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The  
Monmouth Mining  
and  
Development Company

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INCORPORATED UNDER THE LAWS OF ARIZONA

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Capital Stock \$1,000,000

Divided into 1,000,000 Shares of \$1.00 each

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FULL PAID AND NON-ASSESSABLE

**NO INDIVIDUAL LIABILITY**

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Principal Office: Monmouth, Illinois  
Office in the Field: J. P. Wallace, Gen'l Mgr.  
Kingman, Arizona

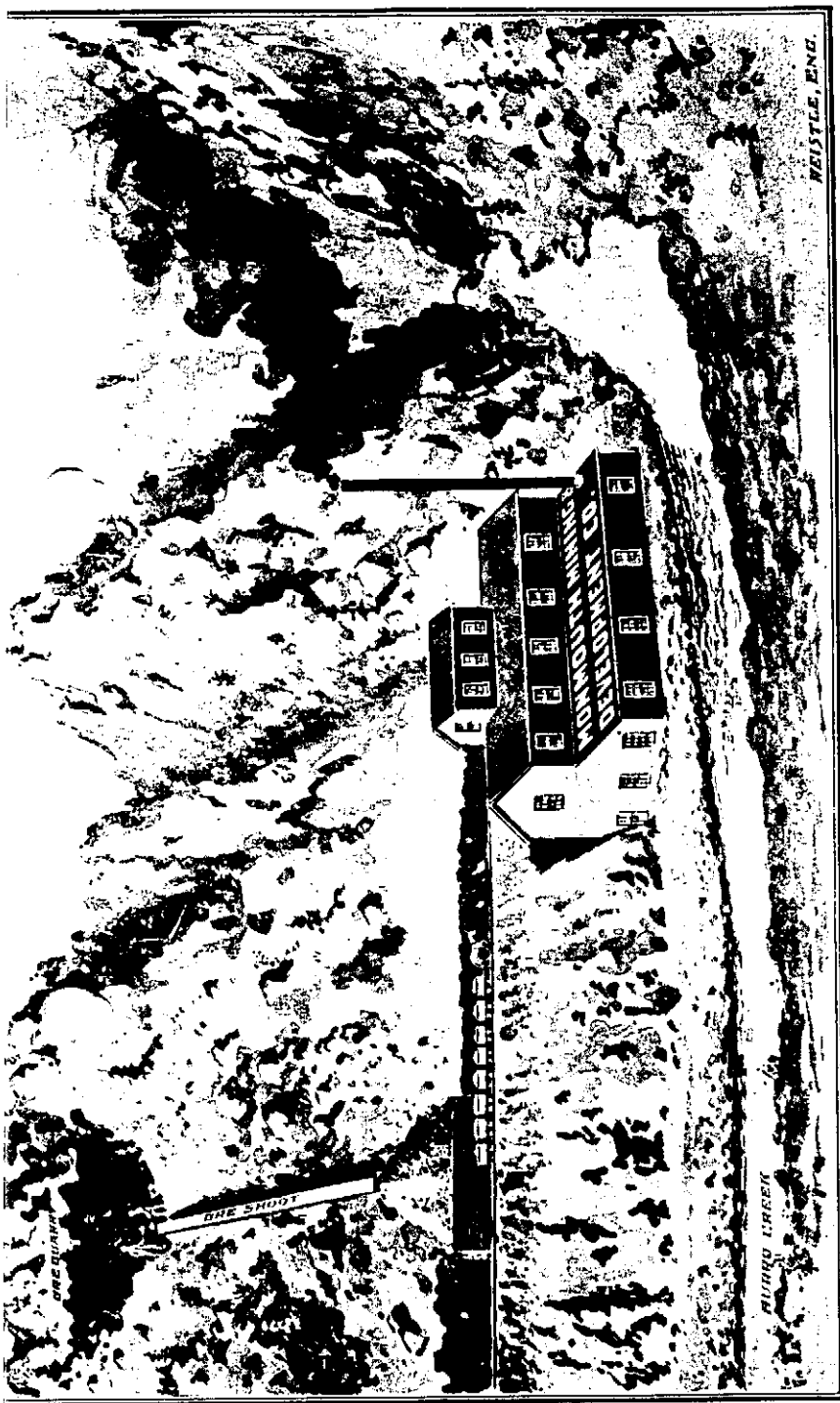


Fig. 1. Mill and Quarry. Proposed Plan.  
The mountain shown in this cut is over one-half mile long, and is all ore.



Fig. 2.  
Burro Creek, Opposite Cookhouse.

above Parker and connects with their main line in California. When completed our mines will be within one day's drive of this road.

**The Properties** consist of two full claims, 1500 by 600 feet each, and two mill sites of 5 acres each, making a total of 50 acres. The names of the claims are the Burro and Telegraph. Both are on the same vein. The mill sites are in contact with the properties on the east and west. Burro Creek crosses these mill-sites and the vein of ore. The headwaters of Burro Creek are 40 miles northeast of the mines. Throughout this distance it traverses and drains an immense mountainous tract from which arise numerous springs of pure cold

water. Six other creeks of smaller size empty into and feed Burro Creek. During the greater part of the year this stream carries 500 inches of water; it sometimes carries 2000 inches, and occasionally during the warmest season it has not over 50 inches of water. It can be depended upon for water-power for almost any size plant of machinery for say, eight months of the year, and by draining it and storing the water, power the year round can be secured. The canyon through which the creek flows for a portion of its course is deep, narrow and precipitous; its walls are of solid rock from 200 to 400 feet high, and



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therefore offers the best of natural conditions for a cheap and durable dam. Either water or electric power can here be generated at the least possible expense. Neither wood nor coal will be needed for power purposes. Water-power in the arid west is a rarity and is as valuable as it is rare.

**The Vein** upon which these properties are located outcrops for over one mile. The Burro and Telegraph ore bodies measure in width throughout their entire length from 38 to 90 feet and stand up in bold relief above the creek bed from 150 to 400 feet high. They

form a long, prominent and picturesque mountain chain of gold-bearing quartz, which perhaps is not excelled in its stupendous grandeur in the United States. Nature has seemingly outdone herself in the making of this mountain of ore. It can not be appreciated or fully understood unless seen, and the oftener one views it the greater it seems to grow. It is best described as a monster rock quarry filled with the money metals. Nature has put in plain sight a million tons of ore; of this there can be no doubt; it is open to the eyes of every observer. How many more millions are hidden below

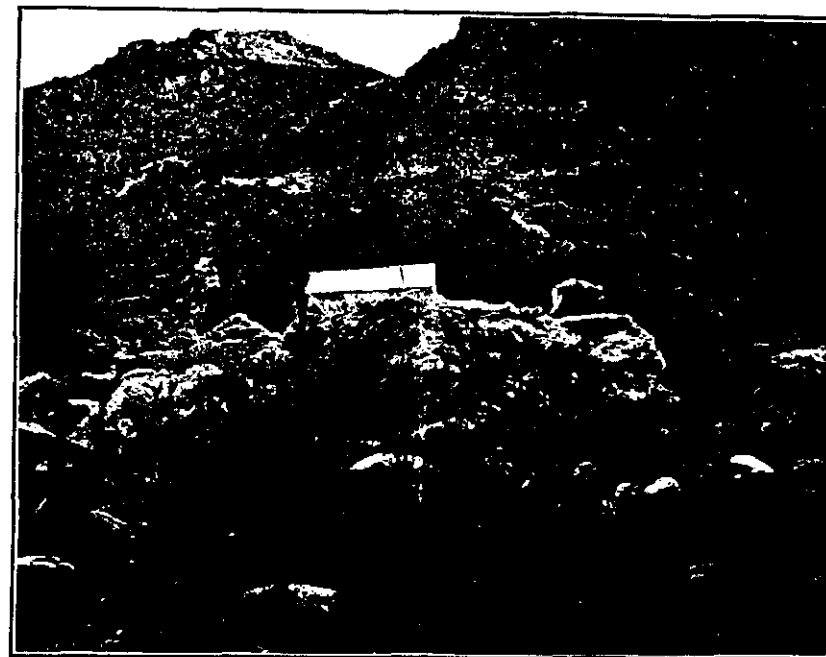


Fig. 4.  
A Side View of the Ore Body Rising Precipitously from the Creek Level.

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**Development.**—Inasmuch as the ore bodies have been so completely laid bare by the denuding forces of Nature one would scarcely think these properties required development, and, in fact, they would

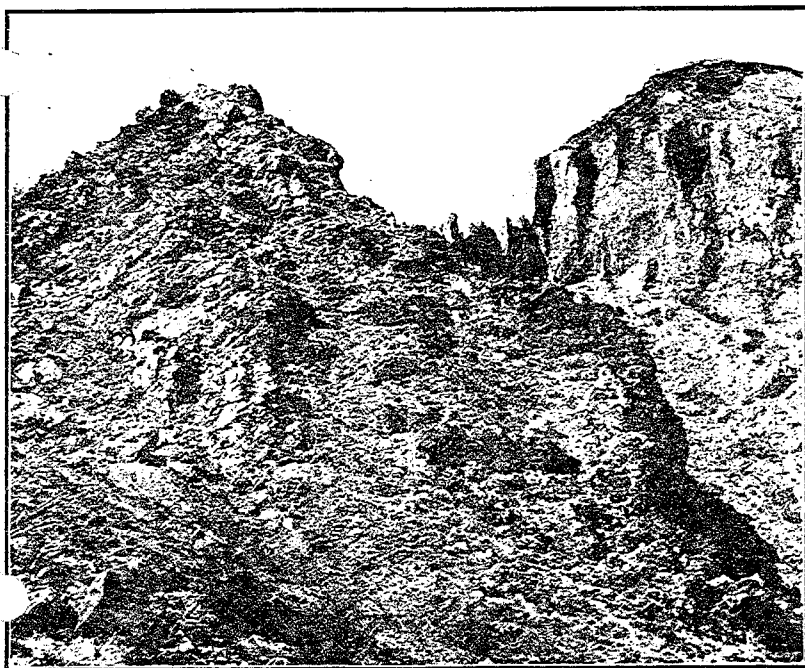


Fig. 5.

A Side View of the Ore Body on a Higher Plane Than Fig. 4, but Continuous with It.

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course of the vein. This tunnel cut the vein at a depth but little above water level. An upraise from the end of this tunnel through the ore body to the surface would serve as a mill hole through which all ore mined in the open cuts at the surface may be dropped and by means of chutes loaded into a train of cars and trammed to the mill. There is no cheaper method of mining than this. The mill will be located at the mouth of this tunnel on the creek. The ore will be dumped into an ore bin and from thence it will pass automatically through the

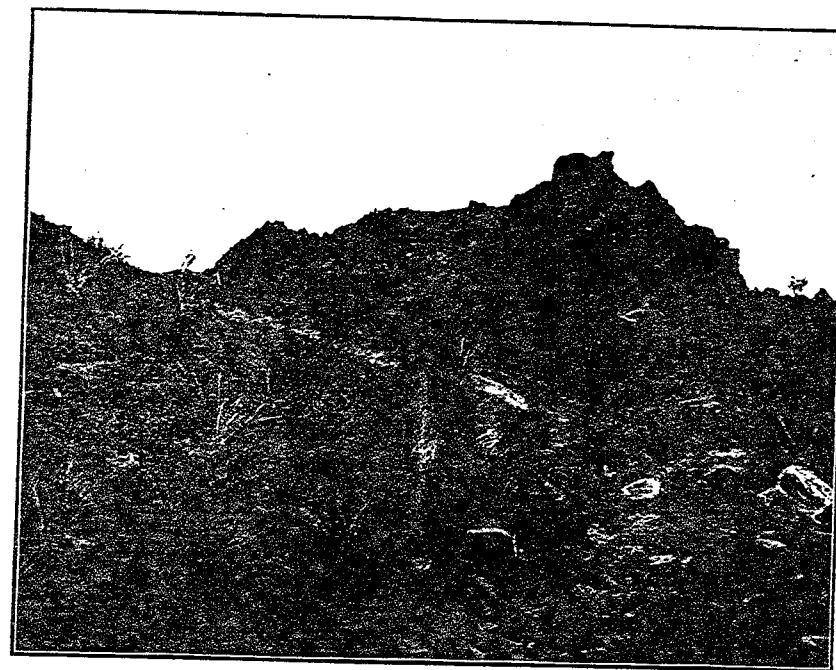


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A Side View of the Ore Body at the Summit, 400 Feet Vertically Above the Creek Level.

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Fig. 8.

View from the West Side Showing Outcrop of the Ore Body, Dump of the 500-foot Cross-cut Tunnel, Mill-Site and Burro Creek.

tions. A warm spring flows from the north end of the vein; it furnishes about 4 inches of water which is perpetual.

**The Ore and its Value.** — The veinstone is a fine granular, sugary quartz, varying in color from whitish to brownish. The purple or amethyst-colored quartz, common to Cripple Creek ores, is occasionally met with, and some of the quartz is not unlike that of the celebrated Comstock. There are no base metals in it; there is an almost complete absence of sulphides, no iron, copper, lead, antimony or arsenic being present excepting in the most trivial quantities. These metals are very injurious to most milling processes and add much to the cost of treatment. It is the absence of sulphides in our ore that enables us to adopt the cheapest and most rapid process of reduction. On account of these rare and unsurpassed qualities this ore was awarded a medal at the late Louisiana Exposition. When we consider the large number of mineral exhibits and the ability of the experts who recommended the awards on ores an indorsement of this kind is of the highest practical importance.

**The Ore** has been assayed many times by different men of experience. The results of hundreds of assays thus made show a swing in values from \$2.00 to \$48.00 in gold per ton. J. E. Askew, M. E., took samples from numerous places along the vein and got from \$2.00 to \$28.00 per ton in gold. He estimated the average value in gold and silver at \$9 to \$10 per ton.

Henry E. Wood, metallurgist, has a well-equipped mill in Denver, Colo., for the testing of ores in a large way. He has made elaborate and careful treatments of our ore upon two occasions and reports over his signature an average of \$8.40 and \$13.90 per ton.

J. P. Wallace, our General Manager, has sampled these properties and assayed the ores many times in our own laboratory at the mines and obtained averages of \$8.35, \$9.47, \$12.61 and \$13.77. Following are the series of assays from which the above averages were obtained:

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
T	.22	\$ 4.40	13.20	\$ 7.92	\$12.32
T	.04	.80	1.32	.81	1.61
B	.12	2.40	—	—	2.40
B	1.52	30.40	.84	.50	30.90
T	.92	18.40	1.08	.54	18.94
B	.16	3.20	1.16	.58	3.89
B	.10	2.00	.50	.25	2.30
B	.28	5.60	12.20	7.32	12.92
B	.16	3.20	.16	.08	3.29
B	.12	2.40	.60	.36	2.76
B	.04	.80	.08	.04	.84
T	.28	17.36	5.60	10.41	16.01
T	.16	3.20	32.80	19.68	22.88
T	.20	4.00	9.52	8.89	13.52
B	.12	2.40	.20	.12	2.52
B	.12	2.40	.12	.07	2.47
T	.28	6.48	5.60	3.88	9.48
T	.04	.80	2.44	1.46	2.26
B	.16	3.20	.56	.33	3.53
B	.12	2.40	.14	.26	2.66
B	.16	3.20	—	—	3.20
T	.28	5.60	12.56	7.53	13.13

\$8.35 Average.

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
B	.12	\$ 2.40	5.00	\$ 3.00	\$ 5.40
B	.28	5.60	9.76	5.85	11.45
B	.16	3.20	7.24	4.34	7.54
B	.48	4.80	22.64	13.58	18.38
B	.16	3.20	—	—	3.20
B	.12	2.40	1.08	.64	3.04
B	.12	2.40	.32	.19	2.59
B	.12	2.40	.60	.36	2.76
T	1.84	36.80	2.04	1.22	38.02
T	.24	4.80	.52	.31	5.11
T	.60	12.00	1.08	.64	12.64
T	.28	5.60	—	—	5.60
B	.12	2.40	.28	.16	2.56
B	.12	2.40	—	—	2.40
T	2.12	42.40	.56	.33	42.73
T	.20	4.00	—	—	4.00
B	.30	6.00	2.06	1.23	7.23
T	2.00	40.00	1.76	1.05	41.05
T	2.16	43.20	.48	.28	43.48
T	.72	14.40	.44	.26	14.66
B	.12	2.40	.68	.40	2.80
B	.24	4.40	.72	.43	5.23
T	.40	8.00	.32	.19	8.19

\$12.61 Average.

