"GREENWOOD" ORE BODY:

About July 1908 the Ohio-Kentucky Co., purchased from the Nevada Tiocha Mining Co., a group of 8 claims lying to the north of the Raymond Ely or Panacker, on one of which, the Monarch, there is a well timbered double compartment vertical shaft sunk to a depth of nearly 500 feet. This shaft is equipped with a fine large hand frame hoist building, Fairbanks-Morse 25 H.P. gasoline hoist, etc., and is located 300 ft. northerly from the Raymond & Ely side line. On the 360 ft. level a drift extends southerly about 800 ft., into the Raymond Ely or Panacker ground where it intersects the INDEPENDANT vein.

This drift was driven during the year 1875, but owing to the base character of the ore encountered, sulphides of zinc, lead and iron, the old company did not crosscut the ore body. This was done, however, during the summer of 1908. with the result that a vein nearly forty feet wide was exposed striking easterly and westerly, of which 15 feet is nearly pure sulphides averaging about 10% lead, 9 ozs. silver, $1.50 gold, 19% zinc, 15% iron, with only about 25% silica, a little manganese an no arsenic or antimony.

A drift running westerly cuts this same vein about 75 feet distant, showing the same general character of the ore, but it was not crosscut at this point. No drifting has been done, but the probabilities are that it will be found to continue easterly at least as far as the old Phoenix or Nevada Utah shaft No. L. as distance of 400 or 500 feet, where a body of similar ore was struck by the Nevada-Utah Co., in this same INDEPENDANT vein at about the same level. This is also a very large body of sulphidies ore at least 15 feet wide, and from samples taken by the writer from the dump as work was presented the grade and character was found to be about the same as the Greenwood. No development has been done on this discovery but the future will doubtless disclose the fact that this ore shoot is the easterly end of the Greenwood body and that this immense shoot will extend down and found to connect with . and be a part of, the "Black Ledge" nearly 900 feet below.

The greenwood ore body has been proven at least 75 feet

westerly and at this point seems to be continuing in that direction strong and persistant. The "Black Ledge" is in this same vein about 900 feet below and the indications are that the ore will be found to be continuous between these points, in which event, many hundreds of thousands of tons will result, especially should the ore shoot be found to be 400 feet in length. The ore being extremely heavy, not more than eight cibic feet would constitute a ton, and therefore, a block of ground 900 by 400 by 15 feet would produce nearly 700,000 tons, to say nothing of the amount below the 1200 foot level, or that to be found above the 360 foot level. This, what is termed the "Greenwood" ore body, named from the men who first discovered it, lies in the shale overlying the quartzite, at a point where the porphyry dyke or vein would be found had it broken up into the shale. This was not done, however, but it is evident that a crack or fissure resulted from the intrusion of the dyke, which later serves as an avenue for the upward passage of the mineral bearing solutions eminating from the porphyry dyke, a few hundred feet below. This being the case, richer ore can be expected as depth and closer proximity to the dyke are obtained. The fact that richer ore is found in the "Black Ledge" seems to prove this theory.

(175)

I-form

Denver, Colorado, November 18, 1915.

403

Mr. H. S. Kimball,
Room 2719 Equitable Bldg.,
#120 Broadway,
New York, N.Y.

My dear Mr. Kimball:-

I have just returned from Salt Lake and have had lunch to-day with Mr. Whitaker who is preparing his report on the Pioche situation. It occurs to me now that there may be an opportunity for you in the Pioche field in the way of a gamble in connection with the development of the Electrolytic Zinc Process. You will no doubt recall that I have mentioned this Amalgamated-Pioche ore body in the upper levels, being that part which is not amenable to any mechanical treatment of which we know, but which contains 200,000 to 300,000 tons of ore very accessible and quite completely blocked out, with possibilities of that much more being developed during the process of extraction. This ore runs about 12% zinc and to the best of my recollection, carries a quite appreciable amount of gold, silver, lead and copper. Mr. Whitaker agrees with me that for a long time to come, this ore can be delivered to a plant for treatment at Pioche for a dollar a ton, and the ore in sight is certainly sufficient upon which to build a plant along these lines, if such is found to be desirable.

I have repeatedly called Mr. Swart's attention to this body of ore in connection with his consideration of the Pape Process.

2.— Mr. H. S. Kimballs—

During my recent visit to Salt Lake, I called upon Mr. Williams, who represents the Empire Zinc Company in that territory, and who told me during the conversation that the Electrolytic Process, as now being developed by the American Smelting & Refining Company and also the United States Smelting Company, had upset all plans for the treatment of complex ores so far as he personally was concerned. He tells me also that his principals are not as fully convinced of the success of the process as he himself is. He has been told by a Mr. Ramsay, who is carrying on the operations for the A. S. & R., that there was no doubt but they could produce spelter for 3 1/2¢ a pound from the ore. This, of course, would be a decidedly high treatment cost for a 40% ore, since it would represent $35.00 to $40.00 per ton, and in that case will never enter as a competitor against the present plan of operation. However, it is my belief that the great supply of zinc of the future will come from the Western complex ores, the abundance of which is quite well known to you. In the case of the Pioche ore, you will produce probably 300 pounds of zinc at a cost at this rate of $10.50 for treatment and $1.00 for mining. For this cost you have recovered 300 pounds of marketable spelter, which, at the lowest market price, would pay back a good profit on the cost and would leave you a profit of about 100% for the production of gold, silver, lead and copper.

In my perusal of your Amalgamated-Pioche proposition, I see no mention of the fee having been in any way commented by this proposition. I am suggesting for your consideration the possibility of your getting some equitable option on this fee as a consideration for your undertaking the present proposition with the development of the Electrolytic zinc

E.-- Mr. H. S. Kimball.

Process in view as the ultimate object.

I am writing this that you may have this suggestion to consider during your consideration of Mr. Whitcomb's findings on the Vogelstein proposition.

Yours very truly.

AMP/S

CC to -
Mr. H.S.Kimball,
St. Louis, Mo..
- and-
Mr.Chas. W. Baker,
New York,N.Y.

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Item

ORVIL R. WHITAKER
ENGINEER OF MINES
932 EQUITABLE BUILDING
DENVER, COLORADO

Denver, Colo., November 18th, 1915.

403

Mr. H. S. Kimball, Prest.,
American Zinc Lead & Smelting Co.,
1012 Pierce Building,
St. Louis, Missouri.

Dear Sir:

In accordance with instructions from Mr. A. K. McDaniel, I beg to hand you herewith my report on the Amalgamated Picche property, which you have under consideration for lease.

This report deals with that portion of the property showing immediate available profits, and covered by the estimates of Messrs. Rogers and Van Wagenen. A complete and detailed report covering the entire property was made in 1912 by Mr. A. H. Rogers and is on file in the Company office.

The calculations are based upon the results of tests on representative ore made by The General Engineering Co. of Salt Lake City, and the sale of the zinc and lead concentrates under contracts now in force to the United States Zinc Co., Blende, Colorado, and the U. S. Smelting Co., the excess tonnage stipulated in the contract to be sold on the same basis, maximum price paid for zinc being 8¢.

The present operations consist of mining and shipping the high grade ore, which is decidedly detrimental to any proposed future milling proposition; therefore the estimates are made on conditions at this time and would not hold if the "gouging" is continued.

Owing to the lack of equipment and high pumping cost, profit on the available ore reserves can only be realized by mining the ore left in the mine as fast as possible, and storing it; at the same time build a suitable mill; then if no additional ore is developed discontinue mining and realize on the milling operations.

Summary:

Proven ore:

In place in mine above 13th level,	2600 tons	20% zinc
" " " " between 13th and 14th levels,	6665 "	16% "

On dumps:

Fines	4335 tons	20% zinc
Coarse	3050 "	14% "
Total:	16650 tons	17% zinc

Income from Ore:

Mill tests show ratio of concentration on a 17% head of 3 to 1 for the zinc and 25 to 1 for the lead, of the following analysis:

	oz. Au.	oz. Ag.	% Zn.	% Pb.	% Fe.	% Insol.
Zinc Conc.	0.115	15.98	42.98	0.72	12.60	8.30
Lead Conc.	0.448	40.44	12.88	4.91	30.10	2.76

Per contracts now in force:

Value of	42.00% Zn	Conc. f.o.b. mine ---	$25.00
" "	4.90% Pb	" " "	22.50

$\frac{16650}{3}$ = 5,550 tons zinc conc. at $25.00 per ton = $ 138,750.

$\frac{16650}{25}$ = 660 " lead " " 22.50 " " = 14,850.

Total $ 153,600.

Expenses:

Begin at once mining at the rate of 100 tons per day and the construction of a mill. First four months' operations will result as follows:

Mining etc. of 9265 tons ore at $3.00		$ 27,795.
Pumping at $2,000 per month		8,000.
General Expenses at $1500 per month		6,000.
Mill complete		37,000.
Various		7,000.
		$ 85,795.

At rate of $22,000 per month.

After four months mill should be in operation, resulting in monthly expense as follows:

Milling 1500 tons at $2.00	$ 3,000.	
Hauling surface ore at 25¢ per ton	375.	
General	1,300.	
	4,675.	
Total for 11 months' mill operations		51,425.
Total expense		$ 137,220.

Monthly revenue from mill operations at the rate of 1500 tons of ore per day, should be:

500 tons of 42% Zinc Conc. at $25.00 per ton		$ 12,500.
60 " " 4.90% Lead " " 22.50 " "		1,350.
		$ 13,850.

Results from mining the ore reserves and storing same on dump, constructing mill, and milling ore included in the foregoing estimate are as follows:

Total revenue from ore sales as per contracts in force, together with excess tonnage	$ 153,600.
Total expenses	137,220.
Profit on ore	$ 16,380.

Miscellaneous Income, based upon past royalties from leases, somewhat uncertain due to unforeseen changes:

Railroad 15 months at $1,000	$ 15,000.	
Water rent 15 " " 400	6,000.	
Royalties from leases at 500	7,500.	
Total Miscellaneous Income		$ 28,500.
Total profit		$ 44,880.

Therefore disregarding interest charges, etc., the proposition is:

Initial investment distributed over four months	$ 85,795.
Net gain from ore sales and miscellaneous	44,880.
Time required for realization 15 months	

Prospective value:

In addition to the estimated ore there are 6,000 tons of fills in the mine average grade 9.5% Zn and 7,000 tons of dump on the surface average grade 7.0% Zn. These would yield a small profit from milling provided the operation could be relieved of all general and overhead expenses.

The Greenwood and Susan Duster mines contain large ore bodies of good zinc value, but so far no successful process for treatment has been worked out.

