern and Western ends of the Block.

The quartz lanses are not uniform in value, foot-wall or hanging-wall positions usually being the richest. Often the greater part of a large quartz body is nearly barren of values. Sometimes small, rich, quartz augen a few inches long occur scattered through the enclosing country rock in sufficient number to render the whole pay-ore for several feet in thickness. The evidence is insufficient to justify an opinion as to the possibility of the ore-bodies becoming more continuous and contiguous in depth.

SAMPLING RESULTS: An important feature is brought out by the sectionalizing of many of Mr. Geppert's samples. For example, a groove-sample 10 to 20 feet long may assay \$4.00 to \$5.00 as a whole; but the sections show a much higher value than this for a few feet and the rest of the groove extremely low-grade or barren

material. For this reason, it appears inexpedient to attempt to mine the entire masses of quartz, even although a large-tonnage basis mean decreased mining and milling costs per ton. The mining of the entire quartz bodies would result in a grade of ore too low to pay in a region where cost-conditions are so disadvantageous as in Silver Reak.

Mr. Horman's sampling, and my own, closely checked that of Mr. Geppert, excepting in Block E', where my wall samples showed lower values than the corresponding breast samples of Mr. Geppert. Such an occasional variation is to be expected in a free-gold ore.

the blocking-out of ore is commercially impossible; and for this reason there is, technically speaking, no ore blocked out in the mine. This applies especially to the surface and upper workings. Here the leasers have eaten out the hearts of the ore-bodies, leaving only the vanishing remnants of ore. These odds and ends are so numerous, however, as to aggregate a considerable amount, and I have made an attempt to estimate their possible tonnage and value.

In the Hickey adit workings, valuable ore-bodies have been developed which are exposed on one or at the most two sides, and are therefore difficult of estimation.

The geological conditions in the lower workings are detailed on Map 6, which should be studied in conjunction with Map 5.

-PROBABLE ORE RESERVES-

				Gross :	Gross :
		: See		Value :	Value :.
•	• • · · · · · · · · · · · · · · · · · ·	: Map No	Tons	Per Ton :	Total :
BLOCK	LOCATION and REMORKS		: CS		\$ 220.:
À	Upper Workings, Two small lenses	: 4	40	7.45	298.:
В	Bunch,		216	16.32	3525.:
C	" Below old Stope		: 473	12.52	5922.:
D .	" " Middle Stope		41	8.46	346.:
E	: Highest " bunch		: 116	14.43	1674.:
F	" Three Bunches		: 84	18.82	1076.:-
G	: Upper " Above old Stope		334	12.96	4328.:
H	· 11 11 11 11		307	8,26	2535.:
T	" Below " "	•		/2.2/	19924.
***************************************	TOTAL, UPPER WORKINGS, As above,-		- 1631	1 20, 201	77
	•	<u>:</u>	-		
			: 306	: 10.83	3315.:
J	: Magazine & Drinkwater Workings	: 5	: 83		The same of the sa
K	. Case Tunnel		: 243	8.62	
T.	" Blacksmith-shop		: 278	11.58	3163.:
H	Drinkwa ter Wkgs. Near Portal		119	13.05	1553.
N	. above Drift		72	: 14.03	1010.
3	" Small Pillar	• •	: 40	8.63	345.
P	W.of Chiatovich Stope			9.19	1066.
C	" W.of No.4 Winze		: 116	The second leaves the second l	11491.
R	" Adjoining 3rd Level	•	: 1065		25001
•	TOTAL MAGAZING and DRINKWATER W	orkings ,-	-2322	: 10.16	2000
*		*			
			articel		:
1	REMARK: -The following Blocks over	erap ru v	mad oo		•
:	projection; hence they a	on Hon 5	TON CD		•
•	horizontal sections only	OU WE'D O	•	•	* *
: 3	: Hickey adit Workings, -Tonnage in	-: 5 0		-	
•	determinate	: 6	: 102	14.31	: 1460.:
T	" Two small lenses		÷ 593		
: U	Moar Brunton's Shaft				
: 7	" Indeterminate		3960	12.35	48906.:
: 17	: " First West Drift		. 0300		
X	" Mixed with Waste, - Va-	ri .	464	8.43	3911.:
•	riable.		:		
Y	: " Indeterminate		: 48		1055.
: Z	Almost Undeveloped		422		
AT	: " Lens	•	18 to to	.,	
B'	" Tonna ge Indeterminat	70:	: 170		
Ç	" Irregular Body	•	: 1630		-
. D*	" High-grade at E. end		: 1420		
हा	" Cut off by dyke on ".	1			The second livery with
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⁽Tonnages based on 12.5 cu. ft. to the ton, as result of numerous density tests).

The mine dumps were not sampled, hence no estimate for them is given. These dumps are scattered and evidently low-grade, and would require shafts and deep cuts to expose their contents for effective sampling. If ever worked, they will doubtless require close sorting to produce a pay-grade of rock. The old mill-tails at Silver Peak were not examined, and may have some value.