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
B	.28	\$ 5.60	.76	\$ .45	\$ 6.05
B	.24	4.80	.88	.52	5.32
B	.04	.80	.52	.31	1.11
B	.68	13.60	.20	.12	13.72
B	.20	4.00	.60	.36	4.36
T	.12	2.40	.44	.26	2.66
T	.36	7.20	17.40	10.44	17.64
T	.26	5.20	5.42	3.25	8.45
B	.16	3.20	—	—	3.20
B	.04	.80	.80	.48	1.28
B	.04	.80	.84	.50	1.30
T	1.76	35.20	1.36	.81	36.01
T	1.36	27.20	2.20	1.32	28.52
T	.48	9.60	31.08	18.64	28.24
B	.54	10.80	2.26	1.35	12.15
B	.08	1.60	.20	.12	1.72
B	.20	4.00	.36	.21	4.21
B	.08	1.60	.28	.16	1.76
B	.10	2.00	—	—	2.00
B	.16	3.20	.78	.46	3.66
T	1.12	22.40	.52	.31	22.71
B	.10	2.00	.53	.31	2.31

\$9.47 Average.

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
T	2.44	\$48.80	—	—	\$48.80
T	.72	14.40	2.16	\$1.29	15.96
T	.44	8.80	1.78	1.06	9.86
T	1.80	36.00	1.52	.91	36.91
B	.28	5.60	1.18	.70	6.30
B	.28	5.60	.16	.09	5.69
B	.22	4.40	2.18	1.36	5.70
T	1.68	33.60	1.64	.98	34.58
T	.44	8.80	1.24	.74	9.54
T	.40	8.00	.52	.31	8.31
T	.80	16.00	—	—	16.00
T	.40	8.00	.34	.20	8.20
T	.32	6.40	.78	.46	6.86
T	.12	2.40	1.88	1.12	3.52
T	.32	6.40	10.84	6.50	12.90
T	.16	3.20	11.84	7.10	10.30
T	.44	8.80	13.00	7.80	16.60
T	.08	1.60	3.16	1.89	3.49
T	.08	1.60	.96	.57	2.14

\$13.77 Average.

It is but fair to state that many of these assays were made from 10, 20 and 25-pound samples broken from the ore bodies indiscriminately, while the higher grade assays represent sample lots taken from ore chutes. A general average of all the above-mentioned tests would be about \$10.78 per ton. It is possible the ore might not average by the 100-ton lots in some portions of the vein more than \$7.00 and in other portions not to exceed \$5.00 per ton, but even if this were true the ore would still yield big profits. Like the great Homestake and Treadwell, as well as all other big mines, the ore values are never of uniform tenor throughout. The Homestake ore averages but \$3.53 and \$3.69 per ton, and the Alaska Treadwell but \$2.00 per ton, and both have paid millions in dividends. Not to appear presumptuous, let us for a moment compare economic conditions between these two greatest of all low-grade mines and our own properties. The Homestake and Treadwell bring their water for power and other purposes through flumes, pipes and ditches from points many miles distant and at great expense. We have a large stream of water flowing across our vein. Both the great mines now hoist most of their ore through shafts from 800 to 1200 feet deep. We can open-cut our rock and tram it to the mill for one-third the cost of shaft sinking and hoisting. The Homestake amalgamates, concentrates and cyanides, and the Treadwell amalgamates, concentrates and smelts. We only cyanide our ores. It will be seen from the above that we have the advantage in cheaper power, cheaper mining and cheaper treatment. We also have the advantage in a higher grade ore, a higher extraction of values and superior climatic conditions. If, therefore, two dollar ore and three dollar sixty-nine cent ore can be mined and made to pay a profit under the unfavorable conditions named, why should not five, eight or ten dollar ore under the more favorable conditions mentioned be still more remunerative? We feel justified in counting on large dividends from the commencement of milling operations.

**The Process.**—Careful experimentation has shown the cyanide process to be best adapted to the treatment of our ores. J. E. Askew, one of the most competent and trustworthy mining men of the West, spent over four weeks sampling and testing our ores. In his report he says: "These ores are eminently suited for the extraction of values by the cyanide process," and then gives a series of tests made by the MacArthur-Forrest people, which resulted in a saving of 90 per cent. of the values.

Henry E. Wood, metallurgist, made two series of tests and obtained an extraction of 90 per cent. He says in his report: "The crushing quality of the ore is excellent for the production of a uniform

product through a thirty-mesh screen. The ore is very free from base metals, and will cyanide satisfactorily. There is no question as to the application of cyanide to your ore or tailings."

**The Stock.**—Two years ago the mines described in this report were bought and paid for in full by the promoters and turned over without incumbrance to the present company, which they themselves organized. In consideration of this cash outlay the organizers took stock in exchange, thus showing faith in the enterprise. They, therefore, place themselves in line with all other purchasers of stock and receive a like dividend. Four hundred thousand shares of stock were set aside for the treasury. Of this amount 100,000 shares were sold at 25 cents per share, and the proceeds applied to the purchase of tools, erection of living quarters, assay office, blacksmith shop, cook house, the building of wagon road to mines, patenting of mines and development work generally.

The stock in this company is full paid and non-assessable. It can not be taxed or assessed in any way or for any purpose. All stock is common—there is no preferred stock. This stock had an actual and bona fide value from the start. This value is due to and based upon the wonderful ore bodies exposed to view in both claims. Stock in any mining company is valuable in proportion to the known value of its mines. Mining claims with little or no ore in sight have no actual or market value. We have one million tons of ore above the level of Burro Creek which is "in sight" and ready for extraction. Stock based upon such a showing has a real and present value, and can not be compared to the uncertain value of stock in prospects.

Since the inception of this enterprise, and commensurate with the work of development, the price of stock has steadily advanced from 25 cents to \$1.00 per share. It is today cheap at that price. With a mill on the ground this property would bear a capitalization of \$5,000,000. The fact that almost none of the stock bought from this company two years ago has been sold by its purchasers is high endorsement of its value and of the company's management. Our stockholders believe in the enterprise and are holding their stock as a permanent investment. The ores now developed and "in sight" are sufficient to keep a large mill in constant operation for many years, and when worked down to water level our mines will only have begun their career.

**Large Ore Bodies Preferred.**—S. F. Emmons, one of the most able and noteworthy of U. S. geologists, says in his work on "Economic Resources of the Northern Black Hills," page 66, 1904: "As a

purely business proposition a very large body of low-grade ore is preferable to a moderate sized body of very rich ore."

The Engineering and Mining Journal in the Dec. 15th, 1904, number, says in an editorial on "The Basis of Value": "The fundamental fact in a mining enterprise is the known quantity of ore in the mine."

Edmund B. Kirby, the distinguished mining engineer, in an article contributed to the Mining and Scientific Press, says: "Mining men have only begun to utilize the great resources of the West in low-grade ores. As metallurgical skill is applied to the various large deposits



Fig. 9.  
Putting in Alfalfa and Barley Crop on Ranch—Second Crop of Sugar Cane Shown in Background.

already known and exposed, it will be found that no new processes are necessary to make many of them yield a handsome profit."

One of our prominent mining editors says in print: "Miners have now awakened to the fact that there are millions to be made from low-grade ores, and that the element of speculation does not enter as largely into the low-grade mining proposition as in the case of those producing higher grade ore."

It is a fact that large bodies of low grade ore are more sought after and are looked upon with greater favor by the ablest and most

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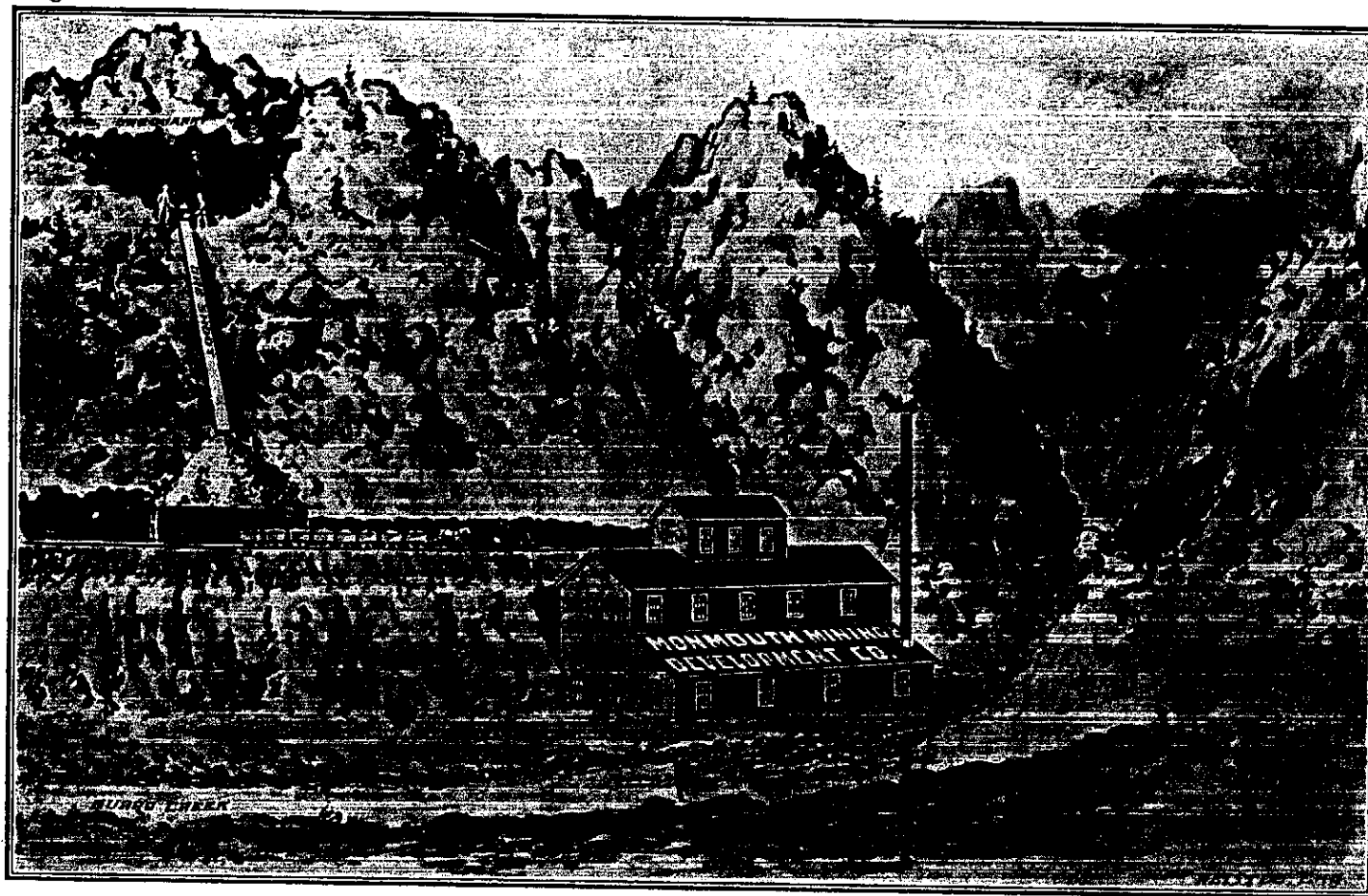


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The Monmouth Mining and Development Company's properties are situated in the southeastern portion of Mohave county, Arizona. They are on the western slope of the Aquarius Mountains, six miles east of the Big Sandy River, and about twenty miles east of north from the town of Signal. They are accessible by wagon road from Kingman, Signal, Hackberry and all other surrounding points. The Santa Fe Railroad Company is now building a cut-off line from Congress Junction, Arizona, which crosses the Colorado River three miles



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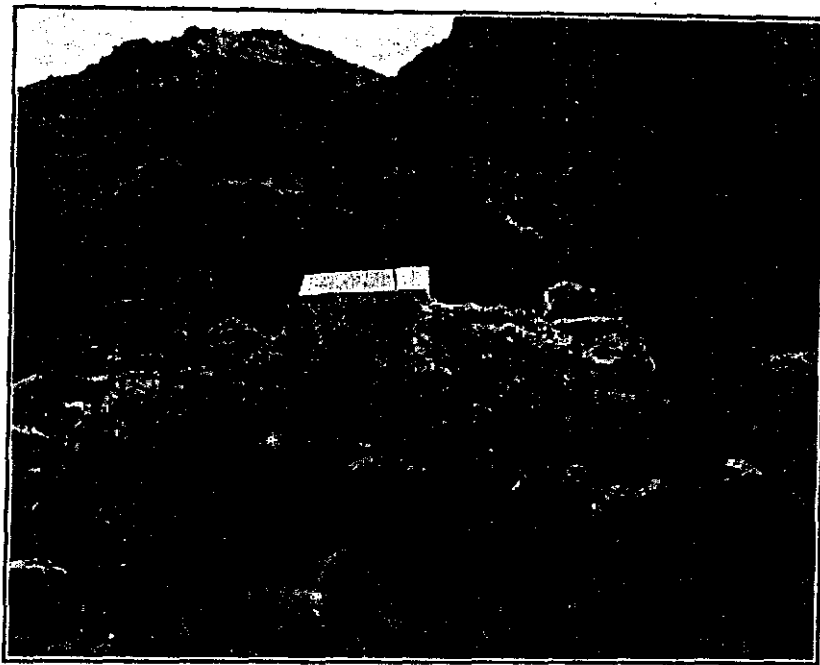


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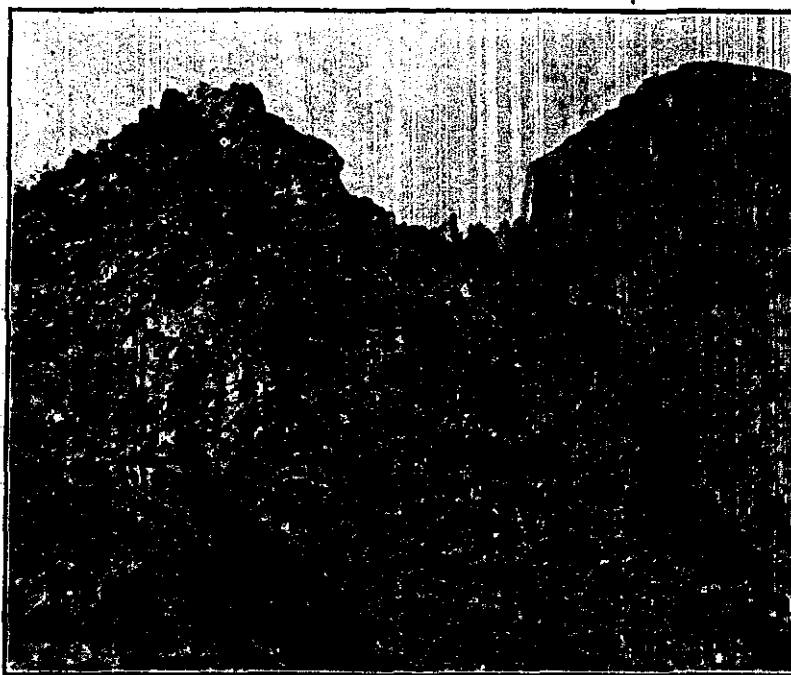


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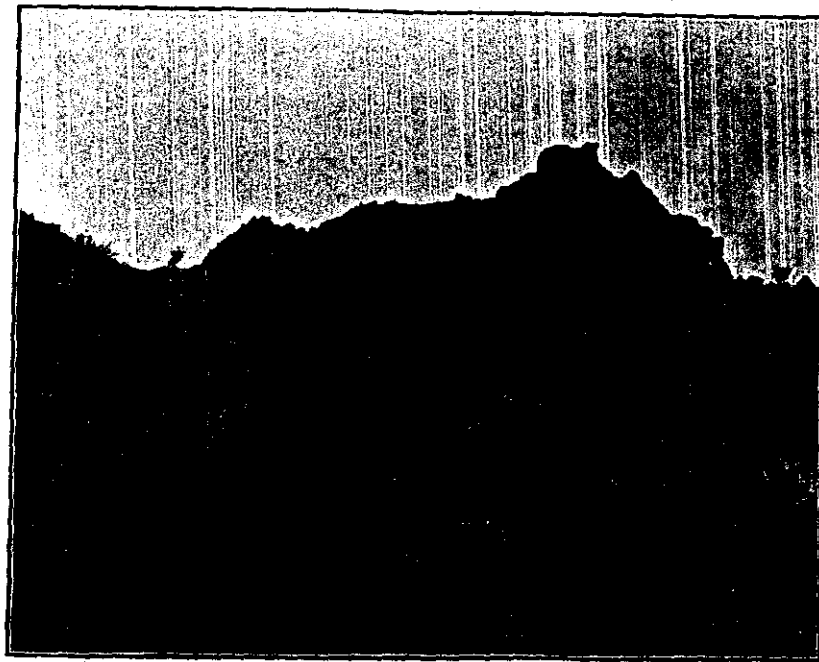