The old reports claim good ore in the bottom of the Black Ledge winze and also in the two winzes of the Meadow Valley. Level 14 of the Black Ledge winze is now in low grade ore and the vein is narrow; the other winzes are filled with water. Time estimated to investigate these prospects one month; additional cost $5,000. However, the lack of mechanical equipment would delay the beginning of operations elsewhere.

The old stopes above the 12th level of the Raymond and Ely claim have a fair prospective value for a small production.

Mill tests are being made at the Denver plant on the ore, also a separate test of the Greenwood ore; results to be forwarded as soon as finished.

Conclusion:

The value of the proposition is calculated on the assumption of a market for 500 tons of zinc concentrates per month and 8¢ zinc, with present contract. A better selling contract would proportionately increase the profits. However, the outlook for

additional tonnage of similar ore is not encouraging.

If the terms as offered carry with them the acquiring of a holding interest in the property, without additional expense, then the ore bodies of the Susan Duster and Greenwood mines have a good prospective value dependent upon the development of a successful process for treating the ore.

Very truly yours,

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Item

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October 14th, 1915.

Mr. A. M. Plumb,
1218 Foster Building,
Denver, Colo.

My dear Bert:

I wish to give you a little data in regard to a deal which Mr. Kimball has made for the Zinc Company with Vogelstein on the Amalgamated Pioche property.

We are to examine this property and Kimball has so agreed. It may be that I will go down, but it may be that we will send Mr. Whittaker, and in either case the chances are that you will go along also so that we can have real expert opinion. I am sending this data to the office by letter so that if it should come about that we would wire for Whittaker to go, you will at least have this for a starter. In addition to this Vogelstein has agreed to send reports, maps, etc., which he has in New York.

The proposition calls for Vogelstein and the American Zinc Company each to put up half of $40,000.

Rogers and Van Wagenen claim that there are 7000 tons of ore on the dump and ~~100,000~~ 10,000 tons in the mine of milling grade.

Both suggest that the mine be operated and the ore taken out before February 1st, then allowed to fill up to the twelfth level, which strongly indicates that they expect no ore further than this amount; however, Vogelstein believes the chances are for more tonnage in spite of the fact that Rogers and Van Wagenen say not. There is a possibility for a low grade tonnage of about 10,000 from the upper levels, also from 5,000 to 10,000 tons more which is under a railway right-of-way. Rogers and Van Wagenen say 17,000 tons of milling ore; Vogelstein says 34,000 tons.

Vogelstein's proposition is to build a mill with this $40,000.00, each putting up half. The first earnings after the mill starts are to be devoted to paying the $40,000. In addition the Zinc Company and Vogelstein equally divide $2.00 a ton for the ore milled as a bonus for putting up the mill.

The profit has been estimated for 6¢ to 8¢ for spelter as follows, the 8¢ figure being the top settlement price under their present contract with the United States Zinc Company. Vogelstein also says that they will cancel this contract if desired. Rogers and Van Wagenen give the following profit:

At 8¢ spelter	$168,000.00
At 7¢ spelter	140,000.00
At 6¢ spelter	126,000.00

After reimbursing the mill cost and the tonnage

bonus, one-half of the profits go to the Zinc Company and one-half to the Amalgamated Pioche. Of the half to the Zinc Company, Vogelstein gets one-third and Zinc two-thirds. We to have charge of the operations.

In case the present smelting contract is cancelled, Vogelstein agrees to arrange a new smelting contract with the Zinc Company, giving working charges F.O.B. Caney or Dearing, as follows:

$17.50 with spelter at 5¢.

$4.00 per ton increase for each ~~1/8¢~~ 1¼ advance in spelter.

A new block to be erected at Caney or Dearing with Vogelstein and the Zinc Company sharing the expenses, which is about $15,000.00 to handle the maximum output of the mine, estimated to be 500 to 550 tons per month. One-half of the risk of building this block is therefore carried by Vogelstein, and Vogelstein is to receive one-quarter of the smelting profits and the Zinc Company three-quarters.

The Amalgamated Pioche Company is relieved from all risk; also all incomes from rents, royalties, the railway which they own, etc., are to be applied to the gross earnings in liquidation of this $40,000.00 above mentioned.

This will give you an idea of the proposition as proposed and I will let you know further what is decided to be done.

In the meantime, You will probably receive

addressed to me reports, maps, etc., from Vogelstein which please keep together with this letter for further reference.

With kind regards, I remain,

Very truly yours,

AKMcD/M

(175 Item)

403

June 9, 1915.

Mr. J. A. Schloss,
c/o L. Vogelstein & Co.,
42 Broadway,
New York City, N.Y.

Dear Sir:-

As per our recent conversation in St. Louis, I am enclosing you herewith copy of the work done in our laboratory in January, 1914. This, I think, you will be able to understand without any elaborate explanations.

The ore was crushed to 12 mesh and sized on 20, 40 and 60 mesh. These products were treated on the jig and the material passing 60 mesh was treated on a Wilfley Table. The tailings from the jig were subsequently ground to 80 mesh and passed over a Wilfley Table, with a very satisfactory result, but giving a product somewhat lower in zinc, owing to its finely disseminated nature.

I believe a mill to handle a small tonnage, say 25 tons daily, could be built along the line of this test for a very small sum. Of course I appreciate the uncertainty of the outcome of such a venture, owing to the special condition of the market at this time. I merely wish to call your attention to this work for your careful consideration and for reference at some future time when market conditions may be a little more satisfactory.

I note that this work was reported direct to the Amalgamated Pioche Mines & Smelters Corporation at Pioche, Nevada. This may account

2- Mr. J. A. Schloss.

for your not having seen the results earlier.

Yours very truly.

AMP/N

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Item

Jan. 19th, 1914.

The Amalgamated Pioche Mines & Smelters Corp.,

Mr. H. R. Van Wagenen, Supt.,

Pioche, Nevada.

Dear Sir:-

Your favor of the 17th duly received and we are pleased to note that our test results recently sent you proved very interesting.

In regard to products treated over our Huff Separators, would say that we made no separation over the Huff. Our reason for not doing so was that the combined zinc obtained from our Plumb jig and Wilfley table was of such a grade that we did not believe any further treatment would pay or be necessary. You will note if you refer to our tabulated results sent you that we saved from your crude ore 58.45% by weight in a zinc which assayed as follows:

Au.	Ag.	Cu.	Pb.	Zn.	Fe.	Ins.
0.10	8.90	0.40	1.20	50.00	5.80	11.60

In this product we saved 87.00% of the gold, 72.00% of the silver and 90.85% of the zinc. In view of the small percentages of copper lead and iron it is very possible that the gold and sadver follow the zinc, if this is so no money could be made by trying to remove the copper, lead and iron.

We will be glad to try this out if you think it practical. Hoping to hear from you in the near future, we beg to remain.

Yours very truly,
AMERICAN ZINC ORE SEGREGATING CO.,
by

(175) Item I

AMALGAMATED PIOCHE CO. PIOCHE, NEVADA. Lot No. 576.

	Weight	% Weight	Au	Ag	Cu	Pb	Zu	Fe	Ins.	
Original	23940	100.00	.07	7.10	0.25	0.60	32.20	4.70	41.40	
Jig Conc.	9240	38.59	.10	8.50	0.70	1.30	51.10	5.70	10.66	12-80 only
Wilfley Conc.	1480	6.19	.12	9.44	0.20	1.10	50.10	6.10	12.64	(80-150)
Wilfley Conc.	2160	9.00	.12	8.86	0.20	0.90	49.40	5.50	12.50	(-150) zinc pro.
Wilfley Conc.	1116	4.66	.09	10.10	0.25	tr	42.60	7.60	17.26	(From combined jig
Combined	13996	58.45	.10	8.90	0.40	1.20	50.00	5.80	11.60	(tails reground to 3$
Saving			87.00	72.00			90.85		16.50	(mesh.)
Wilfley Conc.	150	0.60	.32	11.10	0.25	7.60	13.80	29.20	2.31	(-150) Iron-Lead
Saving			3.20	.90				4.00		product)
Wilfley Tails	4848	20.250	none	1.20	none	none	3.30	1.60	93.20	(From reground jig (tails)
Wilfley Tails	1000	4.17	tr	2.04	0.10	none	7.50	1.80	82.32	From 80-150 orig.
Wilfley Tails	1470	6.14	.02	4.24	0.10	none	10.40	1.60	77.62	From -150 orig.
Combined	7318	30.56	tr	1.90			5.30		88.40	
Saving				8.28			5.03		65.30	

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(175) Item

January 5, 1914.

Mr. H. H. Van Wagenen, Supt.,
Amalgamated Pioche Co.,
Pioche, Nevada.

My dear Mr. Van Wagenen:-

I am enclosing sheet showing results on the test of Pioche Ore, part of which test I believe you saw made. The gist of the matter is that by a very simple method a 32% zinc ore which would yield you about as follows, on 5.25 spelter

Au	0.07	
Ag	7.10	No residue value.
Cu	0.25% wet	
Pb	0.60% "	
Zn	32.80%	Value = $10.45
Fe	4.70%	
Insol	41.40%	

Less freight 7.00

Net value per ton = $ 3.45

becomes now of the following value:

Au	0.10 oz.	
Ag	8.90 oz.	Residue value = $ 0.55
Cu	0.40% wet	
Pb	1.20% "	
Zn	50.01%	Value = $21.25
Fe	5.80%	
Insol	11.60%	

$21.81
Less freight 7.00
$14.80

Weight Factor .5845 x $14.80 = $8.65 value per crude ton.

Leaving a margin in favor of milling of $5.20

Your milling cost ought not to exceed $2.00 per ton.

Yours very truly,

WGS/B

Enc.

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Item

AMALGAMATED PIOCHE MINES AND SMELTERS CORPORATION

PIOCHE MINES

EASTERN OFFICE:
40 CEDAR STREET, NEW YORK
MINE OFFICE:
PIOCHE, NEVADA

Pioche, Nevada, January 2nd-1914

40 B

W. G. Swart, Esq.,

Denver, Colo.

Dear Mr. Swart:

I would have seen you again but for a rush of business at the last of my visit in Denver.

The Plumb jig worked finely, and the way the Huff separated out the pyrite and chalcopyrite was not slow.

I asked Mr. Plumb to bottle up samples of the various products, for me, to accompany my copy of the report, and I trust this is not asking too much.

With regards, and hoping that your lameness may soon be overcome, I am,

Sincerely,

H. R. Van Wagenen

HRVW/M

Superintendent.

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Item

L. Vogelstein & Co.
Agents for
Aron Hirsch & Sohn,
Halberstadt, Germany
Metals.
42 Broadway. Tel. 2000 Broad.
Cable Address, Ludovicus.

L. Vogelstein. Special Partner: Aron Hirsch, Berlin. E. G. Hotchkiss.

New York, Nov. 19/13.