FUTURE POSSIBILITIES: In considering the future of a property of this character, large allowance should be made over the probable ore-reserves above enumerated. The most comprehensive view of such a property is to be had by ascertaining the average production per stated depth, e. g., per 100 feet on the dip of the ore-zone. In the Blair Mines, the data of past production are incomplete and uncertain. On the assumption, however, that the mine has produced 50,000 tons of ore with a gross value of \$20.00 per ton. and assuming that this ore represents the production from about 600 feet on the dip of the ors-zone, we find the average production per 100 feet to be about 8.000 tons with a total gross value of \$160,000. These figures agree fairly well with the probable ore-reserves opened up in the Hickey adit Workings, which ore-reserves represent somewhat less than 100 feet on the dip of the ore-zone.

In my opinion, there is a very fair mining chance of this zone persisting to a depth of 400 feet below the Hickey Adit Level and of its producing \$135,000. gross per 100 feet on the dip.

The unknown effect of the fault-plane which dips under the ore in the Third East Drift (before mentioned) should be considered.

MINING and DEVELOP ENT: Systematic exploitation will be difficult owing to the irregularity of the ground. Expensive development will be necessary -possibly as high as \$2.00 per ton of ore milled.

Therever possible, this work should be done by contract, this

system having been found satisfactory in the past.

TRANSPORTATION TO MILL: By waggon-road (9 miles) would cost from \$1.50 to \$2.00 per ton on a basis of 50 to 75 tons per diem. By aerial trem, the cost should approximate 30¢ per ton. An assured reserve of 30,000 to 40,000 tons of ore would justify the erection of a tram.

MILLIEG: The ore exposed is free-milling and admirably adapted to analgamation followed by concentration and cyaniding. Almost the entire value is in gold. Tables 1, 2, 3 & 4 show the results of various tests and mill runs, and fine crushing is seen to give the highest extraction.

A laboratory test on 16 A. T. of 80 mesh ore from Block D' (rejects of samples) gave the following results;

The surplus of 3.6% shown above is accounted for by the difficulty of handling the minute quantities of smalgem and concentrates involved, and does not affect the assays of heads and tails which show an apparent extraction of 97.3%. In actual milling, an extraction of 90% could be expected on this kind of ore. Numerous samples were panned and a very fair idea of the free-milling value was obtained by panning.

The best location for a new mill which I noticed was near the point marked B on Map 1. An aerial tram from A to B would be about four miles long, and there appears to be ample water for a small mill at B. This water contains a considerable percentage of coluble salts, but has proved satisfactory in past milling operations. Tater could also be piped from Silver Peak to the point B if necessary.

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The fuel question is a serious item, as the local supply of wood is extremely limited. Coal occurs about 25 miles N. W. of Silver Peak, but little is known of its quality or amount. The use of gas-engines is worthy of consideration.

A 30 stamp mill owned by the Company is old and very poorly arranged for economical operation.

COSTS	and	PROFITS: 50 to 75 ton basis.	ESTIMATE
		Mining and development work, Transportation to mill, Milling, Euperintendence, Sampling, Assayin	per ton \$4.5030 2.50
		Surveying, etc. Loss in tails, 10% of \$15.00, Total Costs and Losses, Gross Value,	50 1.50 9.30 15.00
		Possible Profits,	\$ 5.70

On an assumed production of 9,000 tons per 100 feet, the possible profits would be about \$50,000 per 100 feet of depth on the dip of the ore-zone. The cost of constructing tramway and plant to be deducted.

SUGGESTICES: The ore in the Hickey adit Workings could be leased without difficulty to several parties in Silver Peak, for much of it would be profitable even with the adverse mining and transportation conditions now in force. Such leasing would result in the gutting of the mine and produce only a small profit for the owners; and the mine appears worthy of an attempt to place it on a systematically paying basis.

On this policy, the ore-bodies now exposed in the

History add a security

an incline should be sunk in the ore-zone for 500 feet below the Adit level, and development work started in depth. There is no lack of places for development on the Adit level; but the Western drifts and cross-cuts have proved so barren that the East locks more attractive. A winze should be sunk below blocks Z and A' (Section 10, Map 6), and also below the important Block W (Section 4, Map 6). The results of this work would dictate further policy.

Before undertaking any operations at the mine, it would be advisable to go thoroughly into the question of securing any additional ground that may be desired. This applies especially to a mill-site and water-right near Silver Peak. and to a site for a possible deep shaft or incline to be used as a permanent working opening for the mine should it prove up well below. The "Western Soldier" outcrop appears to cross both side lines of that claim. Notwithstanding this, ore is said to have been mined on ground palpably belonging to the "Homestake" claim, the mining being done by parties paying royalties to the Blair Company. If this be so, it would certainly appear that the "Homestake" owners have a good case for damages, and it would not be unwise to secure control of the "Homestake." A brief inspection of the "Mary Mine," now being opera ted by John Chiatovich, leads me to believe that this ore also would apex on "Homestake" ground and may be

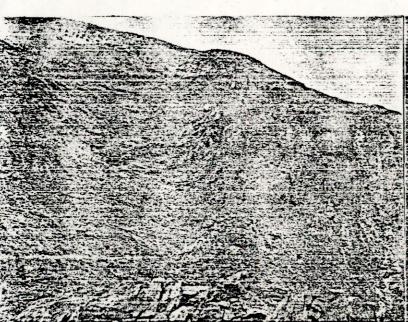
that the option has expired.