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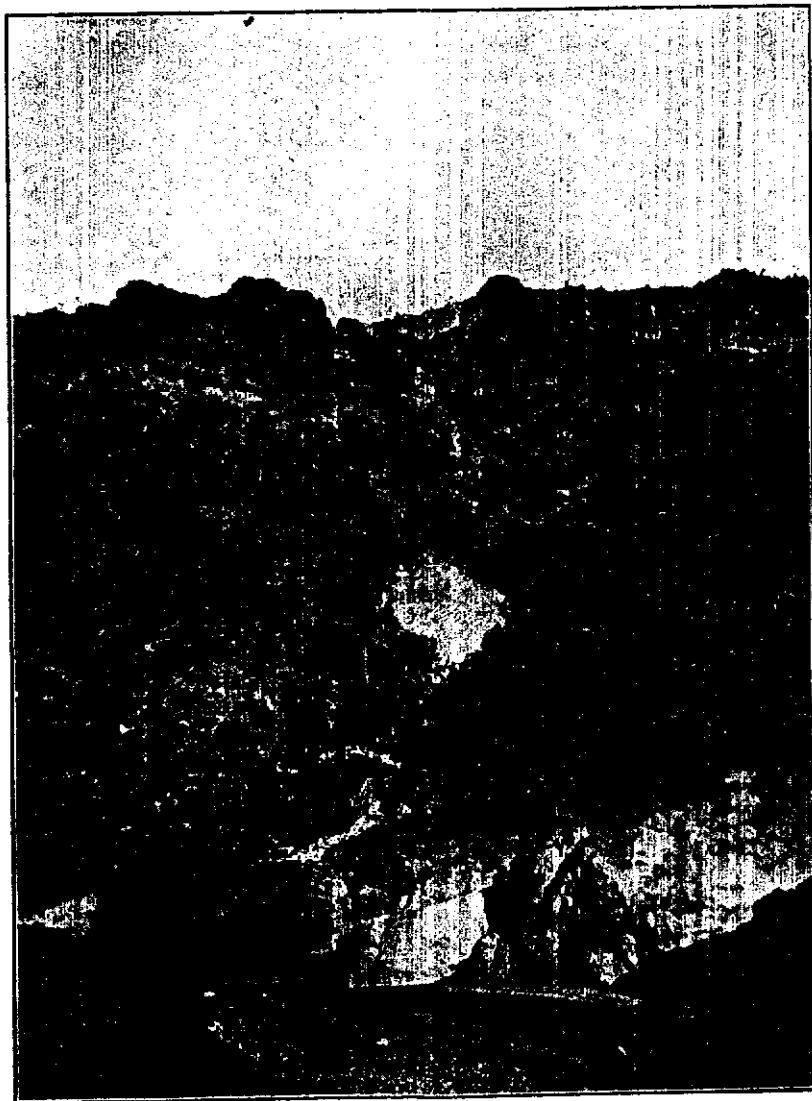


Fig. 8.  
View from the West Side Showing Outcrop of the Ore Body. Dump of the 500-foot  
Cross-cut Tunnel, Mill-Site and Burro Creek.

tions. A warm spring flows from the north end of the vein; it furnishes about 4 inches of water which is perpetual.

**The Ore and its Value.** — The veinstone is a fine granular, sugary quartz, varying in color from whitish to brownish. The purple or amethyst-colored quartz, common to Cripple Creek ores, is occasionally met with, and some of the quartz is not unlike that of the celebrated Comstock. There are no base metals in it; there is an almost complete absence of sulphides, no iron, copper, lead, antimony or arsenic being present excepting in the most trivial quantities. These metals are very injurious to most milling processes and add much to the cost of treatment. It is the absence of sulphides in our ore that enables us to adopt the cheapest and most rapid process of reduction. On account of these rare and unsurpassed qualities this ore was awarded a medal at the late Louisiana Exposition. When we consider the large number of mineral exhibits and the ability of the experts who recommended the awards on ores an indorsement of this kind is of the highest practical importance.

The Ore has been assayed many times by different men of experience. The results of hundreds of assays thus made show a swing in values from \$2.00 to \$48.00 in gold per ton. J. E. Askew, M. E., took samples from numerous places along the vein and got from \$2.00 to \$28.00 per ton in gold. He estimated the average value in gold and silver at \$9 to \$10 per ton.

Henry E. Wood, metallurgist, has a well-equipped mill in Denver, Colo., for the testing of ores in a large way. He has made elaborate and careful treatments of our ore upon two occasions and reports over his signature an average of \$8.40 and \$13.90 per ton.

J. P. Wallace, our General Manager, has sampled these properties and assayed the ores many times in our own laboratory at the mines and obtained averages of \$8.35, \$9.47, \$12.61 and \$13.77. Following are the series of assays from which the above averages were obtained:

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
T	.22	\$ 4.40	13.20	\$ 7.92	\$12.32
T	.04	.80	1.32	.81	1.61
B	.12	2.40			2.40
B	1.52	30.40	.84	.50	30.90
T	.92	18.40	1.08	.54	18.94
B	.16	3.20	1.16	.58	3.89
B	.10	2.00	.50	.25	2.30
B	.28	5.60	12.20	7.32	12.92
B	.16	3.20	.16	.08	3.29
B	.12	2.40	.60	.36	2.76
B	.04	.80	.08	.04	.84
T	.28	17.36	5.60	10.41	16.01
T	.16	3.20	32.80	19.68	22.88
T	.20	4.00	9.52	8.89	13.52
B	.12	2.40	.20	.12	2.52
B	.12	2.40	.12	.07	2.47
T	.28	6.48	5.60	3.88	9.48
T	.04	.80	2.44	1.46	2.26
B	.16	3.20	.56	.33	3.53
B	.12	2.40	.44	.26	2.66
B	.16	3.20			3.20
T	.28	5.60	12.56	7.53	13.13

\$8.35 Average.

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
B	.28	\$ 5.60	.76	\$ .45	\$ 6.05
B	.24	4.80	.88	.52	5.32
B	.04	.80	.52	.31	1.11
B	.68	13.60	.20	.12	13.72
B	.20	4.00	.60	.36	4.36
T	.12	2.40	.44	.26	2.66
T	.36	7.20	17.40	10.44	17.64
T	.26	5.20	5.42	3.25	8.45
B	.16	3.20			3.20
B	.04	.80	.80	.48	1.28
B	.04	.80	.84	.50	1.30
T	1.76	35.20	1.36	.81	36.01
T	1.36	27.20	2.20	1.32	28.52
T	.48	9.60	31.08	18.64	28.24
B	.54	10.80	2.26	1.35	12.15
B	.08	1.60	.20	.12	1.72
B	.20	4.00	.36	.21	4.21
B	.08	1.60	.28	.16	1.76
B	.10	2.00			2.00
B	.16	3.20	.78	.46	3.66
T	1.12	22.40	.52	.31	22.71
B	.10	2.00	.53	.31	2.31

\$9.47 Average.

II

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
B	.12	\$ 2.40	5.00	\$ 3.00	\$ 5.40
B	.28	5.60	9.76	5.85	11.45
B	.16	3.20	7.24	4.34	7.54
B	.48	4.80	22.64	13.58	18.38
B	.16	3.20	—	—	3.20
B	.12	2.40	1.08	.64	3.04
B	.12	2.40	.32	.19	2.59
B	.12	2.40	.60	.36	2.76
T	1.84	36.80	2.04	1.22	38.02
T	.24	4.80	.52	.31	5.11
T	.60	12.00	1.08	.64	12.64
T	.28	5.60	—	—	5.60
B	.12	2.40	.28	.16	2.56
B	.12	2.40	—	—	2.40
T	2.12	42.40	.56	.33	42.73
T	.20	4.00	—	—	4.00
B	.30	6.00	2.06	1.23	7.23
T	2.00	40.00	1.76	1.05	41.05
T	2.16	43.20	.48	.28	43.48
T	.72	14.40	.44	.26	14.66
B	.12	2.40	.68	.40	2.80
B	.24	4.40	.72	.43	5.23
T	.40	8.00	.32	.19	8.19

\$12.61 Average.

Claim.	Ozs. Gold.	Val. Gold.	Ozs. Silver.	Val. Silver.	Total Val.
T	2.44	\$48.80	—	—	\$48.80
T	.72	14.40	2.16	\$1.29	15.96
T	.44	8.80	1.78	1.06	9.86
T	1.80	36.00	1.52	.91	36.91
B	.28	5.60	1.18	.70	6.30
B	.28	5.60	.16	.09	5.69
B	.22	4.40	2.18	1.36	5.70
T	1.68	33.60	1.64	.98	34.58
T	.44	8.80	1.24	.74	9.54
T	.40	8.00	.52	.31	8.31
T	.80	16.00	—	—	16.00
T	.40	8.00	.34	.20	8.20
T	.32	6.40	.78	.46	6.86
T	.12	2.40	1.88	1.12	3.52
T	.32	6.40	10.84	6.50	12.90
T	.16	3.20	11.84	7.10	10.30
T	.44	8.80	13.00	7.80	16.60
T	.08	1.60	3.16	1.89	3.49
T	.08	1.60	.96	.57	2.14

\$13.77 Average.



It is but fair to state that many of these assays were made from 10, 20 and 25-pound samples broken from the ore bodies indiscriminately, while the higher grade assays represent sample lots taken from ore chutes. A general average of all the above-mentioned tests would be about \$10.78 per ton. It is possible the ore might not average by the 100-ton lots in some portions of the vein more than \$7.00 and in other portions not to exceed \$5.00 per ton, but even if this were true the ore would still yield big profits. Like the great Homestake and Treadwell, as well as all other big mines, the ore values are never of uniform tenor throughout. The Homestake ore averages but \$3.53 and \$3.69 per ton, and the Alaska Treadwell but \$2.00 per ton, and yet both have paid millions in dividends. Not to appear presumptuous, let us for a moment compare *economic conditions* between these two greatest of all low-grade mines and our own properties. The Homestake and Treadwell bring their water for power and other purposes through flumes, pipes and ditches from points many miles distant and at great expense. We have a large stream of water flowing across our vein. Both the great mines now hoist most of their ore through shafts from 800 to 1200 feet deep. We can open-cut our rock and tram it to the mill for one-third the cost of shaft sinking and hoisting. The Homestake amalgamates, concentrates and cyanides, and the Treadwell amalgamates, concentrates and smelts. We only cyanide our ores. It will be seen from the above that we have the advantage in cheaper power, cheaper mining and cheaper treatment. We also have the advantage in a higher grade ore, a higher extraction of values and superior climatic conditions. If, therefore, two dollar ore and three dollar sixty-nine cent ore can be mined and made to pay a profit under the unfavorable conditions named, why should not five, eight and ten dollar ore under the more favorable conditions mentioned be still more remunerative? We feel justified in counting on large dividends from the commencement of milling operations.

**The Process.** — Careful experimentation has shown the cyanide process to be best adapted to the treatment of our ores. J. E. Askew, one of the most competent and trustworthy mining men of the West, spent over four weeks sampling and testing our ores. In his report he says: "These ores are eminently suited for the extraction of values by the cyanide process," and then gives a series of tests made by the MacArthur-Forrest people, which resulted in a saving of 90 per cent. of the values.

Henry E. Wood, metallurgist, made two series of tests and obtained an extraction of 90 per cent. He says in his report: "The crushing quality of the ore is excellent for the production of a uniform

product through a thirty-mesh screen. The ore is very free from base metals, and will cyanide satisfactorily. There is no question as to the application of cyanide to your ore or tailings."

**The Stock.**—Two years ago the mines described in this report were bought and paid for in full by the promoters and turned over without incumbrance to the present company, which they themselves organized. In consideration of this cash outlay the organizers took stock in exchange, thus showing faith in the enterprise. They, therefore, place themselves in line with all other purchasers of stock and receive a like dividend. Four hundred thousand shares of stock were set aside for the treasury. Of this amount 100,000 shares were sold at 25 cents per share, and the proceeds applied to the purchase of tools, erection of living quarters, assay office, blacksmith shop, cook house, the building of wagon road to mines, patenting of mines and development work generally.

The stock in this company is full paid and non-assessable. It can not be taxed or assessed in any way or for any purpose. All stock is common—there is no preferred stock. This stock had an actual and bona fide value from the start. This value is due to and based upon the wonderful ore bodies exposed to view in both claims. Stock in any mining company is valuable in proportion to the known value of its mines. Mining claims with little or no ore in sight have no actual or market value. We have one million tons of ore above the level of Burro Creek which is "in sight" and ready for extraction. Stock based upon such a showing has a real and present value, and can not be compared to the uncertain value of stock in prospects.

Since the inception of this enterprise, and commensurate with the work of development, the price of stock has steadily advanced from 25 cents to \$1.00 per share. It is today cheap at that price. With a mill on the ground this property would bear a capitalization of \$5,000,000. The fact that almost none of the stock bought from this company two years ago has been sold by its purchasers is high endorsement of its value and of the company's management. Our stockholders believe in the enterprise and are holding their stock as a permanent investment. The ores now developed and "in sight" are sufficient to keep a large mill in constant operation for many years, and when worked down to water level our mines will only have begun their career.

**Large Ore Bodies Preferred.**—S. F. Emmons, one of the most able and noteworthy of U. S. geologists, says in his work on "Economic Resources of the Northern Black Hills," page 66, 1904: "As a

purely business proposition a very large body of low-grade ore is preferable to a moderate sized body of very rich ore."

The Engineering and Mining Journal in the Dec. 15th, 1904, number, says in an editorial on "The Basis of Value": "The fundamental fact in a mining enterprise is the known quantity of ore in the mine."

Edmund B. Kirby, the distinguished mining engineer, in an article contributed to the Mining and Scientific Press, says: "Mining men have only begun to utilize the great resources of the West in low-grade ores. As metallurgical skill is applied to the various large deposits

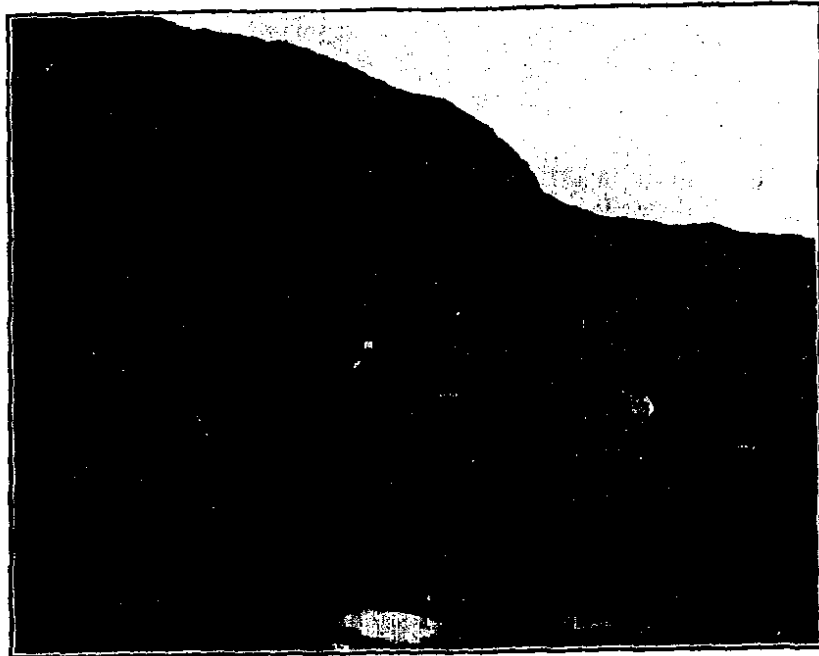


Fig. 9.  
Putting in Alfalfa and Barley Crop on Ranch—Second Crop of Sugar Cane Shown in Background.

already known and exposed, it will be found that no new processes are necessary to make many of them yield a handsome profit."

One of our prominent mining editors says in print: "Miners have now awakened to the fact that there are millions to be made from low-grade ores, and that the element of speculation does not enter as largely into the low-grade mining proposition as in the case of those producing higher grade ore."

It is a fact that large bodies of low grade ore are more sought after and are looked upon with greater favor by the ablest and most

## REPORT ON BURRO CREEK MINE - 1928.

BY C. E. BLOUNT, ECONOMIC GEOLOGIST.

### LOCATION AND TITLE:

The Burro Creek Mine is situated in Southern part Mojave Co., Ariz. The exact location finds the section corner of 10-11-14-15, T. 14 N., R. 12 W., Gila and Salt Rivers., in about the S.W. center of the Burro claim. The mine is also about 9 miles in Southerly direction from post-office of Wickieup which is sixty miles south of Kingman on the main highway from Kingman to Phoenix. The property consists of two claims and two mill sites comprising 52 acres, is patented and owned by the M. M. & D. Co., of Monmouth Ill.