Mr. W. G. Swart,
1218 Foster Bldg.,
Denver, Colo.

407

Dear Sir:-

The Nevada-Utah Co. is opening up an ore body which is supposed to contain about 30% Zn. 6% lead and rather high values in silver. The question arises for the Company what to do with the ore - whether it can be sold to better advantage as run-of-mine or whether it should be wet concentrated or dry concentrated. I have instructed Mr. H. R. Van Wagenen, Supt. at the mine to send you a thirty pound sample of this ore and should thank you to let me have your recommendations. Of course, we are interested for the Zinc Co. to get an ore supply and we might not be afraid to handle even an ore rich in silver with the recent experience which we have gathered. Besides, our firm is interested in the N-U Co. and has, therefore, a particular desire to have this matter handled intelligently.

Trusting to hear from you,

I am,
Yours very truly,

LV.MC
CC Mr. Kimball

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Item

AMALGAMATED PIOCHE MINES AND SMELTERS CORPORATION

PIOCHE MINES

EASTERN OFFICE
40 CEDAR STREET, NEW YORK
MINE OFFICE
PIOCHE, NEVADA

Pioche, Nevada. October 4th 1913.

American Zinc, Lead & Smelting Company,

Caney, Kansas.

Gentlemen:-

We have a limited amount of zinc sulphide ore, running about 35 to 40% zinc, ½ to 3% lead, 5 ozs. silver, 0.02 gold. The gangue is very silicious and, if you are burdened with lime, this product will be very favorable. Would it not be well for you to ~~offer~~ pay for silica above a certain percentage?

There is a little iron and manganese.

Will you be so kind as to name us a schedule on such ores, stating the freight rate from here.

Very truly,

AMALGAMATED PIOCHE MINES & SMELTERS CORPORATION

By H. R. Van Wagenen.

HRVW/M

Supt.

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Item

AMALGAMATED PIOCHE MINES AND SMELTERS CORPORATION

PIOCHE MINES

EASTERN OFFICE:
40 CEDAR STREET, NEW YORK
MINE OFFICE:
PIOCHE, NEVADA

Pioche, Nevada, November 7th-1913.

403

W. G. Swart, Esq.,

American Zinc Ore Separating Co.

Denver, Colo.

Dear Mr. Swart:

Your letter of October 20th has gone unanswered for some days, I have been very busy.

What you say regarding zinc ore is of interest. Instead of sending you a sample of our ore I will state its analysis and trust that that will be sufficient data to enable you to quote, when the time comes. We have 2000 tons of this ore and I figure that it will be much better for me to await further development of the ore-body and then mill, rather than to ship it direct to the smelter.

The analysis:

Gold	Silver	Lead	Zinc	Iron	Insol	Lime	Sulphur	Mn	Cu
0.18	20.5	2.2	31.9	8.0	37.8	1.2	17.6	0.6	0.3

I shall not be in Denver before the 20th to 25th of December, and, unless the business you mention needs more immediate attention, I shall be glad to talk it with you then.

With best regards.

Sincerely,

H. R. Van Wagenen.

HRVW/M

Superintendent.

(175)
Item

403 Inc $7M

Nevada-Utah Mines and Smelters Corporation

Attention was recently called to the affairs of the Nevada-Utah Mines & Smelters Corporation by the filing of the schedules in bankruptcy by the company, on Feb. 6, in the United States District Court, in New York. According to the schedule, the company's debts are as follows: Taxes due in Maine, $775; secured claims, $140,000, the largest of these being one for $92,500 of L. Vogelstein & Co. and one for $40,000 of the Bristol Consolidated Mining Co. The largest of the unsecured claims are: Paterson National Bank, Paterson, N. J., $7500, John W. Griggs, Paterson, N. J., $5000, C. J. Caughey, New York, $13,977, and others, bringing up the total to $44,258. In addition to these there are disputed claims amounting to about $180,000, of which the largest is a note for $125,000, held by the Merchants National Bank, of Salt Lake City. It is also shown that the subsidiary companies are indebted to others in an amount greater than $50,000, aside from certain disputed claims against these companies. The schedule of assets filed shows principally a large amount of debts due to the Nevada-Utah company from subsidiary companies on open accounts, and shown at their face value to be worth $307,743. There was cash on hand 86c., and deposits of money amounting to $274 in the banks and elsewhere.

Plan of Readjustment

Under date, Dec. 15, 1911, the stockholders were advised by circular of a plan of readjustment of the company's affairs. This plan has been superseded by one dated Feb. 26, 1912, in which it is stated that the existing indebtedness of the corporation and its subsidiary companies, after adjustment of certain claims, is about $230,000; the present stock outstanding amounts to $15,000,000 and consists of 1,500,000 shares, par $10. It is further stated that the plan outlined below will be carried into effect under the direction of Trippe & Co., as successors to T. Gross, who was named as the syndicate manager in the original plan.

It is proposed to form under the laws of the state of Delaware, or some other state, as may be selected, a corporation to be known as the Consolidated Nevada-Utah Co., which shall have certain authorized issues of capital stock and convertible bonds. The securities and properties now owned by the Nevada-Utah Mines & Smelters Corporation, will be conveyed to this company, and the new company in payment for these properties will issue its stocks and bonds in the amounts provided and distributed in the manner prescribed. It is stated that at the request of the syndicate managers, and of the directors of the Nevada-Utah company, Willard V. King, president of the Columbia Trust Co., L. Vogelstein, of L. Vogelstein & Co., of New York, and William D. Elwell, of Wiggin & Elwell, of Boston, have consented to select the personnel of the new company and its first board of directors.

Under this plan there are to be 2,000,000 shares of common capital stock, par $3, total $6,000,000; 900,000 of 6% first-mortgage, serial convertible bonds, payable $90,000 per year, commencing July 1, 1918, secured by stocks and first mortgages, covering the Nevada and Utah properties and convertible at any time into stock at par.

Purposes of New Issue

The new company will issue upon the order of the syndicate managers in payment for securities and properties purchased, 1,700,000 shares of its capital stock, and $900,000 of its bonds, the new company reserving 300,000 shares of stock to provide for the conversion of bonds.

The stock issue will be distributed as follows: 1,500,000 shares will go to the stockholders of the Nevada-Utah Mines & Smelters Corporation, who deposit their stock under this plan and take bonds to an amount equivalent at par to 50c. per share so deposited, one share of stock in the new company for each share deposited; 150,000 shares will go to the syndicate managers and to subscribers who have underwritten not less than $200,000 par value of the bonds of the new company, and 50,000 shares to the treasury of the new company, making the total of 1,700,000 shares. Of the bonds it has been arranged that $750,000 par value will be offered to the present stockholders of the Nevada-Utah company at par, before being sold or disposed of to others. The stockholders joining the plan must deposit with the Columbia Trust Co., on or before Mar. 31, 1912, the signed subscription agreement accompanied by their stock certificates and a check for 60% of the par value of the bonds being subscribed for; 20% of the par value of the bonds is due May 31, 1912, and the remainder, 20%, Sept. 30, 1912. In return a receipt will be given for each of the first two payments and the stock and bonds will be delivered on final payment and surrender of receipts. This will give each stockholder one share of new stock for each share of old stock so deposited, in addition to a 6% bond, or scrip, for the full amount paid, secured by a first lien on the property of the new company, and at his option convertible into stock at par.

Under this plan it is proposed to raise $750,000 cash, which will be distributed as follows: To holders of notes and other valid indebtedness of the Nevada-Utah company and its subsidiary companies, not exceeding approximately $230,000; for compensation of the syndicate managers and subscribers and for commissions, taxes, expenses of receivership and general readjustmnt expenses, not exceeding approximately $130,000; to the treasury of the new company, $390,000. Under the new plan, the outstanding securities will be as follows: Stock issued and outstanding, 1,650,000 shares, or $4,950,000; stock in treasury, 50,000 shares, or $150,000; stock reserved to provide for conversion of bonds, 300,000 shares, or $900,000; total, $6,000,000; convertible bonds issued and outstanding, $750,000; convertible bonds in treasury, $150,000; cash in treasury, approximately $390,000; other indebtedness, none.

It is said that arrangements have been made with the holders of the alleged claims against the company, aggregating over $165,000, for the adjustment of these claims in a manner favorable to the new company, and that the expenses of the readjustment will be materially reduced by these arrangements and other savings.

Other Plans

A committee known as the Stockholders' Protective Committee, of which Frank D. Pavey is chairman, has issued recently a circular under date of Feb. 29, in which still another plan is outlined for the reorganization of the corporation. In a circular accompanying the plan of the Pavey committee, certain objections are made to the plan of Trippe & Co. Following this, and under date of Mar. 11, Trippe & Co. have caused to be published a notice in which they state that all information in their possession affecting the reorganization of the company will be given to any stockholder, but that they do not intend to answer the statements contained in the Pavey circular; further, that the plan under which they, Trippe & Co., are acting, has the support of stockholders owning a large number of shares and that they have every reason to believe that their reorganization will be successfully completed.

It will be remembered that on July 31, 1911, E. R. Wooley, former president of the company, explained in a circular to the stockholders the benefits which the company was to derive by combining the Pioche properties in the Amalgamated Pioche Mines & Smelters Corporation, and terminating the dispute and litigation in which the camp was involved. It was stated in the circulars of Dec. 15, 1911, that the present board of directors considers that this combination was desirable and of benefit to the company, but that it cannot approve all the methods employed by the former management to accomplish this end, nor all of the transactions connected therewith, as to the

character and effect of which the former board, it is said, was not fully informed.

In December it was stated that the company's mines in Utah are being operated by lessees, and that the Day mine is being worked by the Day-Bristol Co. It is said that the Bristol mines cannot be operated profitably until the problem of transferring the ore to the railroad is solved. Further, considerable development is said to have been done on the Amalgamated company's properties with gratifying results, and this development, it is claimed, should be immediately pushed so that the extent and character of the orebodies may be determined, with a view of erecting suitable reduction works.

The Nevada-Utah Mines & Smelters Corporation has about 10,000 stockholders, and this wide distribution of the stock has caused a considerable interest to be manifested in the affairs of the company since they were first brought into prominence, recently, by the circulars issued in the summer of 1911 by E. R. Wooley, then president.

Premier Diamond Mine

JOHANNESBURG CORRESPONDENCE

The 1911 report of the Premier Diamond mine, in the Transvaal, shows that 8,325,000 loads, each of 16 cu.ft., of blue ground were crushed and washed. This is a reduction of 1,000,000 loads from 1910. The value per load recovered was 3s. 5.3d. against 3s. 2.5d. in 1910, but the yield per carat per load was only 0.213 against 0.230 in 1910. The reduction in grade apparently continues each year with depth and presents a serious problem. The increased value of yield was due solely to an advance of 15% in the value of stones won, and this was due to the recent rise in the diamond market. Every 24 hours 29,055 loads are treated. The cost per load in 1911 was 2s. 0.99d. and the cost per carat was 9s. 9.3d. The total yield of diamonds was 1,774,206 carats, a decrease of 371,617 carats from the previous year.