Harold A. Titcomb.

Salt Lake City, Utah.

16th Harch, 1904.

BLAIR GOLD MINES.

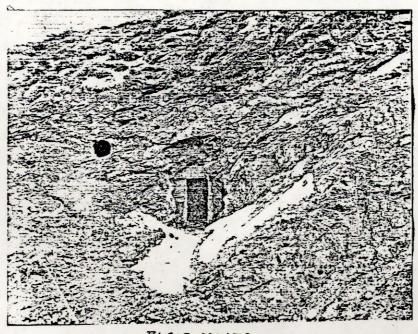


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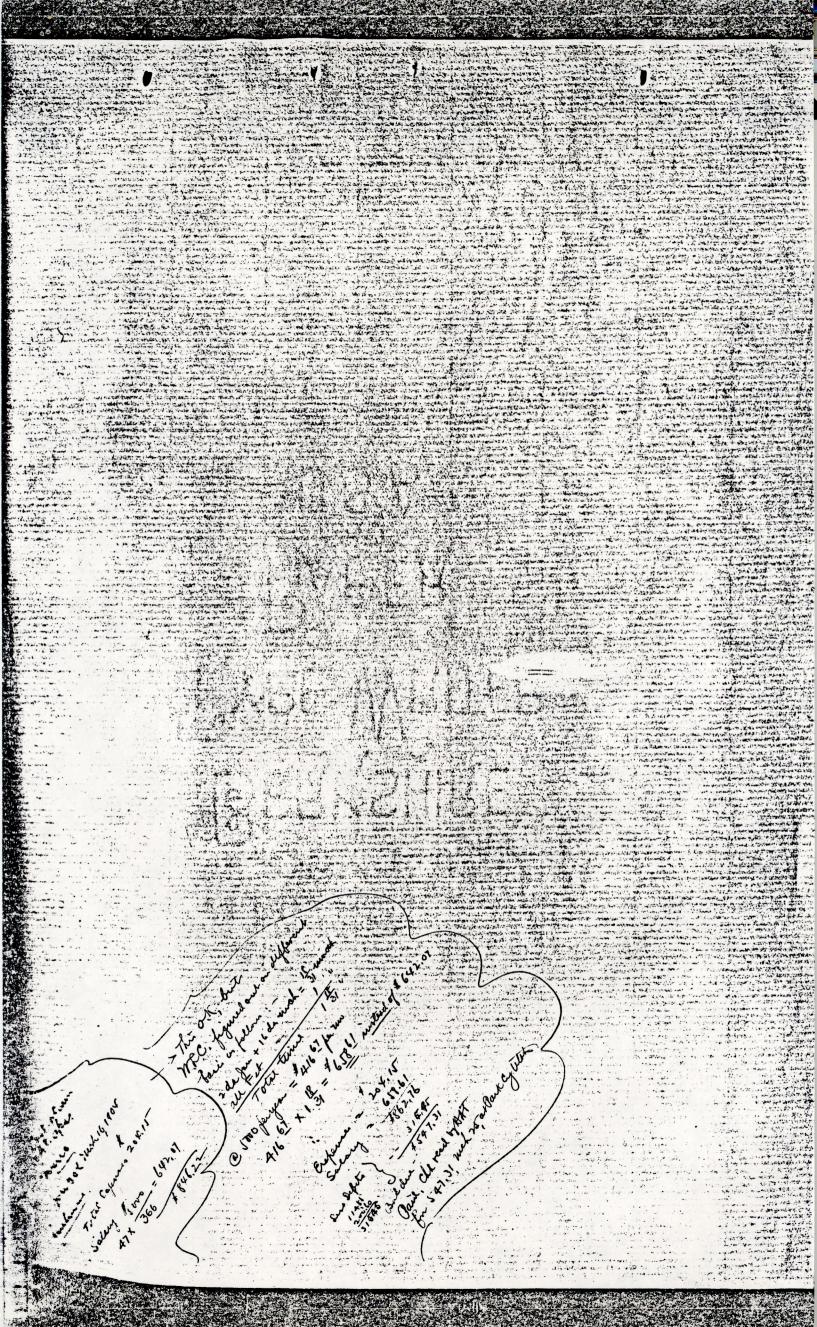


RECENT VOLCANIC CONE
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BLAIR MINES
SHOWING QUARTE AND GRANITE LENSES
IN META MORPHIC ROCKS.

#45. Tuch. 1904.



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