### HISTORY:

The property has been held by different owners since the very early territorial days. It is reported that George Hearst of Homestake prominence bought the property and paid \$5,000.00 on it shortly before his decease. About 1903 the property was bought by Dr. J. P. Wallace of Colorado. The writer assisted in constructing a road from the Big Sandy to the mine, a distance of about 7 miles. The M. M. & D. Co., was incorporated by Dr. Wallace, under the laws of Arizona. The Burro Creek Mine was then taken over by the said Company. The capitalization was \$1,000,000.00 with par value of \$1.00 per share and non-accessable. The writer could not learn how long the Company operated but it ceased when Dr. Wallace died. The duration of operation was about one year. The ground was then patented, and has lain idle since the time. All taxes have been paid to date, and the title is clear. The writer is informed that the stock is all held by a very small syndicate and can be transferred readily.

### GEOLOGY:

Mr. Willie T. Lee in Bulletin 352 U. S. Geological Survey, describes this district as resting on a pre-Cambrian granite base rock, but in the Burro Mine section the writer saw no granite. In the channel of Burro-Creek the basement rock consists of a coarse grained hard quartz-feldspar complex contacting with a very early bluish black basaltic intrusive. As this early rock is covered by a later rhyolite effusion it was impossible for the writer in the limited time he was on the ground to determine their extent. The rhyolite above mentioned is probably late tertiary. This horizon which is several hundred feet thick is capped with a very late flow of basalt.

The ledge of mineral bearing material is a quartz filling in an enormous fissure which cuts the country for several miles, striking northwesterly. The fissure cuts the quartz-feldspar basement dipping to the northeast about 80 degrees and extends upwards into the contact older basalt.

Prior to the advent of the rhyolite effusion the erosion bed swept away the hanging wall rock of the fissure leaving the vein filling exposed to a present depth of about 300 feet. The rhyolite in turn was also cut away by the waters of the present Burro Creek, presenting a body of gold and silver-bearing quartz about 500 feet long, 300 feet high with an average width or thickness of about 70 feet exposes along the hanging wall side. The two claims parallel Burro Creek on its south side for about 3,000 feet. The creek then makes an abrupt turn to the



south cutting across about the center of the Burro claim and west of the creed the ledge rises to a height several hundred feet and is about 20 feet wide. This section is about 900 feet long and is cut on its northwesterly end by Warm Springs creek and canyon to a depth almost on a level with Burro Creek. The vein crops along the entire length of both claims, but on the Telegraph Claim the rhyolite horizon forms the hanging wall, exposing only the apex of the ledge. Where the ledge is exposed by the erosion action of Burro Creek and Warm Springs Canyon, it shows a marked tendency to widen with depth varying from 20 to 40 feet at the top to 30 to 100 feet at the deepest point of erosion.

#### ORE BODIES:

That part of the Burro Claim from which the hanging wall has been removed, presents as before described, a mass of commercial ore about 500 feet long, 300 feet high and 70 feet wide. Figuring 16 cu. feet to the ton, this body would comprise about 650,000 tons of ore that would be mined with a power shovel, and of course would use no timbers.

The westerly portion of the Burro claim presents, above the creek bed a body of ore about 1800 feet long 300 feet high and 30 feet wide or more than 300,000 tons of ore that can be mined through tunnel from the surface.

The Telegraph Claim presents a body of ore about 1500 feet long, 400 feet high and 20 feet wide, nearly another million tons that can be mined from tunnels, making about 1,900,000 tons of ore that can be mined from tunnels, that can be mined without sinking or using any hoisting machinery.

#### ACCESSIBILITY:

Until the present year (1928) the mines of this district were without means of transportation, as there were no roads over which appreciable tonnage could be moved, and the nearest railroad point was at Kingman, seventy miles to the north. At present a fine highway passes within about four miles of the Burro Creek mine. Five thousand dollars would extend this road to the Mine, as most of the four miles is across a flat mesa or table land. The last mile is down Warm Springs Canyon and would require most of the labor to make it passable for heavy trucks.

#### FACILITIES:

There are several fine Dam Sites on Burro Creek, both above and below the Mine, the average annual rainfall and flow is sufficient to generate all the power the mine would ever require and leave a large margin which could be disposed of at the surrounding mines. The drainage basin of Burro Creek is over 100 miles long above the Mine and heads in some of Arizona's highest mountains, which have a regular snow fall.

As the climate is very mild in winter electric heating would be sufficient for all purposes. Any and all timbers would have to be hauled in from the mountains, a distance of about forty miles.

The rhyolite erosion at the Mine is of first class quality for building purposes, and as it is of fine working quality all houses should be constructed of it. The water (about 3 miners inches) at the Warm Spring should be used in the change room for the miners shower baths.

LABOR:

As a vast portion of the visible ore can be extracted and reduced with the most simple machinery, only the cheapest labor would be required, and as the climate is the mildest in the winter months (very seldom any frost) housing costs should be at the minimum.

DEVELOPMENT:

Several short adit tunnels have been run across the ledge on the Burro Claim. These tunnels offer a first class opportunity for examining and sampling the ledge. A tunnel over 600 feet long has been driven through the foot wall on the west side of the Burro Claim. This tunnel is in the right place to work the ore from the south half of the Burro Claim, and all of the Telegraph Claim above the creek bed. Over 1,700,000 tons of ore can be taken out through this tunnel. By extending the track about 500 feet along the canyon southwesterly, the above tonnage could be put through any size mill by gravity, thereby eliminating any "back-pumping" or elevating any part of the ore at any time after it leaves the Mine. This system (gravity system) represents a vast cut in the cost of production and reduction, and many mining ventures have gone to the wall on account of excessive handling of ore at the mill.

There are no buildings, tools or machinery on the grounds as all of these were removed year ago.

CONCLUSION:

As this property is ideally located, as regards to tonnage, climate, water power and transportation, it offers opportunity for large net returns for many years, under proper procedure and management. A small sum of one or two thousand dollars should first be expended in systematic sampling, then a small Pilot Mill (65 tons) should be installed to determine the method of treatment and reduction. This mill should be planned to add units to it as the treatment system is determined, until at least 1,000 tons could be treated each day of 24 hours.

Some small water-power system can be worked out at first to operate the pilot mill. Then a large impounding dam could be constructed to operate a large mill.

No money should be expended on the road until the pilot mill has proven the treatment method. The initial plant can be conveyed to the Mine on pack animals. The packing distance would not exceed one mile.

VALUES:

If the assay returns of J. P. Wallace (hereto appended) are correct, the values far exceed the Homestake or Treadwell.

REPORT OF THE BURRO CREEK MINE #5 C. E. B BLOUNT - Geologist

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## REPORT OF THE BURRO CREEK MINE

No. 1.

C. E. BLOUNT, Geologist.

Oms. Gold	Oms. Silver	T. Val.	Oz. Au.	Oz. Ag.	T. Val.
\$ .22	13.20	12.82	.20	.76	6.03
.04	1.30	1.61	.24	.33	5.32
.12		2.40	.04	.52	1.11
15.92	1.88	30.77	.68	.33	4.36
.92	1.03	18.31	.20	.60	13.72
.16	1.16	3.99	.12	.44	2.63
.10	.50	2.50	.36	17.40	17.64
.28	12.20	12.82	.26	5.42	8.45
.16	.15	3.29	.16		5.20
.12	.60	2.76	.04	.60	1.28
.04	.08	.84	.04	.84	1.30
.26	5.50	16.01	1.73	1.33	36.08
.16	32.30	22.88	1.33	2.20	28.52
.20	9.32	13.32	.48	31.08	28.24
.12	.80	2.32	.54	2.26	12.15
.12	.12	2.47	.08	.20	1.72
.28	5.30	9.48	.20	.36	4.21
.04	2.44	2.26	.03	.28	1.73
.16	.56	3.33	.10		2.00
.12	.44	2.66	1.18	.73	3.63
.12		3.20	1.12	.52	22.71
.28	12.56	13.13	.10	.53	2.31

Average \$8.35

Average \$9.47



## REPORT OF THE BUREO CREEK MINE

#5.

C. E. BLOUNT, Geologist.

Oz. Gold	Oz. Silver	T. Val.	Oz. Au.	Oz. Ag.	T. Value
.12	5.00	\$ 5.40	2.44		\$19.60
.23	9.73	11.35	.72	2.16	11.96
.16	7.24	7.45	.14	1.40	9.83
.48	22.64	13.33	1.80	1.52	36.91
.13		3.20	.28	1.16	4.50
.12	1.00	3.04	.22	.16	5.60
.12	.32	2.59	.22	2.18	5.70
.12	.60	2.75	1.68	1.64	34.53
1.84	2.04	36.02	.44	1.24	9.54
.24	.52	5.11	.40	.52	6.51
.60	1.08	12.04	.80		16.00
.28		5.60	.40	.32	6.20
.12	.28	2.56	.32	.73	6.86
.12		2.40	.12	1.33	3.52
2.12	.56	42.75	.32	10.84	12.90
.20		4.00	.16	11.84	10.50
.30	2.00	7.25	.44	13.00	16.00
2.00	1.73	41.05	.08	3.16	3.49
2.16	.43	43.48	.02	.96	2.14
.72	.44	14.66			
.12	.68	2.60			
.24	.72	5.23			
.40	.32	8.19			

Average \$13.77

Average \$12.01

General Average \$11.05

Signed: -

C. E. BLOUNT.

gmc.

BURRO MINE

(Note by G. M. Colvocoresses)

October, 1937

In 1934 I was told that this property had been sampled by Beckwith, a reliable engineer, who had estimated a total of 2,000,000 tons of gold ore with an average value of \$3.00 per ton (at old price) but I greatly doubt this statement as I could never obtain any copy of the report or confirmation of the statement.

About a year later it was partially sampled by an experienced prospector named Robertson who told me that most of his samples ran only a few cents to the ton and I have learned that similar results were obtained by others.

I believe that Holland's opinion may be considered as correct unless some very recent developments have changed the situation.

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BURRO MINE

District: Bagdad  
Location: On a branch running N.W. of Burro Creek in Mohave County 22 miles S.W. of Bagdad Camp, about 12 miles from Signal. Elevation 2000'. 1 patented claim; perhaps others unpatented.  
Owners & Operators: No information. Idle.  
Date Visited: Aug. 29th, 1917.

NOTES:

Formation, lava flows, coarse breccias and rhyolite. A tunnel is driven 70' South, then 25' S.W. in calc-spar more or less mixed with porphyritic material. Black manganese is plentiful throughout the tunnel. The breast shows more porphyritic material and quartz veinlets, and less manganese, than elsewhere in the workings. 70' from the portal is a 5' cut showing calc-spar heavily stained with black manganese. A general sample of the little dump at the portal, consisting of manganese stained calc-spar and porphyritic material, with quartz veinlets assayed (H-173): Au. 0.01 oz.; Ag. 0.39 oz.

On the surface, the body of spar and porphyry is about 100' wide, but apparently ceases 300' south of the tunnel where it abuts

gmc

-2-

against rhyolite and lava.

To the N.W. on Burro Creek, is a big ledge made up of calcite and quartz, strike N 70 W, slight dip S.E. 100' S.E. is another smaller parallel ledge 10' wide. The green country rock is granitic and very siliceous. Where the ledges are water-worn in the bed of the creek they show much shattering. The ground mass is rhyolite and the cracks are filled with pinkish quartz and calc spar.

The scanty remains of an old camp, and a piece of apparatus, nearly buried, which looks like an amalgamating barrel, are all that remain of any equipment there may have been in the past.

The property appears to me to be absolutely worthless under any conditions, but I understood that every few months different engineers make the very hard trip to examine it.

Report by Holland.

BURRO MINE

LIBRARY  
EAGLE-PICTURE M. & S. CO.

Extract from letter of July 23, 1937 from George M. Colvocoresses, Mining and Metallurgical Engineer, 1102 Luhrs Tower, Phoenix, Arizona.

"In reference to the Burro Mine, - this should really not have been included in the list which was sent since my information in regard to this property is sketchy.

One of my field engineers from Humbolt visited the claim a number of years ago and from his report I quote:

LOCATION

"On a branch running N.W. of Burro Creek in Mohave County, 22 miles S.W. of Bagdad Camp, about 12 miles from Signal. Elevation 2000' - 1 patented claim; perhaps others unpatented."

NOTES "Formation, lava flows, coarse breccias and rhyolite. A tunnel is driven 70' South, then 25' S.W. in calc-spar more or less mixed with porphyritic material. Black manganese is plentiful through the tunnel. The breast shows more porphyritic material and quartz veinlets, and less manganese, than elsewhere in the workings. 70' from the portal is a 5' cut showing calc-spar heavily stained with black manganese. A general sample of the little dump at the portal, consisting of manganese stained calc-spar and porphyritic material, with quartz veinlets assayed (H-173): Au. 0.01 oz; Ag. 0.39 oz.

"On the surface, the body of spar and porphyry is about 100' wide, but apparently ceases 300' south of the tunnel where it abuts against rhyolite and lava.

"To the N.W. on Burro Creek, is a big ledge made up of calcite and quartz, strike N 70 W slight dip S.E. 100' S.E. is another smaller parallel ledge 10' wide. The green country rock is granitic and very siliceous. Where the ledges are water-worn in the bed of the creek they show much shattering. The ground mass is rhyolite and the cracks are filled with pinkish quartz and calc-spar.

"The scanty remains of an old camp, and a piece of apparatus, nearly buried, which looks like an amalgamating barrel, are all that remain of any equipment there may have been in the past.

"The property appears to me to be absolutely worthless under any conditions, but I understood that every few months different engineers make a very hard trip to examine it."

In 1930 I was told that this property had been very thoroughly sampled by an engineer representing one of the large mining companies, who estimated that it contained some two million tons of \$3. gold ore, at the old price, but I could not obtain any copy of this engineer's report or assay maps and greatly doubt that he made any such estimate. Subsequently a partial sample of the surface pits and outcrops was made, by some friends of mine, who told me that most of their samples carried only a few cents per ton and unless more recent development has entirely changed the situation, I believe that this showing is of no interest to anyone."

I do not consider that this information has any commercial value and am very glad to pass it on to you for what it may be worth. It may, at least, save your company the expense of a useless field trip, unless more recent work would justify such an investigation."

5/1/1913

REPORT ON  
THE BURRO AND TELEGRAPH  
MINES

by J. E. Askew

LOCATION

These properties are located in the canon of Burro Creek, in the SE corner of Mohave County, Arizona, about ten miles NE of the town of Signal, and some six miles above the confluence of the Burro Creek with the Sandy one of the principal streams forming "Bill Williams Fork" of the Colorado River.

FORMATION

The ore occurrences are in stratified or schistose granites, the strike of the vein and country rock being the same. On the Tellegraph a porphyry dyke is exposed on the hanging wall side of the vein, by a short cross cut tunnel, and this dyke no doubt follows its strike. The formation has been considerably eroded in past ages. but is now, at least in this particular spot, covered to a great depth by a volcanic conglomerate, composed of water worn and angular fragments of the crystalline rocks below in a matrix of basaltic lava. This covering in the immediate vicinity of the mine forms cliffs hundreds of feet high. It is only the eroding of Burro Creek canon, which has brought to view the ancient rocks enclosing the vein below. On top of this conglomerate is a considerable thickness of pure basaltic lava. The Creek apparently flows in its old bed, worn down before the volcanic phenomena occurred, for on the north side of the cliffs rise four to five hundred feet high while on the South where the vein is exposed, the older rise at an angle of from thirty to thirty-five degrees, and are denuded of the volcanic covering for several hundred feet, until on top they pass under a cap of the latter. Warm sulphur springs are found at two or three points, apparently coming out of the vein itself, and have no doubt leached out the values from the vein matter in several places.

### VEIN MATTER

The vein, which is of immense proportions, varying from ten feet at the highest point of its outcrop in the telegraph to 100 feet in width, where cut through by the Creek on the Burro about 350 feet lower is composed of fine granular quartz from white to pinkish in color. This body as exposed is four hundred feet long by an average height of 150 feet and an average width of 50 feet and contains, at conservative estimate, 230,000 tons of ore.

### DEVELOPMENTS

Nature herself has done most of the development work on these properties, and has in lapse of time so worn and broken down the rocks forming both the hanging and foot walls, that the ore or vein matter now stands up above its immediate surroundings as a prominent ridge or comb. The owners have at various times broken considerable ore from openings made in this ridge or comb, especially on the Telegraph, which ore are assorted and worked in a small one stamp mill, built on the ground a number of years ago. A tunnel has been driven on the Burro near the level of the Creek, and appears from the nature of the ground passed through to be directly in the former course of the thermal springs before mentioned. This tunnel was driven about 100 feet but developed no values, possibly because of leaching as before referred to. No work has been done to the permanent warer line, but the value of the property is based on the ore in sight and not on anything which may be hidden below the surface.