Operations were hampered by the removal of 740,022 tons of "floating reef," a waste rock broken from the walls and inclosed in the blue ground. Another 750,000 tons remain to be removed. Shortage of native labor accounts for the reduced scale of operations; the profits were £531,276, of which dividends absorbed £300,000; diamonds on hand are valued at £311,367. The recruiting of 12,169 natives cost £40,836 or 67s. per head, whereas in 1910 recruiting cost only 34s. 10d. per head.

In some of the gold mines of the Rand natives were recently costing £5 per head to recruit and compound, and recruiting costs have risen to 1s. 3d. per head per shift. At the Premier, natives find their own food and are paid an average of 2s. 8.7d. per shift. A total of 729 whites were employed, £209,123 being paid in salaries and wages.

The Premier mine has yielded £5,541,975 in profits; of this the equipment has cost £1,646,665. The government of the Transvaal has taken £1,675,785 and dividends to shareholders have absorbed £1,420,000; diamonds in hand amounted to £400,000; trading, reserve funds and cash balance have absorbed the remainder.

South African Notes

JOHANNESBURG CORRESPONDENCE

The year 1911 has been a disastrous one for shareholders in Rhodesian and Congo stocks. The shares in the Chartered Co., which administers Rhodesia, have fallen £1,309,158 in value; Tanganyikas, which own four-tenths of the Congo copper mines, fell £1,702,196; Globe & Phoenix, the show mine of Rhodesia, is down £700,000 in valuation. The Shamva mines, the coming hope of Rhodesia, have lost £406,000; "Eldorados" fell £281,000, and owing to the approaching exhaustion of all its known orebodies, "Giants" lost £196,000. Rhodesia dividends for 1911 totaled £954,613. One of the oldest and most noted mines in Rhodesia, the Surprise, which originally showed 4500 ft. of profitable oreshoot, has been let to leasers owing to unsatisfactory developments.

The Consolidated Langlaagte is one of the Rand's few coming mines. The older portion of the mine has been worked successfully for many years; a new mine is being developed south of a large longitudinal dike which caused an upthrow of nearly 1000 ft., and a new mill of 200 stamps is being erected. In the new mine there are 930,572 tons of profitable ore assaying 8.71 dwt fully developed, and 453,992 tons developed assaying 2.43 dwt. In this mine so much gold occurs in the quartzite partings between the banket-pebble leaders, that sorting waste is impossible and all mine rock is milled.

NOTICE FOR MEETINGS INSUFFICIENT

At the recent meeting of the Randfontein Central, unfavorable comment was made on the fact that only one week's notice of meeting was given, thus rendering it impossible for European shareholders to investigate the reports or to criticize or be represented in any way. A strong agitation has grown up, to have annual meetings transferred to London, and as a compromise several groups have agreed to defer date of meetings some months after the annual reports are published, to enable foreign shareholders to take any action they wish. Most annual meetings held in Johannesburg have been merely formal affairs.

The affairs of the East Rand Proprietary mines still afford a topic of discussion. The "Corner House" has decided, if possible, to take over the real direction of affairs and to allow the author of the present state of affairs to remain as chairman, as an impotent figurehead. The chairman of the Randfontein Central Mines, which is an amalgamation of all the Randfontein mines, reported that during 1911, 745 stamps, out of 1000 erected, crushed 2,159,032 tons for a yield of £2,661,280, or 24s. 7.8d. per ton, while working costs were surprisingly low, being 16s. 8d. per ton. The gross profit was £854,241. He stated that there was a shortage of 5000 natives and that the percentage of sorting has dropped to 5.61%, being another example of the policy of milling waste to make a show of keeping costs down and stamps running, and hence the grade was below the average. The payable reserves total 5,658,859 tons, assaying 7.29 dwt., with 1,000,000 tons assaying 2.83 dwt. He stated that the full requirements of the Rand mines were 297,000 natives, and that there was a shortage of 34½%, whereas last year the shortage was 29%. Recruiting, however, has been better recently, one group having practically all the labor necessary and owing to a dry season good results are expected for the coming year. There is, however, some danger of a great shortage of water for milling and domestic purposes next winter, owing to the shortage of rainfall this season to date. The government figures show for 1911, 24,344 whites and 189,259 colored workers employed at the Rand mines.

GOVERNMENT STATISTICS

The government mineral statistics have been issued. In the Transvaal, 24,456,871 tons were milled for £34,991,620 and a gross profit of £11,725,870. In the Witwatersrand district, 23,888,258 tons were milled for £23,542,479, there being 9432 stamps and 216 tube mills at work. The yield was 27s. 11d. per ton, or 7d. less than in 1910, and costs 18s. per ton, or 5d. more than in 1910. The gross profit was 9s. 7d. per ton, or 11d. less than in 1910, a total of £11,415,861. Practically 490,000 tons were crushed for an extra profit of £200,000. Dividends totaled £7,763,086. Tin-ore production showed a decline of £14,000 to £314,021, due to exhaustion of the Groenfontein tin mines and of the Swazieland tin fields.

Mineral Production of Quebec, 1911

The preliminary estimates of the 1911 mineral production of the province of Quebec show an increase in value from $7,323,281 in 1910 to $8,567,143 in 1911. The most valuable item on the list is asbestos, 99,352 tons, $2,939,006; followed by cement 588,283 bbl., $1,931,181; bricks, 130.297 M., $1,135,501; limestone, $1,081,059; granite, $308,545; lime, $284,334; copper and sulphur ore, 38,554 tons,

Lincoln Co. Nevada

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(175) Item

BOSTON NEWS BUREAU.

NEVADA UTAH REORGANIZATION.

Reorganization Plan Completed—Provides For $400,000 Working Capital.

Boston—Reorganization plan for Nevada-Utah has been perfected. A new company—The Consolidated Nevada-Utah, will be formed to take over securities and properties of the existing corporation. The plan provides for elimination of floating debt of present company, amounting to about $350,000, and the placing of $400,000 cash in the treasury of the new company.

Present company has outstanding 1,500,000 shares, par $10 per share. The new company will have an authorized capitalization of 1,200,000 shares, of $5 par, and $1,200,000, 6% first mortgage bonds, convertible into stock at par. $900,000 bonds will be issued, together with 840,000 shares of stock, the balance of the bonds and stock remaining in the treasury.

Of the 360,000 treasury shares, 240,000 will be reserved for bond conversion and 120,000 for corporate purposes.

Allotment of issued stock will be as follows:

To depositing stockholders	750,000 shares
To syndicate underwriting bonds	90,000 shares
Total	840,000 shares

The above 750,000 shares will be distributed "to the stockholders of Nevada Utah who deposit their stock under this plan and take bonds to an amount equivalent at par to 60 cents per share so deposited, one share of stock of the new company for each two shares deposited."

Shareholders depositing as above are required to subscribe pro rata at par for $900,000 bonds. For each $166\frac{2}{3}$ shares held, stockholders will receive $100 in bonds and $83\frac{1}{3}$ shares of new stock.

Of the cash realized from this sale, $350,000 will take up notes and other debts of Nevada-Utah and its subsidiaries; $150,000 will be for reorganization and receivership, leaving $400,000 as working capital.

When effected, the plan should work out as follows:

Stock outstanding, 840,000 shares	$4,200,000
Stock in treasury, 120,000 shares	600,000
Stock reserved to provide for conversion of bonds 240,000 shares	1,200,000
Total	6,000,000
Convertible bonds outstanding	900,000
Convertible bonds in treasury	300,000
Cash in treasury	400,000
Other indebtedness	none

Subscription to the bonds will be in three instalments; 50% on Jan. 31; 30% on May 31; and 20% Sept. 30, 1912.

Pres. Robert G. Mead in submitting the plan to stockholders referred to former management's proposed merger of Pioche properties into Amalgamated Pioche Mines & Smelters Corporation, saying, that while this combination was desirable and beneficial, the present directors "cannot approve all the methods of the former management, nor all the transactions connected therewith."

He further says: "Present board has striven to set aside and annul certain alleged obligations which, in its opinion, were not contracted in good faith and to restore to the treasury substantial assets which had been disposed of without sufficient consideration. All of the company's treasury stock had been sold and cash in bank had been expended so that the company was and now is without funds or quick assets with which to meet its indebtedness. Arrangements have been made with the creditors, whose claims are admitted, so that the stockholders will not suffer if an adjustment is made within a reasonable time.

"The company's mines in Utah are being operated by lessees and the Day mine is being worked by the Day-Bristol Co. The Bristol mines cannot be operated profitably until the problem of transporting the ore to the railroad is solved. Considerable development has been done on the Amalgamated Co.'s properties with gratifying results and this development should be immediately pushed so that the extent and character of the ore bodies may be determined, with a view of erecting suitable reduction works.

"In view, therefore, of the necessity of providing funds without delay for the purpose of this development work and other operations and for meeting the just debts of the company, your board of directors have recommended that a new company be formed to acquire the stock of subsidiary corporations and other property now held by this company."

NEWSPAPER SPECIALS.

SPECIALS TO BOSTON, NEW YORK, PHILADELPHIA AND CHICAGO NEWSPAPERS.

Berlin cable to New York American states that commercial relations between Germany and United States have reached a crisis, only outcome of which must be either negotiation of a new commercial treaty between these two countries, or continuation of tariff war which threatens extinction in Germany of American trade. Germany would be glad to consider a reciprocity treaty. American Association of Commerce & Trade in Berlin held special meeting Wednesday and demanded immediate action by state department. Trouble comes from refusal of American government to admit German wood pulp and paper into United States on same basis as Canada is now getting, which is absolute free trade.

National monetary commission has determined general outlines of 15 districts into which it is proposed to divide United States for Aldrich plan. Although one-fifth of banking power is in New York, all eastern states will form only two districts, New England will constitute one district, the South four, the middle west four and the Pacific coast states four. As 30 of the 45 directors of national reserve association will be elected by districts, this is regarded as advantageous to smaller banks.

Growth of shoe trade in Massachusetts from 1904 to 1909 follows: Product value increased from $144,291,425 to $187,045,767, or 29.6%; wages paid, from $33,160,667 to $41,970,498, or 26.6%; wage earners, from 62,633 to 74,710, or 19.3%; capital, from $49,529,728 to $72,726,061, or 46.8%; stock and materials, from $88,493,009 to $114,277,189, or 29.1%; value added by manufacture, less cost of materials, from $55,798,417 to $72,768,578, or 30%.