### VALUES

Samples taken from the ore bodies in places, gave returns of from three to 240 ozs. silver, 0, 10, to 1. 40, ozs. gold per ton. Samples were also taken of the ore on the dumps on the Telegraph from which the First Class ore has been assorted and those samples gave returns of from 16 to 20 ozs. silver and from 0.20, to 0.40 ozs. gold per ton. The Telegraph is the one from which the most even results were obtained and no doubt because the vein has been broken into and it is possible to take samples of ore which have



not been affected by the weathering influence.

The highest results were obtained from a very small opening in the Burro, but where the ledge has not been broken into, very small values were obtained, the outside of the ledge being so hard that it is impossible to get a sample without blasting. Metallurgists who have examined the ore microscopically assert that the silver values occur as fine metallic particles; an assay by the Hypo-sulphite method, which showed an extraction of from 75% to 80% silver had previously led the writer to suppose that it occurred as chloride. The average value as determined from a large number of assays both of ore blasted out at the time of assaying the samples and of the ore on the dumps was between \$9. and \$10. per ton with silver at sixty cents per oz.. This gives an immense sum, as the values of the ore in sight, a sample of 150 pounds tested by the cyanide process by the writer, showed an extraction of 81% of the silver and 85% of the gold, whilst a further sample several hundred pounds was tested more elaborately by the Mac Arthur Forest people; who got an extraction of 81.03% silver and 90% gold, with only a destruction of cyanide amounting to thirty six cents per ton. They also reported that it was about the best ore to treat that they had ever handled. It is gathered from the foregoing statements that the proposition here presented is an immense low grade ore and it may prompt the inquiry "Why has not this property been taken up before if it has any merit?" The answer to this is: The owners have never been in position to do anything with it themselves, and several parties who have visited it, thought it too low grade ore at the time with the then methods of extraction in practice, the high cost of machinery and transportation in those days, whilst of late years the low price of silver and the craze for gold has predisposed possible purchasers to pass it by. The writer believes that he was the first person who examined the property, who tested the ores by cyanide process, and demonstrated that this was an ideal and extremely cheap process, eminently suitable for the extraction of values carried in these properties.

A Creek of living water carries the property which will, for six or eight months of the year, furnish all the power required, The property is distanced some 65 miles from the nearest R. R. point on the Santa Fe Pacific, formerly the Atlantic and Pacific, 10 miles from a Post Office. A wagon road formerly existed right to the property, but the last mile is now impassable for vehicles, but could be put in shape for a small outlay. The ore as above stated lies above the surface of the ground and can be mined or rather quarried very cheap, not to exceed fifty cents per ton no timbers being required, and while the low consumption of cyanide, cost of crushing, handling, superintendence, etc. ought not to cost over \$1.00 more, leaving the profit of \$7.50 per ton on such ore as above described. The presence of water on the ground and wood within a short distance, something unusual generally in Arizona gives an offering for money making exceptional to any one with the necessary means, who will investigate thoroughly and not turn it down because his predecessors failed to find, in their opinion, sufficient merit.

(Signed)

J. E. Askew,

Mining Engineer.

(Copy of the original.)



RECONNAISSANCE REPORT  
ON  
THE BURRO TELEGRAPH MINE \*\*\* 1917

Hon. Lew E. Wallace, Secy.  
The Monmouth Mining and Development Co.  
Galesburg, Ill.  
Dear Sir:-

In compliance with your request, I herewith submit my report on your mine, known locally as, "The Burro Gold." It is situated in Sections 10, 11, 14, & 15, in Tp. 14, N. of 12, West (according to a brass monument erected in a pile of stones by the U. S. Land Officials and Dated "1916".

This monument is about 100 feet east of the hanging wall of your vein and 150 feet South of Burro Creek, just up the hill about 50 feet above the site of your old Assay Tent site.

This property lies near the east line, but in the county of Mohave, State of Arizona. In a straight line it is 54 miles SE of Kingman, the county seat; it is 50 miles NW to Yucca on the Santa Fe R. R. Another Outlet Possible is a R. R. Survey Passing three miles north of your mine, this is to reach a large porphyry mine called, "The Copper Creek Mine" and located some three miles above you on Burro Creek, owned as I understand by Senator Clark.

At present your wagon road from the Big Sandy River in to your property "10 miles" is in bad shape especially the last mile down from Warm Springs Creek.

Mail is brought in from Kingman to Signal, twice a week.

PROPERTY

Your four patented claims, consist of two mill sites and the Burro and Telegraph lodes. You get 3000 feet in length upon the main vein with a width of 600 feet and an area of

I did not examine the records at Kingman to check your title. Nor do I know the exact survey lines of your property, nor whether you have properly filed in either your County Seat,

or at Phoenix the required annual papers, reports and paid fees which keep your Company intact, but I assume you have complied with all the laws of Arizona. This calls for annual reports as well as taxes in County and State.

Owing to the distance from the railroad and the neglect by Mohave County officials, I was unable to find correct maps of your locality so I have tied into it your Burro Section as per government survey, the range as I found it in the deeds of Cofers Ranch which lies in Sections 13, T 14, R. 14.

I previously found the surveyors for the Land Office had marked range number wrong, down on Bill Williams River and had been forced to correct it there, so the monument on your property I will check the next time I go to Kingman.

#### GEOLOGY

Five miles west of your mine is the valley of the Big Sandy River which is from one half to one mile wide. See photo annexed, looking across Big Sandy at the hills on the horizon in which lies your mine. This view shows the timber at the mouth of Burro Creek which cuts through a deep box Canon. Your mine is in the mountain which shows exactly in the center of the horizon where the mountain appears to cut off.

The Big Sandy River flows south about forty miles. This valley is a trough formed by faulting. A detrital filling of the valley consists of vast beds up to a thousand feet of river silt, gravel breccia and volcanic ash, etc. The valley extends from the Hualapai Mt. on the west to the Aquarius Cliffs on the east and the Aquarius Cliffs run for 125 miles from the Colorado River on the north to the Bill Williams River on the south. There are great masses of Rhyolite and Andesite in and along these cliffs.

The Rhyolite and Andesite outbursts along the river are of the Tertiary age and the same age in which are found most of the best paying fold mines of the southwest. In places large quantities of lime can be seen. After crossing many hills of this cemented river gravel, we drop down into Warm Springs Creek which flows from the north into Burro Creek at your Mine.

The Spring is called warm though the water is not hot. Many cattle were there to water. Undoubtedly the altering of the lime caused the heat. We pass down this creek half a mile through a box canon to its junction with Burro Creek where we are faced with what appears to be a huge fissure vein which is tilted on more properly dips to the northeast from 35 to 40 degrees and which has a strike of North 40 degrees west (Magnetic).

As we get an end view of the vein it is more impressive. Further, as the walls of Burro Creek canon here tower up to several hundred feet in height, the ordinary miner would call this the largest vein he had ever seen. And since the vein is mineralized we need not quarrel over a name.

I find the brecciated material shows the old gravel deposit which has been cemented together and part of the big ledge is pure lime and part pure quartz but generally it is altered, broken fragments glued together by silica and considerable lime along certain bedding planes.

The hanging wall of the vein contacts with a pink volcanic tuff which is about six feet thick. Next to this is a body of conglomerate and adjoining this is a wide body of volcanic glass, and well impregnated with feldspathic crystal sand also with much magnetic iron. The great heat following the deposition of flow of this volcanic rock has caused the alteration of the gravel and ash sand cemented them together until we find along this contact the mineralized layers have made into ore a body from 20 to 50 feet thick or in width. This contact now stands out in bold reliefs, the softer parts having been washed away. As it now stands up on end, the tunnel at the bed of the creek pierces it at the end and drifts along it, 90 feet, while other tunnels cut into it from the east thru the hanging wall of your 500 foot tunnel cuts it from the west. Numerous cross cuts and adits and trenches are driven into it along the cropping. This applies to both of the claims, the Burro south of the creek and the Telegraph north of the Creek. The waters of Burro Creek having cut across the vein and having worn it away.

# VALUES

I received from you a pamphlet report on your mine written by a party unknown to me and on pages 10 and 11, I find four tables of assays, which reduced to groups show your ores to carry values as follows:-

	22 assays	.25 oz. gold and 4, 58 oz. silver	
	23 "	.381 "	3,065 "
	23 "	.566 "	2,503 "
Total	68 "	1.798 "	13,052 "

which shows an average value of 1449 ounces gold and 3.233 ounces silver or \$8.38 in gold and \$2.44 in silver with silver at 70% per ounce. This makes a total average of \$11.24 per ton in gold and silver.

The above report makes no mention of how samples were taken nor how it was assayed other than to say some were taken from large samples and the higher assays were from ore chutes.

I sampled ores in most of the workings in the hanging walls in cross cuts and drifts, 20, 30, 50, and 100 feet in depth and ore at the mouth of cuts and along the summit of the outcrop and in the deep 500 feet tunnel. On the east side, I took an average sample along twenty five feet in one cross cut tunnel and gave this sample to E. C. Woodward, the best assayer in Colorado Springs who does work for ore settlements of many of our largest mines. We call this sample "D". He returned me the values in gold to be 6/100 of an ounce or \$1.20 and the silver to be one ounce or 75%, making a total of \$1.95 for an average of 25 feet.

I gave him a sample marked "C" which I took across twenty feet along the cliff at the peak of your outcrop and returned me a value of 4/100 of an ounce in gold or 80¢ per ton. No test for silver.

Next I tested thirty feet of ore from the last thirty feet next to head of your lower 500 foot tunnel on the west side and he returned the 4/10 of an ounce in gold or eighty cents and 8/100 of an ounce in silver, making sixty cents in silver and a total in gold and silver of one dollar and forty cents (\$1.40)

(being sample "A").

I then had Woodward Recheck this sample "A" in another form, said sample marked "B" and he returned me 4/100 of an ounce in gold or eighty cents, and 6/10 of an ounce in silver making fifty five cents in silver and a total value in gold and silver of \$1.25.

These samples taken fairly but not favoring the mine might have lost some of the fines by long trip but were all wrapped in paper.

Since all of these general averages went under two dollars in both gold and silver it shows me that there is some trouble about your ore. If your former tests would go over \$11. , I should be able to get \$3.00 to \$5.00.

I then took your ore to Denver and in a private laboratory tried another method. After first roasting the ore and then assaying sample "A" the silver weighed (twenty ounces to the ton) or at 75/ per oz. is worth \$15. and the gold weighed 10/100 of an ounce to the ton or \$2. in gold thus I have an average value of Thirty feet of your ore at face of 500 foot tunnel going \$17. per ton in gold and silver.

Sample "C" I reassayed and it assayed 25/100 an ounce in gold or a value of \$5. being an average of 20 feet on the peak of your outcrop.

I tried a sample I took in the lower tunnel at the end of your vein near the waters edge, going thru a large wooden gate to the tunnel and back about 60 feet from the door where I found a large amount of iron straining the quartz and filling a vug holes. Lots of this had fallen to the floor. I took five grabs of this from the floor, and roasted it and got  $\frac{1}{2}$  of an oz. in silver and 20/100 of an oz. in gold or a value of \$4.37 per ton.

Again in the 100 foot tunnel on your east side I sampled an average of six feet of good looking quartz and roasted it and the assay showed me  $1\frac{1}{2}$  oz. silver and the gold 18/100 of an oz. making \$1.12 in silver and \$3.60 in gold, or a total of \$4.72 in both gold and silver.

I also roasted other samples of ores and panned some and

could see the free gold but in very small particles, the gold being very fine.

#### DEDUCTIONS

In some of your workings your ore is entirely quartz, in others there are large masses of pure talc. spar. In still others the ore is blended and the quartz full of vug holes lined with oxidized iron and some manganese. Acid tests show a large percent of the lime in most of the samples. A microscopic Examination of the ores shows in the quartz minute black specs, some of which are rounded and others under a high power microscope show crystal. It is my opinion that your values lie in these black particles very largely, and that they were deposited there when the gravels and sands were cemented together.

To break these ores down to 20 or 30 mesh would not free these small crystals or particles. They are cemented by silicates and it may be that both the particles of silver and gold are largely as sulphurets. Proper application of heat would free both the gold and the silver. If this is not done, the value which would be removed by cyanide would be the portion of the mineral which is held free along the cracks or cleavage planes.

It is my opinion that the varying tests on your ores are due to the above facts. Careful tests should show your values are largely amenable after freeing the small particles. Both microscopic and fire tests indicate this. Your values are disseminated or diffused similarly to those we find in the placer mines.

I would recommend that you expend a reasonable amount of money in settling the question, whether your ore is absolutely a free ore and the entire mineral contents thereof admirably adapted to cyanide extractions or not, as Messrs. Wood and McArthur-Forrest and others have reported to you many years since or whether some of the later processes would be more practical.

#### PHOTOGRAPHS

Looking down Burro to the west from your mine shows the rugged nature of the country and Burro Creek at the mouth of Warm Springs Creek, with Canon Walls towering hundreds of feet.

This photo shows the bedding of the conglomerate across the creek from your mine.

The next photo shows the dam site on the Burro Creek just above the preceding photograph where the base of a dam would be about 150 feet across the creek and if built 100 feet high it would be from 200 to 300 feet at the crest. The creek here was flowing twenty feet wide by four inches in November. The silt and the sand on the edges of the banks would indicate floods of at least 10 feet. Walls of this dam would be of fine grained volcanics and would hold the water but you would be confronted with two important problems:-

1st. Accumulating sands: the bottom of your dam would fill from sand brought down by Burro Creek. The stream carries a high percentage of solid matter just as does the Big Sandy & Bill Williams Rivers. To obviate this you would have to construct proper flood gates at the bottom of the dam to wash out the sand, this would reduce your available water for the year.

2nd. The intake for a power-flume would have to be taken out on the west side or on the left of this photo and a tunnel would have to be cut thru the canon wall of a flume-way out around in solid rock.

Of course for small power dam you might build say 15 or 20 feet a day and carry a steel pipe around the rock and across and over your vein and drop the water to the mouth of your 500 foot tunnel. This would give ample power for a long time.

3rd. And cheaper still, a turbine well installation might be made from such a dam and extract power right at the foot of your dam. But the floods would interrupt the use of this a few times a year.

I did not take levels on your creek but it is easy to see enough fall to generate a large amount of power. And this power is worth as much as your mine because it can be used for all time and grows more and more valuable every year.

Photo of my horse shows black cliff over the horse which is the end of your outcropping being on south side of Burro Creek

and the pinnacle rocks on the opposite of north side of the Creek is a part of your vein in the Telegraph lode. Water is barely noticeable on the right. The wagon road comes along the stream bed as no room for road at the side of the canon.

Photo of the mouth of your 500 foot tunnel and track.

Photo of old Stamp mill in Signal Town.

Photo of your outcrop of Burro Mine showing quartz ore.

Photo of 20 Stamp Mill just south of town of Signal across the main creek containing much of use to you if any operations were started.

Both of these mills ground ore for the McGracken Mine.

#### FUEL

There is scarcely any timber of value that is visible in the vicinity of your mine property. But a fair amount of Palo Verds, Mesquite and Iron Wood could be hauled in from the Big Sandy River, by present wagon road, some ten miles. Large logs have drifted down the creek and lodged on the banks on your property. One tree was 20 feet long and two feet in diameter. While I did not go up the river or over the hills in all directions from the mine I am Positive a good supply of timber could be gotten above the mine on the creek.

Coal, Oil or coke would now have to be hauled in from Kingman or Yucca on the Santa Fe R. R. or you could electrify from your control of water power. This is the most important kind of fuel for mining work. All big concerns<sup>n</sup> prefer it for even modern hoisting apparatus, for individual motor use in crushers, rolls tables, pumps and even in smelting.

There remains one more source of fuel, not at present recognized, I refer to the late use in Africa by the German Scientists of the great heat of the sun in desert regions. You have ample sunlight during almost the entire year in this section to develop all the horse power you need by utilizing these rays.

#### WATER

There are two creeks flowing over your property.

1st. Warm Springs Creek coming from the north. It flows a



a distance of about ten miles before it reaches your site.

2nd. Burro Creek which flows some thirty or forty miles before it comes to your site. When I was there the amount of water and the fall of the creek was such that both day and night the water makes a great roar. It was more noticeable because of the canon walls. At time of flood it would become impassable unless bridged and you would be compelled to bridge it for continuous work.

I would estimate from high water signs and from the fall per mile, that over 200 cubic second feet must at times flow down the creek. By conserving the water with a dam you would preserve a constant power.

I could find no records of precipitation near the mine, nor of temperature nor of wind velocity, factors essential in considering the hydraulic features.

For a moderate size hydraulic plant it might be preferable to use Warm Springs bed on which to build dam and impound water from that creek and possibly divert water from Burro Creek into it. The huge amount of silt and sand and debris brought down by Burro Creek would make some cost to overcome. Besides walls of the canon are narrower and a dam would be far cheaper on Warm Springs site. However, I merely suggest this in a preliminary way for your consideration.

#### PNEUMATIC USE OF WATER

The stream flow here and the stream fall is ample to install a modern system which consists of a shaft, in or near bed of stream, allowing water to fall into said shaft through a pipe which is filled with air holes. The water draws particles of air along with drops of water and as it dashes upon concave steel hood at bottom of shaft the air is separated from the water, under the hood and under heavy compression. Thence by a pipe the compressed air is drawn off to be used in mill or mine. There are half a dozen mills now running by such air without use of compressors. There is no machinery to get out of order and installation is of moderate cost. The air could be used to run drill about the mine and in place of steam in cylinders and to run various machines in milling.

#### LOCAL COLOR

Between your mine and the Big Sandy, in the granite underlying your formation, is a lead mine called "Owens Mine" because it was formerly owned by the same owner for who this mining district was named. Cofer now owns it. I found a fine showing of lead, large cubes of galena on the dump. The peculiar thing about it was the occurrence of Wulfenite, the Molybdate of lead, which is very refractory and occurs along with the galena. I was shown specimens of other refractory ores in the vicinity. I was informed that Hualapai Mt. west of the river contained every known rare mineral. This goes to prove an environment which refractory ores.

This same man Owens was with McCracken the locator of the famous McCracken lead and silver mines, five miles west of Signal. At this mine over one million dollars has been produced and I find there is a similarity in this respect: that the geological survey Bulletins show a large amount of calcite was deposited in the vugs on top of the quartz and believed as your mine is opened your values will be better but will be refractory. The McCracken Mine is now, after forty years, again operating, having so far, installed a 500 ton modern mill to treat 15.00 ore.

You may not realize that Wm. A. Clarke's great superintendent, Gireau, is superintendent of the Copper Creek mines above you and the Burro Creek and that he has drilled many holes on their fifty six claims and proved an enormous body of Porphyry Copper ore of commercial value.

#### SUPPLIES

I found at Cofer's ranch a rich valley for hay, grain, fruits, vegetables, and stock. Ample supplies of nearly everything needed as food can be grown there. Luxuriantly growing figs, both black and white, berries and other delicacies, sugar cane, grapes and some tropical fruits. Decomposition of volcanic rocks have made the soil unusually rich. The pools along Burro Creek afford fine trout fishing during the summer.

#### CONCLUSIONS

My view of your mine as a whole is favorable. The returns I received thru a high class assayer,

do not destroy the value you have placed upon the property, neither do any unfavorable views by local men determine its worth. You know the Homestake Mine was turned down in its earlier history.

You have sufficient ore developed to warrant modern equipment to work your property in a small way for later increased capacity. It does not require a large sum of money to make a going concern. The entire modern trend is for large low grade ore bodies.

You have the lime and that is what makes our silver millions in Leadville and Aspen. You have a mineralized vein or zone of from 30 to 50 feet and possibly more.

If I can check my tests and prove you have ore going \$17. per ton over a width of thirty feet you have a Benanza, if I can prove it only goes from \$4. to 5. for over 25 feet in width, you have an enormous proposition. A big silver mine may be developed from it, as far more of silver shows than gold per ounce.

In my twenty years work in the Cripple Creek District, we changed our processes three times.

To profitably work your ore, is possible even if you have toasted it, as Gas, Oil, Wood or electricity can be used for that purpose.

(Signed)

Respectively submitted,

Laurence T. Gray

Condensed Report of  
The BURRO and TELEGRAPH Mines

by Arthur G. Harbaugh. May 1, 1913

Property:

Two patented quartz claims, the Burro and the Telegraph form the Burro mines. It is located in the Greenwood mining district on the east side of the Big Sandy River, in the Aquarius mountain range Mohave County, Arizona.

History:

This prominent ledge now located as the Burro mine was prospected by the Spanish more than one hundred years ago. Some of the ore on the Telegraph claim was worked by them. It is reported that Senator Hearst was examining this property at the time he was taken with his last illness. At this time the mine had a two stamp mill to treat the high grade ore by amalgamation.

Accessibility:

The mine is seventy miles southeast of Kingman, on Burro Creek, a branch of the Big Sandy River. It is fifty miles northwest from Congress on the Santa Fe branch, Ashforks to Phoenix. The easier way to reach the property at the present time is by Kingman. An auto way to reach the property at the present time is by Kingman. An auto stage leaves here daily, except Sunday, down the Big Sandy valley to Owens, ten miles from the mine. The road from here while rugged is good most of the way, except a few places in the hills across from the river to Burro Creek where the storm waters have washed the grades in the road the company built over ten years ago.

The "Good Roads Association" of Mohave Co. are planning to construct a road from the Sandy to Burro Creek and to a point three or four miles above the mine, where a road has already been built from there to Congress by Yavapai Co. When this is done the mine will be on a county road.

Topograph and Geology:

The elevation at the Burro is given at about 2500 feet

### Burro and Telegraph Mines

above sea level. The surrounding country is covered by rather steep hills of lava flow eroded into box canyons by Burro Creek and its branches. Burro Creek canyon exposes the ledge in several places on the east side of the reef and appears to have broken through a throw in the ledge in the center of the Burro claim. After the creek breaks through the ledge it bends abruptly to the south and follows the same course as the ledge for a distance of twelve hundred feet. Hot Springs Creek wore its way through another fault in the reef at the north end of the Burro claim and enters the creek at the point where it bends to the south.

The strike of the ledge is north  $18^{\circ}$  west with a dip to the east of  $45^{\circ}$  to  $60^{\circ}$ .

The general formation of the ledge is an undifferentiated andesite and acid lava. In parts there is some laccolithic andesite and in a few places some rhyolite is to be found. This ledge is exposed for about 5800 feet. The south end of the ledge is covered by lava hills and the north end is capped over by a steep cliff of malapai a short distance beyond the end lines of the Burro claim.

The foot wall of the ledge changes gradually to a gneissoid granite and granite diorite. The hanging wall is in a porphyry granite and andesite with high silicifications in a few places. The ledge itself is highly silicified and contains calcite also in many places colored a dark brown by manganese and traces of iron. The general ore body is a hard quartz lime. Great Alterations and replacements have occurred in the ledge due to ascending hot gases and hot alkaline waters. In all the northern ends of the ore bodies many vugs, or bubble like formations occur. The ledge bearing commercial values will average nearly thirty feet in width.

Apparently deep seated dykes with a strike north and about  $30^{\circ}$  east have broken the ledge at least in two places in the Burro mine. There are three ore bodies outcropping. The one on the north end of the Burro claim, between the creek where the ledge is crossed and Hot Spring Creek is approximately 600 feet in length. The third ore body is seventy feet south of the second and outcrops for about 375 feet. The ore bodies all widen at the north. One and two shoots

A. G. Harbaugh Report  
Burro and Telegraph Mines

of ore measure over sixty feet at the northern end.

The formation and ore deposit is quite similar to the Gold Roads, and the Tom Reed mines. The surface croppings assay better in many instances. The values of the Burro mines are gold and silver. The gold values appear to predominate in the higher grades.

The Signal McCracken mines twelve miles to the south of the Burro mines were one time good producers.

Reduction:

Amalgamation in the small mill first erected on the mine to treat the rich ore was not very satisfactory as the fine gold was lost and nearly all the silver. Several tests have been made on the ore with the cyanide treatment. The results obtained by Henry E. Wood of Denver, Colorado, show that a saving of 90% can be made by leaching the product. Some later tests made by cyanide and agitation for forty eight hours show an extraction of 95% with the concentrates not previously removed by concentration as the old practice in many operation formerly. Some further tests on the low grade ore to see how fine the crushing would need to be done to give a commercial result gave an 85% extraction by cyanide treatment with a few hours agitation and a contact of thirty six hours on a pump averaging less than 60 mesh in size.

The ore is medium hard but grinds well and does not slime greatly. The solution can be decanted or replaced by water washes without the cost of an expensive filter press. The reduction of this ore is very simple where the concentration is not needed and fine grinding to excess is not necessary. The cyanide consumption of a \$4.00 ore was six tenth of a pound to the ton of ore treated.

Development:

The mine has been prospected by five cross cut tunnels. The work of development of the ore by these adit has been confined to the second and third bodies in the Burro mine. A little open cut work has been done across the ledge in three places on the ore on the

A. G. Harbaugh Report  
Burro and Telegraph Mines

north side of Burro Creek. This one is the largest and averages nearly forty feet in width for a length of 600 feet. It stands above the creek fully 150 feet.

The number two ore body on the south side of the creek has been cross cut by a tunnel 80 feet above the creek bottom and 250 feet to the south, from the east side of the ledge on the hanging wall side. This tunnel is 86 feet in length. The first ten feet of the tunnel shows good ore and twenty six in the face of the tunnel samples well. Some specimens of exceptional value have been taken out by the men that did the work on this tunnel. These came from the south side of the tunnel near the face. A short drift was begun toward the south on this showing, but no winze or raise has ever been driven on this shoot of ore. The north end of this ore body samples well across 60 feet where the creek crosses the reef.

The short drifts have been driven along the foot wall of the vein in the north end of the second ore body. One was started near the creek level and the other is 80 feet above the creek bed. These drifts show ledge matter, colored well with manganese carrying light values. The main ore pipe is further to the south, according to the way the ledge assays. The outcrop of this body is 240 feet above the creek.

The third ore body of the Burro mine is 70 feet to the south of the above and is a little to the east due to some faulting at depth. A short cross cut tunnel has been driven in the fault between these two ore bodies. A cross cut tunnel has been driven in on the hanging wall of the ledge at a point 105 feet south of the north end line of this ore shoot, for a distance of twenty seven feet. This adit is all in ore. Two feet of it samples \$23.20 in gold and fifteen ounces silver per ton. Twenty feet of the ledge seventy feet above this tunnel on the outcrop samples \$4.58. A fourth cross cut tunnel 138 feet to the south of the third tunnel has been driven in for a distance of 29 feet. It samples well across the ledge for this distance.

A. G. Harbaugh Report  
Burro and Telegraph Mines

The top of this ledge about fifty feet above this tunnel across fifteen feet sampled \$7.58. A narrow seam of rich ore forty feet to the south of this \$7.58 sample was found to carry a little over six ounces of gold per ton.

The ore worked by the Spanish and later treated in the two stamp mill was taken from the hanging wall side of this ore body. The dump from the two cross cut tunnels driven in on this number three ore body assays \$4.70.

The top of this third ore body stands about 400 feet above the creek measured from the west side of the ledge. At this point a millsite has been selected and a tunnel was started to cross out east to the footwall of the ledge. The portal of this tunnel is 125 feet above the creek bed allowing forty feet rise of the storm waters and a gravity of 85 feet for the plant.

This tunnel has driven in for 488 feet and is near the footwall of the ledge. If the reef keeps its dip this tunnel should cut it at 520 feet. From the surface indications you can expect that the main ore pipe will be to the north of the point the tunnel will intercept the ledge. A drift run to the south from this cross cut is very apt to open up an ore body that has not cropped at the surface. This working tunnel ought to be carried to completion and some drifting done for this will prospect the Burro Mine in the very best manner.

Facilities:

Freight rates to the mine at present in small quantities cost \$30.00 per ton. This cost can be cut down more than half by the use of auto-trucks when the mine is operated on a larger scale.

Water for all milling purposes can be obtained by gravity flow from Hot Springs Creek. IN case more water is needed a large supply is at hand in Burro Creek.

Rough mining timbers can be poured in the Hualalia mountains at a distance of forty miles; sawed timbers will have to be secured at the railroad.



A. G. Harbaugh Report  
Burro and Telegraph Mines

Very little timbering will ever be needed in the mine except for ore chutes, or platforms in making raises. The drift wood in the creek furnishes fire wood for the camp cooking at present.

There are several points along Burro Creek where a water power plant might be constructed. A dam to stand the force of the storm waters will need to be built from bedrock, and at this point the width of the canon will make such a structure rather expensive. About twelve miles above the mine there is a very narrow box canon where the creek flows on the bedrock and at this point a basin is formed above. It is possible to get a head of 500 feet. The main supply of water for Burro Creek comes from a spring just above this dam site. The water shed of Burro Creek contains many square miles and in an ordinary season the flow of water will generate 200 horse power for a large part of the year.

Power for a plant milling fifty tons per day can be produced by gasoline engines using distillate to very good advantage in this district. For a large unit a steam plant, using crude oil and equipped with the latest types of high pressure engines can be operated at a far lower cost than a similar plant at the Gold Roads Mine, where a low grade ore is yielding a fair profit.

Skilled mine labor can be secured in this section of Arizona for \$3.50 per shift of eight hours. Solution men in the mine receive \$4.00 per shift of eight hours.

The climate is all in favor of cheap mining and milling costs. Mill construction is not so costly since no precautions are necessary for hard freezing and for heating the plant.

Investment:

The Burro mine is one that requires large capital to work in the most efficient manner. A large reduction plant would give a greater margin of profit on a low grade ore. The mill tunnel gives plenty of ore for large operations, with a wide ore body like the ledge on the Burro. Enough ore from this tunnel alone can be secured to mill a large tonnage for three or four years, on the south

A. G. Harbaugh Report  
Burro and Telegraph Mines

side of Burro Creek. Before any plants are erected some winzes should be sunk on the ore bodies to see if the values do not increase well with depth. The mining cost will not be high when everything is considered. The milling cost will not be high when everything is considered. The milling costs will be nearly all power and labor as the cyanide and chemical expenses will be very little.

Any adjoining property that may be of value can be purchased reasonably.

A list of assays from the mine where it has been proven by development are given.

Signed by A. G. Harbaugh

May 1, 1913.

Copy of J. P. Wallace's letter of Oct. 7, 1903

Kingman, Arizona  
Oct. 7, 1903

L. E. Wallace, Secy.  
Monmouth, Illinois

Dear Cousin:

I returned from Burro Creek late last night after an absence of eight days. When I reached the creek on the 30th of September, it was considerably swollen, but I forded it all right. The next day, it was very high, and remained high for three days. I was compelled to wait for its subsidence, before going up to make the location. Finally, I got there on the third and located the dam site and ranch. I came back to camp and commenced the survey of proposed tunnel on the west side of vein, from the mill site to the lode. Made two surveys over there, then made one on the east side. I then spent nearly a day in filing down the wagon thimble to make it fit the new wheel I got from Los Angeles for wagon, and which I took down with me. Altogether, I was very busy.

This morning, I took from the Post Office a letter from cousin Frank, stating that no decision had yet been reached by the Board. In this letter, a number of questions were asked, which I will answer at once.

1st. Would a 10-stamp mill pay on the high grade ore only?

Ans. I think it would pay expenses, and possibly a small profit. It would not pay on the low grade.

2nd. How would you get out this high grade ore from open cuts on the outside, or from the tunnels?

Ans. From the outside, by all means

3rd. What power would you use for drilling?

Ans. Machine drill run by either gasoline or water power.

4th. What would be the purpose of a tunnel run to the mill on the west side.

Ans. There is more room on the west side for a large mill, and for cyanide vats, and being of less altitude than the east side, a higher head and greater pressure from water in pipe line could be obtained.

If erected on the west side, there would be no subsequent moving of mill; the work we did there would be permanent. The cost of transporting ore through tunnel to mill would be no more than over a train track on side of hill on east side of vein, Both would be done over train (tram) railroad track, with mule or horse cars. All ore would be worked from the outside of vein as originally proposed whether mill be on east or west side of vein. Wherever put, the mill must be above high water mark, and if put on east side, it would throw the mill up the hill so far that not more than one half the vertical height of one body could be mined and dumped into the upper part of the mill. The mill on the west side, being lower, would allow a greater vertical height of ore being mined.

5th. Would it not be wise to put up a ten stamp mill and wait for two or three years until we find out definitely if there is sufficient water, even with the reservoir, to run a big plant, etc.

Ans. I would not advise waiting for more information on water question, we now know that there is not enough water for power purposes in summer season. We know by calculation that a large dam would back up water enough to operate our mill during the dry months. We now know that we cannot obtain electric transmission for power purposes from Yavapai County. Enclosed letter just received so states. I see no good reason, therefore, for waiting two or three years.

6th. Do you think a dam placed at the three-mile point would give sufficient head?

Ans. Yes, provided the pipe be of large size, and it would have to be in order to overcome the friction due to an increased surface area within the pipe.

7th. Would it be wise to locate a dam at lower end of Mexican ranch, where it broadens out, etc.

Ans. Yes, this is just the place where I showed you the surveyor's monument (or rather the committee) it is where the narrow canyon below begins to widen into a broad expanse. If built here, the dam would cause the water to back up to and alongside of the ranch, and would cover all the low intervening ground and I am of the opinion that then the ranch would not need any irrigation; It would be sub-irrigated. This is, in my judgement, an ideal place for a dam and a ranch. We would raise all our own garden stuff for the mine, and all our own hay and grain for our horses.