One of Wall Street's most important Christmas announcements to employees has been postponed because it was discovered at last moment that it was more liberal than was wise. National City Bank has for six months been working on a pension plan to take care of its 450 employees. Plan, it was discovered by actuaries, would have meant a $3,000,000 deficit in pension fund in 10 years. Plan will be modified.

Paris special says that an undercurrent of suspicion has again arisen in connection with foreign political situation, although nothing tangible is available. This also is a factor in monetary situation. Still another influence is approach of the holidays. Paris will be practically only European market open on Saturday and Tuesday. Some degree of nervousness, therefore, is attending holiday season.

Postal Telegraph & Cable Co. has issued instructions to its construction department to proceed with erection of additional copper wires between all important points on the system for purpose of extending telephonic use of its wires to independent telephone companies.

An independent boxboard manufacturer estimates that in last few years shareholders of boxboard concerns in United States have lost approximately $75,000,000. A greater portion of this loss has been due to impossibility of making trade agreements within Sherman law.

Chicago & Northwestern has placed contracts for 60,000 tons of standard section rails. Soo Line has ordered 15,000 tons. These orders have been placed with Illinois Steel Co. Southern Railway will shortly order 25,000 tons of rails from Tennessee Coal & Iron.

"Fruit-of-the-loom" cottons which were reduced on December 4 to 7½ cents, lowest price in five years, have been advanced to 7⅞ cents for spot delivery only. Since cut was made heaviest movement in 10 years has occurred.

Acme White Lead & Color Works of Detroit, largest competitor of National Lead, has decided to increase its capital stock from $2,750,000 to $4,000,000. Increase is to give additional working capital.

Government has filed suit against Keystone Watch Case Co. of Pennsylvania for unlawful combination. Government declares company manufactures or controls 80% of all watch cases sold in United States.

Krupp works at Essen, Germany, are making a 38 centimeter gun (about 15-inch) which will be the biggest piece of artillery ever constructed. It will carry a projectile weighing [illegible] pounds.

Mines in Pioche, Nevada, District

Mineralogical Conditions as Shown in the Development of Some of the Principal Mines

*By R. M. Bell**

The early operators attached very little value to the porphyry ore deposits, from the fact that when first encountered the ore was too base for treatment in their pan-amalgamation mills. When the Yuba and Mazeppa ore shoots were worked, the clean, high-grade lead carbonate smelting ores were most eagerly sought, and a great deal of the valuable second-class ore was left in the stopes, and the extensive unexplored portions of this porphyry lode is likely to prove one of the most valuable assets and important sources of profit to its owners.

Several eminent engineers who have visited Pioche consider the Yuba dike as the primary ore source or mother lode of the district; and that the rich values of the parallel and lateral quartzite fissures will unite with it at a little farther depth below the 1,500-foot level.

This is a feature that may prove of great economic importance to the district, as this great dike has been identified on its strike to the west at short intervals on the Harrison, Abe Lincoln, Morgan and other claims; and at Stampede Gap, 10 miles west, what is believed to be the same dike with similar fissuring and alteration occurs, and is associated with bands of the rich lead-silver and gold rocks, which opens up a stretch of promising territory for investigation. In addition to this, recent development has shown that the Pioche uplift is traversed by at least half a dozen similar dikes of altered rhyolite.

One of these great dikes traverses the north foot of the uplift half a mile north of the Yuba dike for 4 miles, with a strike north 50 degrees west. At the Ely Valley mine it outcrops 50 feet wide and carries a network of porous quartz stringers that may mean important mineralization at depth; and at a point 1,000 feet south of this ore on the Jefferson claim, another great dike occurs, that is fully 20 feet wide, with a similar strike and a southwesterly dip. Both these dikes should traverse the adjoining Pioche Metals Co.'s ground, where some rich lead ore has recently been developed.

Half a mile south of the Yuba dike, at Pioche, another big intrusion of similar soft altered porphyry traverses the properties of the Pacific and California Pioche Mining companies, where it has been opened in several shallow cuts in limestone and shows a strike of N 70° W, and along the west base of the uplift another altered dike was cut in the Golden Prince shaft, where it is associated with an immense ore body of iron gossan rich in gold, silver, and lead. This dike is 10 feet wide. It has a strike of N 40° W and can be traced to the north of the shaft on this company's ground for 1,000 feet, and the same distance south on the Pioche King group. There are also two cross dikes of basalt to the northeast.

Numerous similar dikes of altered porphyry, containing in some instances an interesting development of secondary minerals, including bronze mica scales, hornblende, and chlorite, are exposed in the Highland and Jack Rabbit Mountains and generally in close relation to the ore bodies. Should they prove relatively as rich in metals as the Yuba dike, their economic importance to the district can hardly be appreciated. They will certainly stand considerable investigation to this end.

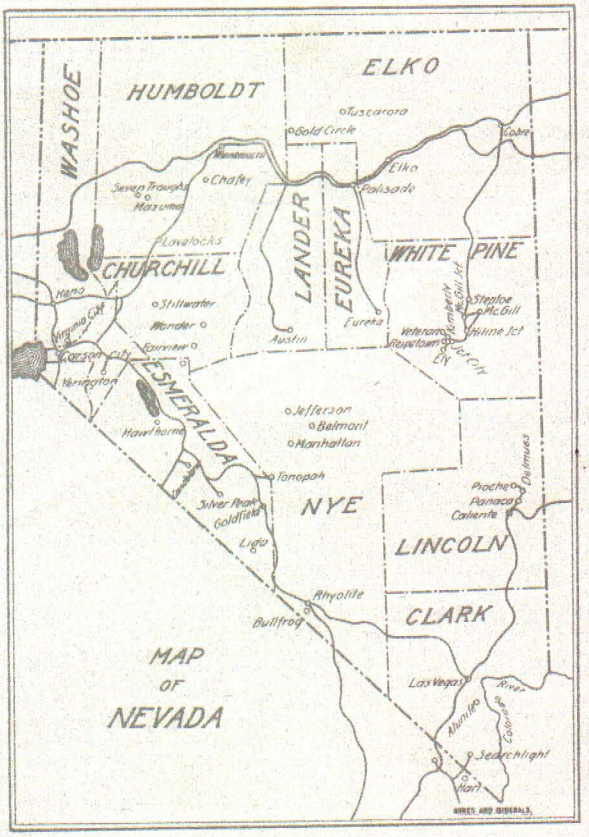
The Nevada-Utah and the Ohio-Kentucky Mining companies own all the old mines that have made Pioche famous for rich ore production in the past, and amount to a mineral empire of themselves, and with railway transportation and other modern advantages, with their several well-equipped deep shafts, from whence to commence operation on extensive and proven ore bodies, should be put in shape with very little further capital to become a large and profitable mining enterprise.

Several of the more important claims of these old properties are owned jointly by these two companies, a circumstance that has stood in the way of this operation. A movement is now on foot to turn over the entire property of both companies to a holding company, which is the only logical thing to do, as it would settle all chances of further trouble and warrant the establishment of a big mining enterprise.

Any one familiar with the economic geology of Park City cannot help being impressed with future possibilities of the old mines at Pioche. The famous Ontario mine, at Park City, was worked in a steep quartzite fissure exposed by the erosion of the limestone-shale formations. At the Daly-West mine adjoining and on the same fissure the shale and limestone formations were still intact and richly mineralized with great bodies of very zincy and irony silver-lead sulphide ores.

The situation at Pioche is practically the same. The rich silver-gold quartzite fissure of the Raymond-Ely-Meadow Valley mines is succeeded to the west in the overlying shale limestone formations with fault fissure bodies of zinc-iron-lead sulphide ores, relatively rich in silver and gold. In the adjoining Greenwood and Susan Duster mines are bodies of clean mineral 15 to 40 feet wide that look from present development as if they might be put in shape to produce 1,000 tons of ore a day with 90 days additional development, that would average 5 to 10 per cent. lead and 10 ounces to 20 ounces silver, together with $1 to $3 gold per ton.

It is true that these sulphide bodies present a closer blend of the combined minerals than at Park City and doubtless present a knotty metallurgical problem, but with such combined precious values to work on, and a light shaley gangue, I think the problem is susceptible of successful and profitable solution; and it is no serious stretch of imagination to anticipate that, with the rich oxidized ore resources of the Yuba dike



* Former State Mine Inspector, Idaho.

thrown in and the enterprise intelligently gone after, these ore resources will in time repeat the great dividend history of the Ontario-Daly and Daly-West at Park City.

The spotlight of attraction in the current history-making period of Pioche is unquestionably the Prince Consolidated mine. This property is on an entirely different line of fissuring and mineralization from the old mines, and presents one of the most attractive features of the district for rich ore development. The Prince is situated 2 miles south of Pioche and on a fault fissure that traverses the southern border of the Pioche uplift, where it merges into the west valley wash, and it is believed that this fissure has been identified for a distance of nearly 4 miles. It has a strike of N 40° W and a dip of 70 degrees to the south. It is being developed at the Prince mine by a 60-degree incline shaft, now 600 feet deep, from which considerable drifting and cross-cutting has been done at 100-foot intervals.

The shaft at this property is started in a body of black manganiferous iron oxide in limestone. The extreme surface dimensions of this great body of mineral somewhat interrupted with limestone cappings, show width of 200 feet by a length of 600 feet. Some of the cross-cuts underground are over 100 feet in length, but at no place in these cross-cuts are both walls exposed. It will probably develop a great geyser-like fumarole, or double-chamber deposit, connected with the fault fissure. The foot-wall is well exposed at several points underground and shows a well marked movement breccia—a dip of about 70 degrees to the southwest, and strikes about northwest and southeast.

This great body of commercial ore is now sufficiently developed to warrant the statement that 1,000,000 tons is practically in sight and available above the fourth level, and contains an additional 2,000,000 tons of probable ore when the full section of the deposit is run out at the fourth level. This is an ideal free-smelting ore, as indicated by the following analysis, which is the result of extensive sampling by the company in an effort to get at the average values: Lead, 6.7 per cent.; silver, 4.7 ounces; gold, 40 cents; iron and manganese, 49 per cent.; silica, 12 per cent.; lime, 4 per cent.

This great body of oxide mineral is spotted with bunches, lenses, and stringers of rich carbonate of lead, with occasional cores of galena which are rich in silver, especially the galena, clean samples of which assay over 1,000 ounces silver per ton.

If the oxidation proves as deep here as at Pioche and the selective preference for precipitating rich silver and gold by quartzite walls as compared with the more mixed minerals in the overlying shale and lime, as illustrated at the old mines, is maintained here, some interesting results in the way of bonanza values may be anticipated. When the underlying quartzite is penetrated, this great body of mineral is due to contract in size, but would naturally be expected to show a marked increase in value. The company expects the vein to enter the quartzite at 700 feet.