8th. I infer from your letters that you do not think a ten or twenty stamp mill would profitably treat five-dollar ore. Is this correct?

Ans. I am confident that a ten or twenty stamp mill, if run by gasoline, would not pay a profit on five-dollar ore, and it would be unwise to build a dam and pipe line for so small a plant as either of these. It is impossible to make money on five dollar ore, except when treated in a large way, and by cheap power.

9th. You have taken exceptions to my recent letter, I cannot see why.

Ans. When I made estimates on a dam, mill, and pipe line, they were based on the building of a low, short dam, in a narrow part of the canyon, where it would not exceed a hundred and fifty feet long, and at a point not over one mile from the mines. The survey has demonstrated that we must go at least three miles for a dam site, and that the dam must be much higher and longer than first proposed. Instead

therefore of a five thousand dollar dam. We counted on a one mile pipe line that would cost one dollar per linear foot \$5280. We now know it will require three miles of pipe line, and that this will cost \$15,840 if built of the same size pipe as that figured for one mile. But we know the longer the pipe the bigger it must be, in order to carry the same amount of water (due to friction); hence instead of costing \$15,840 for three miles, it will cost at least \$20,000. We figured on a twenty stamp mill to cost \$20,000, and from which we expected a good profit - but this was figured from an average ore yield of ten to twelve dollars per ton, given us by Woods. Since running the Burro crosscut, we know the average of ore there shown will probably not exceed five dollars per ton. We therefore are faced by a different proposition entirely from the that first proposed, and when you insist on doing now with the same money what we then proposed, I cannot but take exceptions to it. To swing our present proposition will require forty thousand dollars, or fifty thousand for the erection of a mill - one that will treat a large tonnage per day, and one that will handle all grades of ore that may be encountered. We don't want to sort the ore. It should be milled (every pound of it) just as it is blasted out.

We figured on a constant water supply. We now know we do not have and cannot count on more than nine months water supply for power purposes. I explained all of the above facts to the committee when here, and I think they fully understood them. All our figuring at the start was done on what we had reason to believe. Our figuring now is done on what we know. We must be governed by present, conditions, and by actual facts.

10th. What is the actual average of Burro and Telegraph ore?

Ans. The average varies in different places in both claims. It varies from twelve dollars to \$2.50. We of course get

sample essays much higher-up to \$43.00, but I am now talking of averages. I can not tell, nor can anyone tell, just what the general average would be for all the ore without running through a great many tons in a mill, and even then, the averages are very liable to change in different parts of the mill as development proceeds. At present we can form a rough guess, based on Wood's returns and on my own numerous essays. I would be inclined to put the general average at about six or seven dollars per ton.

11th. What is the length of each cross cut and of each drift?

Ans. Upper cross cut on Telegraph about 30 feet. I have at this moment forgotten the exact length, but you can turn to my letters written when this tunnel was completed and find out exactly. Burro cross cut 102½ feet. Cross cut between Burro and Telegraph - 40 feet. Upper drift - 38 feet. Lower drift 105 feet. Drift on foot wall south from Telegraph cross cut - 17 feet. Drift on Burro cross cut southward 13 feet. Total feet of workings - 345 feet.

12th. Will the ranch and water rights which you have just located have to be surveyed and what will the cost be?

Ans. The ranch should be surveyed and recorded. The dam-site does not have to be surveyed but should be recorded. The ranch, or at least 40 acres of it should be fenced with wire and a small cabin built on the ground, so as to comply with the law. And I will have to claim it as my house and sleep in the cabin occasionally. It can't be taken up in the name of the company but must be in my individual name. The government doesn't allow land to be taken up for companies. As to the dam and pipe line, the law provides that unless work on one or both of these has actually been commenced within a reasonable time after location and work presented with reasonable diligence thereon until completed, the claim to ownership thereof is utterly worthless and the ground is open to location by another. So you see we must either do something soon or run the risk of losing our rights.

The board should get a move on itself and decide on some policy right away. It is now over three months since the cross cut tunnels were completed and no decision has been reached.

13th. I have heard of an electric power plant to be built on the Colorado river. What of it?

Ans. The power plant above mentioned is, so far, on paper.

It may or may not be built. We cannot wait on this.

14th. What would it cost to put in a measuring scheme to find out the exact amount of water running past our property?

Ans. It would cost probably about \$20.00 to put in a Weir dam for above purpose, and this would accurately measure the number of inches, gallons, or cubic feet of water in the stream at the time. The measurements would have to be taken at different times and during different stages of water to get an average.

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In addition to the above answers I give herewith the data obtained on this trip regarding proposed tunnel from west side near the mill to the vein- connecting both. One of the surveys made shows a length of 350 feet for the tunnel, and this would cut the vein 208 feet deep. The other survey shows a length of 240 feet for the tunnel, and this would cut the vein 99 feet deep and would connect with the present cross cut on the Telegraph vein. These surveys were made from different points on the west side. I would recommend the 350 foot tunnel if either is to be run. I can let a contract for either tunnel for five dollars per foot and we furnish everything but board. The powder, fuses, caps, car, track, ties and candles would cost about seven hundred dollars and the work about \$1,750.00 or a total of \$2,450.00 for the longest tunnel. This would be a total average cost per foot for everything seven dollars.

I wired Henry Wood yesterday why we had not heard from the ore sent him on the 29th of Aug. and have just received the following from him by wire. "Your report will be forwarded tomorrow. Results entirely satisfactory." Just as soon as report is received



I will forward to you.

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Now if the board will permit me to offer one word of plain, straight forward advice or council without feeling that I am assuming to dictate, I will say:

In my deliberate judgment there are only two courses that can intelligently be pursued in deciding the policy to be adopted. One is to erect a big dam and pipe line and a big mill. If necessary sell all the stock to the end that such a plant be established. Decide upon this at once and go at stock selling in earnest. Put the price at fifty cents per share. Establish agencies in different important cities. Pay a fair commission for selling. Get it into your heads that we have a great property and that great efforts are demanded and that time is necessary to the successful accomplishment. If you are at a loss to know what you should do, allow someone who does know to take the lead and go ahead. Act now.

The other course is (in case your backbone is too weak for the first above plan) to fix up the property and sell it. But whatever you do don't allow the matter to drag. Decide immediately and get work under way. I am ready with head and heart to do as you may determine.

Very respectfully,

J. P. Wallace.

ORE TESTING WORKS  
OF  
Henry E. Wood & Company

Denver, Colo. 10/7/03

Report of concentration test on ore from the KINGMAN ARIZONA mine  
for J. P. Wallace

Crushed by Stamps to 40 mesh for 1st Willey Table

	NET WEIGHT lbs.	Ozs. gold	Ozs. Sil	Value per ton
	330	.41	1.70	\$9.05
Coarse				
Tons into one	4.32	22.22	29.3	59.05
76.38				
% saved	7.		22.	\$0.77 (red ink)
Slime	3.56	2.40	18.00	\$57.05
Tons into one				
92.70	% saved	6.30	11.00	\$0.61 (red ink)
Ton Wt concentrates				
7.88	Av Assay	2.30	24.2	\$58.10
Av Tons into One				
(41.87)		13.3	33	1.38 (red ink)
Tailings	#322	.36	1	7.70

All values in above statement are estimated as follows: Gold #20  
Silver.50

Report of Concentration test on ores from the KINGMAN ARIZONA mine  
crushed by stamps to 30 mesh for 1st Willey Table.

	Net Wt lbs	Oz Gold	Oz Sil	Value per Ton
	350	.42	1.70	\$ 9.25
Let Coarse	3.70	2.33	25	56.85
Tons into one				
102.90	% saved	5.10	11	0.55 (red)
Slime	3.20	2.74	21.70	65.65
Tons into one				
109.30	% saved	6.	11	.60 (red)
Amalgam	.099	ozs gold saving equals		0.18 (red)
Ton wt concentrates				
6.60 lbs	Av Assay	2.47	23.40	61.10
Av Tons into one				
53.03		11.10	25.	1.15 (red)
Tailings	344	.37	1.00	7.90

(Gold \$20 Silver .50)  
Values estimate

Report of the Burro - Telegraph Mines, Condensed,

By Arthur G Harbaugh.

1915

The patented quartz claims, The Burro and The Telegraph, form the Burro Mines. It is located in the Greenwood mining district on the east side of the Big Sandy river, in the Aquarius mountain range, Mohave County, Arizona.

This prominent ledge was prospected by the Spaniards more than one hundred years ago. Some of the ore on the Telegraph was worked by them. It is reported that Senator Hearst was examining this property at the time he was taken ill with his last sickness. At this time the mine had a two stamp mill to treat the high grade ore by amalgamation.

The mine is seventy miles south east of Kingman, on Burro Creek, a branch of The Big Sandy river. A good road from Kingman to Owens, ten miles from the mine. The road from here while rugged is good most of the way, except where the storm waters have washed the grades in the hills a few places across from the river to Burro Creek which the company had built. The Good Roads Association of Mohave County have planned to construct a road from the Big Sandy to Burro Creek and to a point three or four miles above the mine, where a road already built from there to Congress by Yavapai County. When this is done the mine will be on a County Road.

The elevation at the Burro Mine is said to be 2500 feet above sea level. Burro Creek canon exposes the ledge in several places on the east side of the reef and appears to have broken through a throw in the ledge in the center of the Burro Claim. Hot Springs Creek also wore its way through another fault in the reef at the north end of the Burro Claim and enters the creek at the point where it bends to the south along the claim.

The strike of the vein ledge is north 18° west with a dip to the east of 45° to 60°. The general formation of the ledge is an undifferentiated andesite and acid lava. In parts there is some lacolithio andesite and in a few places some rhyolite is to be found. This ledge is exposed for about 3800 feet. The south end of the ledge is covered by lava hills, and the north end is capped over by a steep cliff of malpais a short distance beyond the end lines of the Burro claim. The foot-wall of the ledge changes gradually to a gneissoid granite and andesite with high silicific places. The ledge it-self is highly silicified and contains caliche also in many places colored a dark brown by manganese and traces of iron. The general quartz is a hard quartz lime. Great alterations and replacements have occurred in the ledge due to ascending hot gases and hot alkaline waters. In all the northern ends of the ore bodies many vugs occur. The ledge, bearing commercial values will average nearly thirty feet in width.

Apparently deep seated dykes with a strike north and about 30 degrees east have broken the ledge at least in two places in the Burro mine. There are three ore bodies out-cropping. The one on the north end between the creek where the ledge is crossed and Hot Springs Creek is approximately 600 feet in length. The second one is 235 feet south and across the creek is 450 feet in length. The third ore body is seventy feet south of the second and out-crops for about 375 feet. These ore bodies all widen at the north. One and two shoots of ore measure over sixty feet at the northern end.

The formation and ore deposit is quite similar to the Gold Roads and the Tom Reed mines. The surface croppings assay better in many instances. The values of the Burro mines are gold and silver. The gold values appear to predominate on the higher grade ore.



The ore is medium hard, but grinds well and does not slime greatly. The solutions can be decanted or replaced by water washes without the cost of an expensive filter press. The reduction of this ore is very simple where the concentration is not needed and fine grinding to excess is unnecessary. The cyanide consumption on a \$4.00 ore was six tenths of a pound to the ton of ore treated.

The mine has been prospected by five cross-cut tunnels. The work of the development of the ore by these adits has been confined to the second and third bodies. A little open cut work has been done across the ledge in three places on the ore on the north side of the creek (Burro). This one is the largest and averages nearly forty feet in width for nearly 600 feet in length. It stands above the creek for fully 150 ft.

The number two ore body on the south side of the creek has been cross cut by a tunnel 90 feet above the creek bottom and 250 feet to the south from the east side of the ledge or the hanging wall side. This tunnel is 86 feet long. The first ten feet of the tunnel shows good ore and 26 feet in the face of the tunnel samples well. Some specimens of exceptional values have been taken out by this tunnel, coming from the south side near the face. A short drift was begun toward the south on this showing but no winze or raise was ever driven on this shoot of ore. The north end of this ore body samples well across sixty feet where the creek crosses the reef. Two short drifts have been driven along the foot wall of the vein in the north end of the second ore body. One was started near the creek level and the other is eighty feet above the creek bed. The drifts show ledge matter colored well with manganese carrying light values. The main ore pipe is further to the south, according to the way the ledge assays. The outcrop of this body is ~~seventy feet to the south of the above~~ above the creek.

The third ore body is seventy feet to the south of the above and is a little to the east due to some faulting at depth. A short cross-cut tunnel has been driven in on the hanging wall of the ledge at a point 105 feet south of the north end of the ore shoot, for a distance of 27 feet. This adit is all in ore. Two feet of it samples \$23.20 in gold and 15 oz. of silver per ton. Twenty feet of the ledge seventy feet above this tunnel on the out crop samples \$4.58. A fourth cross cut tunnel 136 ft to the south of the third tunnel has been driven in for a distance of 29 ft. It samples well across the ledge for this distance. The top of the ledge about 50 ft above this tunnel across fifteen feet sampled \$7.58. A narrow seam of rich ore forty feet to the south of this \$7.58 sample was found to carry a little over six ounces of gold per ton.

The ore worked by the Spaniards and later treated in the two stamp mill was taken from the hanging wall side of this ore body. The dump from these two cross cut tunnels assays \$4.70 per ton.

The top of this third ore body stands about 400 feet above the creek measured from the west side of the ledge. At this point a millsite has been selected and a tunnel ~~is-125-feet-above-the-creek~~ was started to cross cut east to the foot wall of the ledge. The portal of this tunnel is 125 feet above the creek bed allowing 40 feet rise of the storm waters and a gravity of 85 ft for the plant. This tunnel has been driven in 488 feet and is near the foot wall of the ledge. If the reef keeps its dip this tunnel should cut it at 520 feet. From the surface indications you can expect that the main ore pipe will be to the north of the point the tunnel will intercept the ledge. A drift run to the south from this cross cut is very apt to open up an ore body that does not crop at the surface. This working tunnel ought to be carried to completion and some drifting done for this will prospect the Burro mine in a very best manner.



By Arthur G. Harbaugh.

Water for milling purposes can be secured from Hot springs Creek by gravity flow. In case more water should be needed a larger supply is at hand from Burro Creek. There are several points along creek where a water plant can be constructed. At one point above the mine is a very narrow box canon where the creek flows on the bed rock and at this point a basin is formed above. It is possible to get a 500 foot head.

The water shed for Burro Creek contains many square miles and in an ordinary season the flow of water will generate 200 horse power for a large part of the year.

The climate is all in favor of cheap mining and milling costs. Minimum mill construction costs are required since no precautions for hard freezing and for plant heating is necessary. To work this mine in the most effective manner large capital is required to erect reduction plant sufficient to give greater margin of profit on low grade ore than a smaller plant would. The mill tunnel gives plenty of ore for large operations. With a large ore body like this ledge enough ore from this tunnel alone can be secured to mill an enormous tonnage for three or four years, on the south side of Burro Creek. Before any plants are erected some winzes ought to be sunk on the ore body to ascertain if the values do not increase well with depth as occurred at Oatman, along by the side of the Tom Reed mine the ore at the surface was very low in grade. At the 200 foot level values around \$8.00 were found. At 300 ft the ore was found to be 18 ft wide and assay from \$45.00 to \$50.00 per ton. The mining costs will not be high when every thing is considered. The milling costs will be largely power and labor as the cyanide and chemical expense will be very little.

A list of assays from the mine where it has been proven by development and a description where taken is herewith given.

Value. Description where taken

\$ 2.60	- 60'	across ledge on N. end of ledge of #2 ore body near creek.
2.92	- 40'	" croppings above the 86' tunnel.
2.22	- 6'	" the face & over roof of short drift 59' S of portal of the 86' tunnel
12.06	- 10'	" & towards the footwall 12' from portal of the 27' tunnel, south of fault. (tunnel B)
1.86	* 5'	" continuing to the west of above.
2.04	- 10'	" and taken 12' from portal toward footwall on the next tunnel south (Tunnel C)
3.10	- 10'	" and continuing to the west of the above.
2.64	- 9'	" " " " " " " " " " " "
4.88	- 20'	" the croppings of the ledge above the 27' tunnel B
7.58	* 15'	" " " " " " " " " " " " 29' " C
32.20	- 2'	of the best ore to be found in the 27' tunnel B, body not continuous.
5.68	-	Samples of the 27' and 29' tunnel dumps (Coarse) B and C
5.74	-	" " " " " " " " " " " " (Fine) " " "
17.20	-	Check samples on the \$32.20 ore taken from a little higher position but on the same streak in tunnel B.
8.40	-	Selected dump ore from tunnels B and C.
123.16	-	Seam of rich ore about inch wide above the 29' tunnel C along croppings. There is reason to think other leases will be found in this body of quartz.
Test #1	-	Selected ore, value \$8.40
		ground to 80 mesh - extraction by cyanide 93% Tails \$0.58
	" " 60 " " " " " " 88% " 1.00	
	" " 30 2 " " " " " 63% " 3.10	
Test # 2-	-	Dump ore from 27' and 29' tunnels B and C
		ground to 80 mesh - extraction by cyanide 90% " 0.56
	" " 60 " " " " " 85% " 0.85	
	" " 30 " " " " " 65% " 2.00	

Page 4. Report of the Burro & Telegraph Mines. Condensed,  
By Arthur G. Harbaugh.