At a depth of less than 200 feet the ore body passes through the limestone into the main shale beds of the district and has been carried down in this formation 400 feet.

At the 300- and 400-foot levels cross-cuts have been run into the foot-wall formation, where, at a short distance under the big ore body, two parallel fissure veins have been encountered that stand nearly vertical with a slight dip in the opposite direction from the main vein to the northeast.

These fissures have been proven by raises to apex. In the big manganese body 20 feet below the 200-foot level, a gangue of shale breccia in these foot-wall fissures has been changed to high-grade hard carbonate of lead, rich in silver, without changing in color or fragmental structure. They also, in places, exhibit a silicious, sandy gangue and banded structure due to subsequent motion after the ore was formed.

These rich ore courses vary in thickness from a few inches to 6 feet, and an interesting feature is the fact that they carry their richest values in the widest places, where large hand samples may be picked out well smeared with greenish yellow silver chloride that assay up into the thousands of ounces of silver per ton and several dollars in gold.

These veins, in contrast with their big neighbor, are practically devoid of manganese and iron oxides. They have been developed to a height of 200 feet above the fourth level, where they connect with the big vein, and for an extreme length, so far, of 450 feet, with good ore still showing in all the faces.

This important resource of rich ore is still intact, as no stoping has been done, and the reserve of mineral undercut by the four drifts on the No. 1 and No. 2 fissures at the 300- and 400-foot levels is estimated to contain 14,000 tons. Of the ore taken out in driving the levels and two raises on these smaller fissures, several 40-ton cars have been shipped to the Salt Lake market. The returns received from these shipments have afforded settlement results varying from 100 to 300 ounces silver, $5 to $15 gold, and 30 to 45 per cent. lead.

Another interesting feature of this remarkable ore body is that these small foot-wall fissures are connected at the 300- and 400-foot levels with a flat-dipping bedded ore deposit that conforms to the strike and dip of the enclosing shale formations. The lower bed exposed is at the bottom or fourth level, where it is 5 to 7 feet thick and filled with roughly laminated, sandy, brown, iron-stained gangue, associated with thick streaks and lenses of soft sandy carbonate of lead which, however, contrast sharply with the vertical fissure values, being very much lower in silver and gold, but it carries both and shows a combined value of about $25 per ton across the bed. This lower ore bed has been followed on its flat dip of 15 degrees a considerable distance beyond the No. 2 vertical shaft to the southeast, which would strongly indicate that the source of its ore was in still another vertical fissure in the foot-wall, as ore solutions would be more likely to feed up in a bedded deposit than down, according to the Utah examples of this form of deposits.

Norwegian Mineral Production

According to the United States Consular Report the export of Norwegian iron ore in 1910 was 75,000 tons, valued at $201,000, and the shipments of Swedish iron ore from Narvik, Norway, during the year amounted to 2,043,151 tons. The output of the mines at South Varanger, northern Norway, in 1910 was about 80,000 tons of iron ore. A portion of this was smelted by the magnetic process, and in November and December about 10,000 tons were exported. About 400 men are employed in these mines. At the Salangen mines, in the same district, there were produced during the year 25,000 tons of iron ore, of which the larger part was smelted and exported.

The largest copper mine and copper-refining works in Norway are at Sulitjelma. The production of this mine in 1910 was 146,000 tons of ore, and 1,596 tons of Bessemer copper. The United States Consular Report states that there are several other copper mines in Norway which have recently been opened, so it is estimated that the total production of copper in Norway in 1910 amounted to 320,000 tons of ore and 1,800 tons of refined copper, of a total value of $2,125,000.

Some silver, nickel, and zinc are found in Norway. There were about 650 tons of nickel and 125 tons of copper mined at Christiansand during 1910. Silver is mined at Kongsberg. Aluminum is produced at Vigeland, the output in 1910 amounting to 860 tons. The production of ferrosilicon during the year amounted to 5,000 tons. Zinc is produced by the electric process from imported raw material. The output in 1910 was about 4,000 tons. The only zinc plant in Norway is at Sunkdeloken. The exports of calcium carbide in 1910 amounted to 50,000 tons. According to the United States Consular Report the aggregate capacities of the carbide plants are about 100,000 tons annually, but on account of low prices some of the plants have closed down.

ORE MINING AND METALLURGY

The Pioche, Nevada, District

Interesting Geological Conditions. Mines Made of Value by Improved Transportation Facilities.

*By R. M. Bell**

The famous old camp of Pioche is the county seat of Lincoln County, Nev. It is reached by way of the main line of the San Pedro Railroad to Caliente, thence by a branch line 32 miles in length running north to Pioche.

The name would imply that a Frenchman was one of its first citizens, and the fact that a double row of old locust trees borders its main street, which add a homelike touch to a general desert aspect, would also indicate that the advance agents of the Mormon church were in at the making of the new camp.

The general typography of the surrounding country is typical of Nevada. A broad desert valley 10 to 15 miles wide extends north for 75 miles above Caliente, with an elevation varying from 4,000 to 6,000 feet above sea level, and is bordered on either hand by prominent north and south mountain ranges composed of a vast accumulation of ancient sedimentary formations and igneous rocks that reach a maximum elevation of 9,500 feet above the sea level.

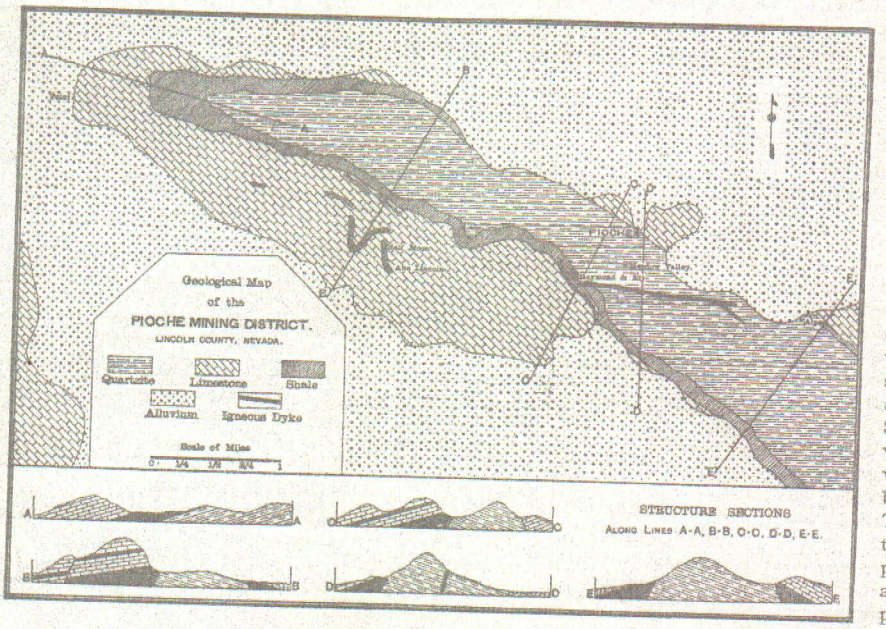


FIG. 1

The Ely mining district is the legal name of the recorded district immediately surrounding Pioche. This name should be changed by petition to avoid confusion with the Ely copper district further north. The recorded mining district covers a low mountain ridge that strikes obliquely across the main valley with a general trend a little north of west and south of east. This uplift presents a topographic freak, and is probably due to a buried laccolite of igneous matter relatively rich in metals, and the source of the district's rich mineralization.

The Pioche ridge, shown in Fig. 1, is separated from the main west range by a valley of erosion a mile wide and dying out to the east before it reaches the opposite range. It is 15 miles long by about 3 miles broad.

The Pioche mines were discovered in 1869. The nearest railway point at that time was on the Central Pacific, at Winnemucca, Nev., 300 miles to the north. The principal mines were rapidly located, as their rich ores outcropped to the surface in many instances, and a wild stampede from the north soon followed. In 1872 the camp had a population of 10,000 people, and tradition says it was about the wildest proposition in western mining life ever recorded, since its daily paper had from one to half a dozen men for breakfast as common news items. The original claims were located only 200 feet wide under the old law and owing to the complex system of parallel and intersecting fissures, conflicting claim lines, and confused apex rights to the rich ore bodies, the costs of fighting men to protect their rights soon constituted a big item in the running expenses of the principal companies.

In 10 years subsequent to their discovery the main quartzite fissures of the Raymond-Ely and Meadow mines had been stoped in a close succession of rich ore shoots 2 to 6 feet thick for a continuous stretch of 2,000 feet and to a depth of 1,200 feet, and had yielded a gross output of $20,000,000 at a net profit of $5,000,000. The ore was a friable quartz gangue, containing lead carbonates associated with silver chloride and native gold, and is said to have averaged over $200 per ton, of which 20 per cent. was gold and the balance silver. The ore was treated by the pan grinding and amalgamation process. Dry Valley and Bullionville being the principal milling points, 6 and 12 miles distant, respectively.

The early cost of mining and milling, as given in the government reports, averaged $75 per ton, and an accumulation of 150,000 tons of tailings at the milling points, containing an average value of 8 per cent. lead, will give an idea of the difficulties the pioneer mill men and metallurgists met and overcame.

The veins were dry down to a depth of 1,200 feet, where water and base ores were encountered. The latter were equally rich in gold and silver but contained too much lead and zinc to admit of a profitable extraction of the precious metals by milling, and so the industry rapidly waned.

In years subsequent to 1879 several attempts at smelting were made with an additional yield of something like $10,000,000 from these and neighboring mines, but with coke as fuel for this purpose, hauled long distances by rail and overland by wagon freight from Modena, Utah, 140 miles distant, very little profit could have been made.

* Formerly State Mine Inspector of Idaho.

With the recent advent of the San Pedro Railway into the camp, it has taken on a new lease of life, and activity has been stimulated all along the line. The camp has a present population of about 1,200 people. There are already a dozen gasoline mining plants in operation, ranging from 10 to 100 horsepower capacity, engaged in shaft sinking and mining development enterprises, and also a score or more of operations with temporary equipment of whip, whim, and windlass. Results in rich ore development are being obtained that give promise of rewarding the San Pedro for its advent with one of the most important sources of mineral traffic in the West. The richness and permanency of the ore deposits are established and their number and variety are remarkable.

Geological Conditions.—After arriving at Pioche, the writer ran across a technical review of the geology and ore deposits of the district, published in 1906 by Prof. F. J. Pack, Professor of Geology at the University of Utah.

The geology of Pioche is simple as to the variety of its formations, but has some rather complicated structural features due to faulting and erosion.

The main east-west uplift is a simple anticlinal fold rising at Mt. Ely to a maximum elevation of about 1,000 feet above the general level of the valley. The main axis of the ridge is heavy bedded, low dipping Cambrian quartzite of medium grain, stained reddish at the surface, but white and vitreous

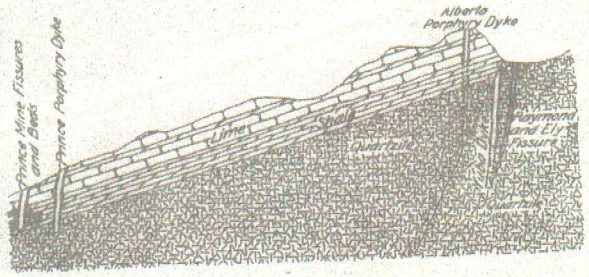


FIG 2

underground, without any secondary cleavage, but in places shattered.

The quartzite is flanked with conformable beds of clay shale, probably 500 feet thick, carrying a rich array of Cambrian fossils.

The main shale beds are succeeded by 400 or 500 feet of massive blue and gray limestone beds that have been greatly reduced by erosion, and disturbed by faulting, bed slipping, mineralization, and the intrusion of an important series of igneous dikes, as shown in Fig. 2.

The main west range is probably of similar origin to Pioche ridge, but on a broader scale. Its eastern base and for some distance up is composed of Cambrian limestones that are said to shade up into Silurian and higher horizons to the west and to represent a total connected series of ancient sediments fully 20,000 feet thick.

This west range is cut into segments by lines of northwest and southeast faulting and erosion. These features are locally called gaps and passes, of which Stampede Gap and Bristol Pass are examples.

Stampede Gap is 10 miles west of Pioche, and the mountain to the south of it for 15 miles in length, with its center 7 miles southwest of Pioche, is richly mineralized, and carries the Mendha and other properties that have made a bow to the mining world in the matter of rich ore production. This section is known as the Highland Mountains, and the Highland district.

North of Stampede Gap and extending to Bristol Pass, 15 miles farther north, is another mountain of heavy bedded blue and gray limestones, breccia conglomerates, and intrusive dikes, known as the Jack Rabbit Mountain, with the Bristol, Day, Onondago, Hillside, Star, and other noted and promising ore deposits and producers near its northern end.

The west slope of this main range was not visited, but it is said that its altered sedimentary formations have been ruptured by a north and south outburst of gigantic monzonite, along the borders of which a rich array of contact metamorphic minerals occur, including large bodies of iron, garnet, and epidote, associated with rich silver, copper, gold and ore samples, and that some very interesting prospects are there in evidence.

The Pioche Record mining district above outlined, including Highland, Jack Rabbit, and Bristol, can practically duplicate in form and physical features all the more successful silver-lead and lead-silver ore deposits in the United States, and is sufficiently developed to identify the types. The flat bedded and contact deposits of Missouri and Leadville, associated with limestone, shale, and quartz porphyry are in a strong measure represented by the Mendha, Half Moon, Old Timer, Point, and Demijohn mines. The vertical fault fissures and ore-bearing shear zones of the Coeur d'Alenes are represented by the Raymond-Ely, Yuba Dike, Susan Duster, and Greenwood veins, while the great lens-shaped chamber deposits, and the bed-connected contraction and fault fissuring that have been such rich ore producers in Utah are represented by the Prince Consolidated, Day, Bristol, Star, Hillside, and others.

The ore deposits of Pioche are practically intact and uninjured by erosion, like those of the Coeur d'Alenes, and can be depended on to stand development and last in depth, except where locally displaced by faulting and leaching, to the point of original precipitation of the ascending mineral solutions that produced them.

This condition is demonstrated by the fact that the richest bonanza ore shoot of the Raymond-Ely mine was covered at its crest by 100 feet of shale in such a position on the quartzite axis of the uplift as to preclude the probability that it was ever connected through or exposed at the surface, except perhaps by a thin flat feeder in the shale bed.

The bonanza footwall fissures of the Prince Consolidated mine apex under 200 feet of limestone in the big gossan ore body, and the lower, flat-dipping, bedded deposits connect with those fissures at 300 and 400 feet deep.

The rich bedded ore body at the Mendha mine, carrying an average of an ounce in gold, 20 per cent. lead, and 20 ounces silver, was discovered at the bottom of an 800-foot incline shaft and vertically under 400 feet of limestone. It connects at this point with a vertical fissure that carries a different class of ore. This rich bedded deposit of silicious ore is probably rooted in a big vertical porphyry dike that traverses the limestones a few hundred feet to the south, which would form a good avenue of development and an easy formation in which to clip the ends of this and other associated ore-bearing beds of the Mendha group, and at the same time test out the ore-bearing possibilities of the dike itself. The famous Yuba dike ore shoots are all blind at the surface, and the big 30-foot ore body of sulphide mineral in the Susan Duster mine apexes as such at 10 feet under the surface.

The Raymond-Ely and Meadow Valley mines were operated entirely on a steep dipping fissure vein in the quartzite, that strikes nearly east and west and dips south at an angle of 60 degrees. From the 1,200-foot level of the Raymond-Ely shaft a cross-cut, driven south a few hundred feet, encountered a large porphyry dike striking due east and west, and also dipping south at an angle of 80 degrees. This dike is over 50 feet thick and consists of an extremely altered quartz porphyry. Within its structure, but lying next to its quartzite footwall, a body of massive black zinc-lead iron sulphide ore, several feet wide, was encountered, and a winze was sunk on it 300 feet below the 1,200-foot level, from which some drifting was done and ribs of clean galena ore encountered that were very rich in silver and gold. This is what was christened the Raymond-Ely

"Black Lead." Its discovery created quite a stock boom at the time, but the ore was too base to be of any value to the early-day operators.

The same dike was later found by a cross-cut at the 900-foot level of the Meadow Valley No. 5 shaft, 1,000 feet east of the first point, where a shoot of lead carbonate ore 200 to 300 feet long, rich in gold and silver, was worked nearly to the surface and produced over a million dollars worth of ore, on the Mazzeppa claim. A thousand feet further east, on the Yuba claim, another ore shoot was worked through an incline shaft 1,200 feet deep, and ore to the value of a million dollars extracted at this point.

This great stretch of rich ore-bearing porphyry fissures is owned jointly by the Nevada-Utah and Ohio-Kentucky companies. It is accessible at three points, varying from 300 to 1,200 feet deep, and could be rapidly put in shape for quite a heavy production of rich ore, which it must doubtless contain.

East of the Yuba claim the same dike is covered for a stretch of half a mile by the property of the Boston-Pioche Co., which is pushing down a 1,000-foot incline shaft on it that is already over 800 feet deep, and at the 300-foot level, where some little drifting was done, several carloads of the characteristic Yuba lead-silver ore were taken out and shipped last year; when drifting has been commenced at the deeper levels in this new shaft some very important strikes of rich ore can reasonably be anticipated.

This great ore-bearing porphyry dike is at present best exposed in the Pacific tunnel, where it has been cross-cut at a depth of 280 feet, drifted on and stoped for a length of 200 feet and a height of 50 feet.

To the writer this porphyry ore deposit presents the most attractive feature of the Pioche district, by reason of the striking structural similarity and probable origin, to some of the steady dividend-paying silver-lead ore deposits of north Idaho—notably the Standard, Mammoth, and the Hecla mines at Mace and Burke.

The Hecla mine is a nearly vertical zone of closely parallel shearing that followed an original dike-filled fissure of diabase porphyry in quartzite walls. This deposit was lean and carried very little commercial ore in the first 300 feet of depth below its apex. It gradually improved as development progressed, and at the 300-foot level it carries an ore shoot 1,000 feet long and up to 25 feet wide, consisting of two wide bands of galena ore, separated by extremely altered clayey diabase rock 5 feet thick and often showing a third central lensy streak of rich ore in the middle of the dike, and replacing its substance with galena.

A section of the Yuba dike deposit at the Pacific tunnel shows a smooth slickensided quartzite footwall, above which is a foot to 18 inches altered porphyry carrying disseminated lead-carbonate ore. A little past the center of the dike is a wider zone of fissuring and replacement that is 2 to 10 feet thick, accompanied with smooth, slickensided walls, and along the smooth slips kidneys and small lenses of friable quartz and clean, hard, carbonate ore occur, containing 50 per cent. lead, 200 to 300 ounces silver, and $20 to $30 gold per ton, while balance of the space is filled with white, chalky, kaolinized porphyry gangue, and disseminated sandy carbonate of lead, constituting a first-class concentrating ore containing average values of 2 to 8 per cent. lead, with 3 to 4 ounces of silver and 50-cents gold to each unit of lead. A similar altered porphyry ore zone follows the smooth quartzite hanging wall of the dike at this point, and I was informed that in the adjoining Yuba shaft workings in places diagonal stringers of rich ore connected the two south ore courses and commercialized the whole body from 10 to 20 feet wide.

These porphyry ore bodies are dry, stand well with little timbering, and owing to the light, chalky nature of the gangue, the lead and most of the silver and gold are readily recovered by ordinary wet methods of concentrating, and whatever silver chloride and fine gold escape into the tailing can be readily recovered by leaching.

Method of Smelting With Oil

Heat Generated Outside the Stack and Only Enough Coke Used to Reduce the Oxides

This article was written with a view to using petroleum as a blast-furnace fuel, and deals mainly with smelting concentrates, but in such smelting little slag is made in comparison with ordinary blast-furnace smelting, consequently fair criticism is invited and will be appreciated.

This article is to place before metallurgists a system of smelting ores of copper or lead carrying gold and silver, to a lead base bullion or to a copper matte, or to base copper metal. Heat for this system is produced by the use of a hydrocarbon fuel, such as petroleum, burned in a combustion chamber out of contact with the ores, instead of coke or charcoal being charged in with the ores, as in the present practice.

Oil, gas, coke, or charcoal is burned in a combustion chamber outside the blast furnace stack, and the heat generated is conveyed to the ores in the stack through suitable flues to a point immediately below the tuyeres, and such heat is subject, for intensity and quantity, to easy, absolute, and instantaneous control.

Burning coke or charcoal for the production of heat, in contact with the ores being smelted tends, in most instances, to modify the result sought when smelting ores for their gold, silver, copper, and lead, on account of the high percentage of glowing carbon, or else on account of air blown in to burn such fuel.

In the reduction of lead oxide or of copper oxide, atmospheric air or oxygen has no part, because it is the contained oxygen of these minerals that is sought to be eliminated, and any air blown in is an opposing factor.