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(Signed) Arthur G. Harbaugh,

Goldfield, Nevada, March 6, 1915.



Report on the Burro Creek Mine - I  
By C E Blount, Economic Geologist.

Location and Title.

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The Burro Creek Mine is situated in the southern part of Mohave County. The exact location finds the section corner of 10-II-14-15.T 14.N.R.12 W.Gila and Salt Rivers, in about the center of the Burro claim. The mine is also about 9 miles southerly direction from postoffice of Wickiup which is 60 miles from Kingman on the main highway from Kingman to Phoenix.

The property consists of two claims and two mill sites comprising 52 acres, is patented and owned by the Monmouth Mining and Development Co. of Monmouth Illinois.

The property has been held by different owners since the very early Territorial days. It is reported that George Hearst of Homestake prominence bought the property and paid \$5000.00 on it shortly before his death. About 1902 the property was bought by Dr. J. P. Wallace of Colorado. The writer assisted in construction of a road from the Big sandy to the mine, a distance of about 7 miles. The M. M. & D. Co. was incorporated by Dr. Wallace, under the Laws of Arizona. The Burro Creek mines was then taken over by the said company. The writer could not learn how long the Company operated but it ceased when Dr. Wallace died. The ground was then patented, and has lain idle since the time. All taxes have been paid to date and the title is clear. The writer is informed that the stock is held by a very small syndicate and can be transferred readily.

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Mr. Willis T. Lee in Bulletin 352 U.S. Geological Survey, describes this district as resting on a Pre-Cambrian granit base rock, but in the Burro-Creek the basement rock consists of a coarse grained hard quartz-feldspar complex contacting with a very early bluish black intrusive. As this early rock is covered by a later rhyolite effusion it was impossible for the writer in the limited time he was on the ground to determine their extent. The rhyolite above mentioned is probably late tertiary. This horizon which is several hundred feet thick is capped with a very late flow of basalt. The ledge of mineral bearing material is a quartz filling in an enormous fissure which cuts the country for several miles, striking northwesterly. The fissure cuts the quartz-feldspar basement dipping to the north east about 80 degrees and extends upwards into the contact older basalt. Prior to the advent of the rhyolite effusion the erosion bed swept away the hanging wall rock of the fissure leaving the vein filling exposed to a present depth of about 300 feet. The rhyolite in turn also was cut away by the waters of the present Burro Creek, presenting a body of gold and silver bearing quartz about 500 feet long. 300 feet high with an average width of about 70 feet exposed along the hanging wall side. The two claims parallell the Burro Creek on its south side for about 2000 feet. The Creek then makes an abrupt turn to the south cutting across about the center of the Burro claim and west of the creek the ledge rises to a height of several hundred feet and is about 20 feet wide. This section is about 900 feet long and is cut in its northwesterly end by the Warm Springs creek and canyon to a dept almost on a level with Burro Creek. The vein crops along the entire length of both claims, but on the Telegraph claim the rhyolite horizon forms the hanging wall, exposing only the apex of the ledge. Where the ledge is exposed by the erosic action of Burro Creek and Warm Spgs Canyon, it always shows a marked tendency to widen with dept. varying from 20 to 40 feet at the top to 30 to 100 feet at the deepest point of erosion.



#### Ore Bodies:-

That part of the Burro claim from which the hanging wall has been removed presents as before described, a mass of commercial ore about 500 feet long, 300 feet high and 70 feet wide. Figuring 16 cu ft to the ton, this body would comprise about 650000 tons of ore that would be mined by a power shovel, and of course would need no timbers. The westerly portion of the Burro claim presents, above the creek bed a body of ore about 1600 feet long 200 feet high and 20 feet or more than 200000 tons of ore that can be mined through tunnel from the surface.

The Telegraph claim presents a body of ore about 1500 feet long 400 feet high and 20 ft wide, or more than nearly another million tons that can be mined from tunnels, making about 1,900,000 tons of ore that can be mined from tunnels without sinking or using any hoisting machinery.

#### Accessibility:

Untill the present year (1928) the mines of this district were without means of transportation, as there were no roads over which appreciable tonnage could be moved, and the nearest rail-road point was at Kingman, 70 miles to the north. At present a fine highway passes within about four miles of the Burro Creek mines. Five thousand dollars would extend this road to the mine, as most of the ~~the~~ four miles is across a flat mesa or table land. The last mile is down warm springs canyon and would require most of the labor to make it passable for heavy trucks.

#### Facilities:

There are several fine Dam sites on Burro Creek, both above and below the mine. The average rain fall and flow is sufficient to generate all the power the mine would require and leave a large margin which could be disposed of at the surrounding mines. The drainage basin of Burro Creek is over 100 miles long above the mine and heads in some of Arizonas highest mountains, a distance of about 40 miles. The rhyolite erosion at the mine is of first class quality for building purposes and as it is of first class working quality, all houses should be constructed of it. The water about 2 miners inches, at the Warm Springs should be used in the change room for the miners shower baths.

#### Labor:

As a vast portion of the visable ore can be extracted and reduced with the most simple machinery, only the cheapest labor would be required and the climate is the mildest in the winter months (very seldom any frost) the housing costs should be at the minimum.

#### Development:

Several short adit tunnels have been run across the ledge on the Burro claim. These tunnels offer a first class opportunity for examination and sampling the ledge. A tunnel over 500 feet long has been driven through the foot wall on the west side of the Burro claim. This tunnel is in the right place to work the ore from the south half of the Burro claim, and all of the Telegraph claim above the creek bed. Over 1700,000 tons of ore can be taken out through this tunnel. By extending the track about 500 feet along the canyon southerly, the above tonnage could be put through any size mill by gravity, thereby eliminating any back pumping or elevating any part of the ore at any time after it leaves the mine. This system (gravity system) represents a vast cut in the cost of production and reduction, and many mining ventures have gone to the wall on account of excessive handling of ore at the mill.

There are no buildings, tools or machinery on the grounds as all of these were removed years ago.

#### Conclusion:

As this property is ideally located, as regards to tonnage, climate, water power and transportation, it offers opportunity for large net returns

(over)



For many years, under proper procedure and management. A sum of one or two thousand dollars should first be expended in systematic sampling, then a small Pilot Mill (25 tons) should be installed to determine the method of treatment and reduction. This mill should be planned so as to add units to it as the treatment system is determined, until at least 1000 tons could be treated each day of 24 hours. Some small water power system can be worked out at first to operate the pilot mill. Then a large impounding dam could be constructed to operate a large mill.

No money should be expended on the road until the pilot mill has proven the treatment method. The initial plant can be conveyed to the mine on pack animals. The packing distance would not exceed 1 mile

Signed

C.E.Blount

A.D. 1928

# Report of the Burro.- Telegraph Mines, Condensed.

By Arthur C. Harbaugh.

The patented Quartz claims, The Burro and The Telegraph, form the Burro Mines. It is located in the Greenwood mining district on the east side of the Big Sandy river, in the Aquarius mountain range, Mohave County, Arizona.

This prominent ledge was prospected by the Spaniards more than one hundred years ago. Some of the ore on the Telegraph was worked by them. It is reported that Senator Hearst was examining this property at the time he was taken ill with his last sickness. At this time the mine had a two stamp mill to treat the high grade ore by Amalgamation.

The mine is seventy miles south east of Kingman, on Burro Creek, a branch of The Big Sandy river. A good road from Kingman to Owens, ten miles from the mine. The road from here while rugged is good most of the way, except where the storm waters have washed the grades in the hills a few places across from the river to Burro Creek which the company had built. The Good Roads Association of Mohave County have planned to construct a road from the Big Sandy to Burro Creek and to a point three or four miles above the mine, where a road already built from there to Congress by Yavapai County. When this is done the mine will be on a County Road.

The elevation at the Burro Mine is said to be 2500 feet above sea level. Burro Creek canon exposes the ledge in several places on the east side of the reef and appears to have broken through a throw in the ledge in the center of the Burro Claim. Hot Springs Creek also wore its way through another fault in the reef at the north end of the Burro Claim and enters the creek at the point where it bends to the south along the claim.

The strike of the vein ledge is north 18° west with a dip to the east of 45° to 60°. The general formation of the ledge is an ~~andesite~~ undifferentiated andesite and acid lava. In parts there is some laccolithic andesite and in a few places some rhyolite is to be found. This ledge is exposed for about 5000 feet. The south end of the ledge is covered by lava hills, and the north end is capped over by a steep cliff of malpais a short distance beyond the end lines of the Burro claim. The foot-wall of the ledge changes gradually to a gneissoid granite and andesite with high silicific places. The ledge it-self is highly silicified and contains caliche also in many places colored a dark brown by manganese and traces of iron. The general quartz is a hard quartz like. Great alterations and replacements have occurred in the ledge due to ascending hot gases and hot alkaline waters. In all the northern end of the ore bodies many vugs occur. The ledge, bearing commercial values will average nearly thirty feet in width.

Apparently deep seated dykes with a strike north and about 3° degree east have broken the ledge at least in two places in the Burro mine. There are three ore bodies out-cropping. The one on the north end between the creek where the ledge is crossed and Hot Springs Creek is approximately 600 feet in length. The second one is 225 feet south and across the creek is 450 feet in length. The third ore body is seventy feet south of the second and out-crops for about 375 feet. These ore bodies all widen at the north. One and two shoots of ore measure over sixty feet at the northern end.

The formation and ore deposit is quite similar to the Gold Roads and the Tom Reed mines. The surface croppings assay better in many instances. The values of the Burro mines are gold and silver. The gold values appear to predominate on the higher grade ore.



The ore is medium hard, but grinds well and does not slime greatly. The solutions can be decanted or replaced by water washes without the cost of an expensive filter press. The reduction of this ore is very simple where the concentration is not needed and fine grinding to excess is unnecessary. The cyanide consumption on a \$4.00 ore was six tenths of a pound to the ton of ore treated.

The mine has been prospected by five cross-cut tunnels. The work of the development of the ore by these adits has been confined to the second and third bodies. A little open cut work has been done across the ledge in three places on the ore on the north side of the creek (Burro). This one is the largest and averages nearly forty feet in width for nearly 600 feet in length. It stands above the creek for fully 150 ft.

The number two ore body on the south side of the creek has been cross cut by a tunnel 90 feet above the creek bottom and 250 feet to the south from the east side of the ledge or the hanging wall side. This tunnel is 86 feet long. The first ten feet of the tunnel shows good ore and 26 feet in the face of the tunnel samples well. Some specimens of exceptional values have been taken out by this tunnel, coming from the south side near the face. A short drift was begun toward the south on this showing but no winze or raise was ever driven on this shoot of ore. The north end of this ore body samples well across sixty feet where the creek crosses the reef. Two short drifts have been driven along the foot wall of the vein in the north end of the second ore body. One was started near the creek level and the other is eighty feet above the creek bed. The drifts show ledge matter colored well with manganese carrying light values. The main ore pipe is further to the south, according to the way the ledge assays. The outcrop of this body is ~~about 40 feet above the creek~~ above the creek.

The third ore body is seventy feet to the south of the above and is a little to the east due to some faulting at depth. A short cross-cut tunnel has been driven in on the hanging wall of the ledge at a point 105 feet south of the north end of the ore shoot, for a distance of 27 feet. This adit is all in ore. Two feet of it samples \$23.20 in gold and 15 oz. of silver per ton. Twenty feet of the ledge seventy feet above this tunnel on the out crop samples \$4.58. A fourth cross cut tunnel 136 ft to the south of the third tunnel has been driven in for a distance of 29 ft. It samples well across the ledge for this distance. The top of the ledge about 50 ft above this tunnel across fifteen feet sampled \$7.36. A narrow seam of rich ore forty feet to the south of this \$7.58 sample was found to carry a little over six ounces of gold per ton.

The ore worked by the Spaniards and later treated in the two stamp mill was taken from the hanging wall side of this ore body. The dump from these two cross out tunnels assays \$4.20 per ton.

The top of this third ore body stands about 40 feet above the creek measured from the west side of the ledge. At this point a mill site has been selected and a tunnel ~~is to be driven across the creek~~ was started to cross cut east to the foot wall of the ledge. The portal of this tunnel is 125 feet above the creek bed allowing 40 feet rise of the storm waters and a gravity of 85 ft for the plant. This tunnel has been driven in 488 feet and is near the foot wall of the ledge. If the reef keeps its dip this tunnel should cut it at 520 feet. From the surface indications you can expect that the main ore pipe will be to the north of the point the tunnel will intercept the ledge. A drift run to the south from this cross out is very apt to open up an ore body that does not crop at the surface. This working tunnel ought to be carried to completion and some drifting done for this will prospect the Burro mine in a very best manner.



Water for milling purposes can be secured from Hot springs Creek by gravity flow. In case more water should be needed a larger supply is at hand from Burro Creek. There are several points along creek where a water plant can be constructed. At one point above the mine is a very narrow box canon where the creek flows on the bed rock and at this point a basin is formed above. It is possible to get a 500 foot head.

The water shed for Burro Creek contains many square miles and in an ordinary season the flow of water will generate 200 horse power for a large part of the year.

The climate is all in favor of cheap mining and milling costs. Minimum mill construction costs are required since no precautions for hard freezing and for plant heating is necessary. To work this mine in the most effective manner large capital is required to erect reduction plant sufficient to give greater margin of profit on low grade ore than a smaller plant would. The mill tunnel gives plenty of ore for large operations. With a large ore body like this ledge enough ore from this tunnel alone can be secured to mill an enormous tonnage for three or four years, on the south side of Burro Creek. Before any plants are erected some winzes ought to be sunk on the ore body to ascertain if the values do not increase well with depth as occurred at Oatman, along by the side of the Tom Reed mine the ore at the surface was very low in grade. At the 200 foot level values around \$8.00 were found. At 300 ft the ore was found to be 18 ft wide and assay from \$45.00 to \$50.00 per ton. The mining costs will not be high when every thing is considered. The milling costs will be largely power and labor as the cyanide and chemical expense will be very little.

A list of assays from the mine where it has been proven by development and a description where taken is herewith given.

[illegible]

#

2.50 -	60'	"	across ledge on N. end of ledge of #2 ore body near creek.
2.92 -	40'	"	croppings above the 86' tunnel.
2.22 -	6'	"	the face & over roof of short drift 59' S of portal. of the 86' tunnel
12.06 -	10'	"	& towards the footwall 12' from portal of the 27' tunnel, south of fault. (tunnel B)
1.86 *	5'	"	continuing to the west of above.
2.04 -	10'	"	and taken 12' from portal toward footwall on the next tunnel south (Tunnel C)
3.10 -	10'	"	and continuing to the west of the above.
2.64 -	9'	"	" " " " " " "
4.38 -	20'	"	the croppings of the ledge above the 27' tunnel B
758 *	15'	"	" " " " " " 29' " C
32.20 -	2'	"	of the best ore to be found in the 27' tunnel B, body not continuous.
568	-		Samples of the 27' and 29' tunnel dumps (Coarse) B and C
5.74 -	"	"	" " " " " " (Fine) " "
17.20 -			Check samples on the \$32.20 ore taken from a little higher position but on the same streak in tunnel B.
8.40 -			Selected dump ore from tunnels B and C.
123.16 -			Seam of rich ore about inch wide above the 29' tunnel C along croppings. There is reason to think other leases will be found in this body of quartz.

Test #1 - Selected ore, value \$8.40		
ground to 80 mesh - extraction by cyanide	93%	\$0.58
" " 60 " " " "	88%	1.00
" " 30 " " " "	63%	3.10
Test #2 - Dump ore from 27' and 29' tunnels B and C		
ground to 80 mesh - extraction by cyanide	90%	0.56
" " 60 " " " "	85%	0.85
" " 30 " " " "	65%	2.00

Several other tests were made to show the range of the needed grinding. The idea sought was to get a commercial extraction as low or coarse mesh as possible to save horse power. The cyanide consumption was low.

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Goldfield, Nevada, March 6, 1915.



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#### Conclusion:

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A.D. 1928