The production of heat within the blast furnace by burning coke in contact with the ores, as in the old system, involves blowing into the furnace quantities of air which comes in contact alike with the coke, unreduced oxides, and with the reduced metal in the sublimed condition. Its mission is to oxidize, or burn the coke for the production of the heat necessary for smelting, but while it does this it also oxidizes some reduced metal and by contact with oxidized mineral it resists the reduction of such mineral to metal. It is only by the predominance of the reducing atmosphere of the burning coke in the blast furnace that the method in common use succeeds, and, manifestly, smelting is done in spite of the oxidizing tendency of free air blown into the stack. Always some of the oxidized mineral is blown upon by the air blast and so resists the reducing tendency of the furnace atmosphere, and some metal that has been reduced in the reducing atmosphere predominant is oxidized by the air blast and sent to the dust chamber, or to the slag as a silicate.

No air should ever be blown into a reducing furnace, other than the little that may be requisite for burning carbon to the monoxide to increase the reducing action of the furnace atmosphere.

A simple laboratory illustration of the reactions involved in smelting lead-gold-silver ores to a lead base bullion is to take a glass tube, seal one end and half fill it with roasted lead ore, mixed with about half its bulk of coarsely pulverized charcoal. Stop the open end of the tube, leaving a small aperture for the escape of gases. Heat the tube over a Bunsen burner until the contents are red hot, when the charcoal will have absorbed or combined with the oxygen of the ore and the lead will be in the form of metal as base bullion carrying the gold and silver of the ore. As the process goes on, the heated gases evolved flow outward at the opening in the end of the tube, thus preventing the ingress of air, and the process of reduction to metal is finally complete.

Atmospheric air, if admitted to the highly heated ore and

fuel in a blast furnace, is counteractive of the reactions involved in the ore-reducing process; and proportionately to the amount of air admitted is the result compromised by imperfect or incomplete reduction, and the reoxidizing of some of the metal already reduced in the form of vapor.

The usual method of lead smelting is subject to this adverse condition, for it is physically impossible to blow the necessary quantity of air to burn the fuel without exposing some of the already reduced metal to its direct action. Hence, chiefly, the necessity for capacious and expensive dust chambers in general use. This also is a prolific cause of lead silicates in slag.

The perfect system consists in the introduction of the necessary quantity of heat to the ore to insure the reactions involved when conditions are right; and conditions are right when the roasted ore and the necessary fluxes are introduced into the blast furnace with sufficient coke or charcoal to take up and react with the oxygen contained in the roasted ore, thus leaving the metal so reduced free to fall down into the crucible.

The ideal method of introducing the necessary heat into the blast furnace without the presence of air with its counteractive oxidizing influence is to burn petroleum or other hydrocarbon in a combustion chamber and to conduct the heat so generated, together with the gases of combustion, through suitable flues into the blast-furnace shaft, and thus into contact with the ore to be smelted. The roasted ore is heated then to the smelting temperature and the desired reactions secured without any possible contact with the atmospheric air.

The small amount of coke or charcoal charged into the furnace should be just sufficient in proportion to furnish carbon to combine with the oxygen of the ore; more than this would be waste of material. The exact proportion of coke or charcoal necessary for this purpose is readily calculated.

The following illustrates a typical instance of such calculation: Assuming 1,000 pounds of charge with 15 per cent. lead and 30 per cent. iron in the charge, the lead as oxide, PbO, in a roasted lead ore, and the iron as ferric oxide, Fe_2O_3, in the form of hematite added as flux. Then 207 parts by weight of lead combine with 16 parts by weight of oxygen; therefore, $150\times\frac{16}{207}=11.6$ pounds oxygen combined with the lead; 12 parts by weight of carbon combine with 32 parts by weight of oxygen; therefore, $11.6\times\frac{12}{32}=4.35$ pounds carbon, are necessary to combine with the oxygen in the PbO.

The iron being in the form of Fe_2O_3 must be reduced to ferrous oxide, FeO, to combine with silica to form slag. In Fe_2O_3 there are 112 parts iron and 48 parts oxygen, therefore; $300\times\frac{48}{112}=129$ pounds total oxygen in the hematite; one-third, or 43 pounds, of which must be combined with carbon to reduce the Fe_2O_3 to FeO to combine with the silica and form slag. As 12 parts of carbon combine with 32 parts of oxygen, it requires $43\times\frac{12}{32}=16.12$. pounds of carbon to reduce the 300 pounds of Fe_2O_3 to FeO.

This makes $4.35+16.12=20.47$ pounds carbon necessary for each 1,000 pounds of charge, to which, if coke is used, add 16 per cent. to cover ash, moisture, and waste, making a total of 23.74, practically 24 pounds of coke to 1,000 pounds of charge, equal to 2.4 per cent. of the weight of the charge, for absorbing the oxygen in the roasted lead ore and reducing the lead, and in combining with the excess oxygen in the hematite to reduce it to FeO. Charcoal is the preferable form of carbon for this purpose, and about 2 per cent. of the weight of the ore charge is required, on account of its less percentage of ash, than assumed for coke.

Carbon dioxide, incident to burning petroleum in a combustion chamber, passes into the blast furnace and comes in contact with the glowing coke or charcoal, insuring the reduction to carbon monoxide of any such carbon as may have escaped contact with roasted ore at combining temperature. This CO gas permeating every space and coming in contact with every particle of the roasted ore, insures complete reduction of the oxidized lead ore to metal.

The same results may be attained as effectually without the use of coke or charcoal charged with the ore, by simply blowing into the combustion chamber an excess of oil over the equivalent of oxygen necessary for its complete combustion, thus generating any proportion of carbon monoxide in the furnace that may be necessary for the complete absorption of the oxygen in the roasted ore. This latter method, however, is not susceptible of so easy and accurate regulation, unless by the use of an entirely independent apparatus for injecting a predetermined quantity of the hydrocarbon to the smelting zone of the furnace shaft.

If the ore to be smelted is an oxide or carbonate of copper, the smelting process is the same as above and the product is black copper, carrying whatever gold and silver is in the ore.

In case sulphide-iron-copper ores carrying gold and silver are to be smelted to a copper matte, the process is modified by omitting the reducing agent. As in the foregoing case, the heat generated in a combustion chamber by burning petroleum or other hydrocarbon there, is passed with the gaseous products of such combustion, through suitable flues directly into the blast-furnace stack and thus into direct contact with the ores to be smelted, imparting to them the necessary heat, and the smelting process at once goes on. If the ore charge carries no more sulphur than is necessary for the matte, then no free air is blown into the blast furnace. If otherwise, and there is an excess of sulphur with its combined iron, then sufficient air must be blown into the blast furnace in the usual way to oxidize the sulphur.

A large amount of heat is produced in oxidizing the excess iron and sulphur in the ore and the amount of heat necessary to be produced from petroleum in the combustion chamber is reduced, and a saving of fuel is effected, the ultimate calorific value of the surplus iron and sulphur being utilized in the smelting operation, which proceeds with certainty and regularity unknown to other methods.

Supports for Feed Wires

At the Robison mine, of the C. F. & I. Co., Walsenburg, Colo., the method of supporting the feed wires upon the timbers having proved unsatisfactory, Mr. John Graham, superintendent, has used the following with satisfactory results. Having a considerable amount of 2-inch old iron pipe on hand this was cut into 5-foot lengths and bent into the shape shown in Fig. 1; the holes for the four porcelain insulators being drilled or punched as found convenient. After being set in holes drilled in the rib for the purpose the legs of the brackets were cemented in place.

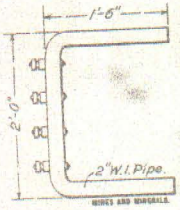


FIG. 1

In order to drill the holes, an ordinary post drill was mounted so as to be adjustable for height on the planking of a mine car on the side opposite to that on which the brackets were to be placed. The car, after having been loaded with brackets and cement sufficient for a shift, was dropped down the slope and stopped wherever necessary to drill the holes.

Aside from being an ingenious method of working up old material and of assuring the placing of the brackets at a uniform height above the rail, the system of doing the work cannot be too highly commended. By mounting the drill on the car, no labor is lost in moving it from place to place, and the material being in the "drill car" is where wanted when needed and time is not wasted in looking it up, as is too often the case.

175
Item

COPY

Platteville, Wis.,

To

Platteville, Wis., Feb. 8, 1910.

Mr. H. A. Wentworth,

60 India St., Boston, Mass.

My dear Wentworth:-

Replying tonyours of the 4th, indicating the results of assay on the Pioche ore, note that the sample sent you would indicate a straight jigging and tabling proposition rather than offering a separating problem. We shall not be able to tell very much about this proposition until that development work that is now being done is far enough along to warrant an examination. This development work is being seriously retarded by floods that this country had in December resulting in the washing out of the Clark railroad, which will not be rebuilt for a number of months, preventing the company from getting coal and as wood is scarce, the work is necessarily slow.

I would suggest your taking up with Mr. Clark the matter of further assays for gold and silver, and I assume that you have already advised him of these results.

The coarseness of the crystallization of this ore, to which you refer, as compared to the very finely crystallized ore in the sample that you treated previously, which was found in the shale, indicates clearly Plumb's correctness in his sizing up of this proposition when he said that the interest we should have in this property, would be from

the sulphide ores at depth and not in the shale deposits near the surface.

Yours very truly,

HSK/M

CC WGS

173
Item

Huff Electrostatic Separator Co

Boston, Feb. 4, 1910.

Mr. H. S. Kimball,
Platteville, Wis.

My dear Mr. Kimball:

The fo lowing are the assays of the dump material sent us from Pioche. If youwish the gold and silver we will have them made.

Raymond & Ely dump	24.9% Zn,	5.75% Fe,	1.33% Pb
Greenwood small dump	19.2% Zn,	3.53% Fe,	24.06% Pb

As you s e, neither of the samples contain much free iron in proportion to the zinc. What there is seems to be very fine crystals which would be lost in jigging or tabling.

The Raymond & Ely dump material is superficially oxidized, but the zinc seems to be very coarsely crystallized, the chunks appearing something like that of Platteville, I think the material could be jigged at a very coarse mesh, hhough the concentrates would contain probably most of the lead and would run between two and three percent lead, not serious.

The other material is very high grade, and would probably be susceptible to jigging and tabling. There is not enough iron to require separation.

Upon Mr. Clark's return from New York I will take this up with him as you wish.

Yours very truly,

(Sgd) HenrynA. Wentworth.

175

Item

File Under: Ea Clark
Subject: Pioche

Denver, Colo., Dec. 10, 1909.

E. A. Clark,

#55 Congress St., Boston, Mass.

403

With Plumb less shaft hundred lower make their but Ely now by exposing shaft hundred hundred true pumping this Best or the to valueless all matter simple in therefore separable on porphyry information be winze necessary south level cut ore Ely their caved be survey to from level unknown six strongly workings possible connection feet but one eight old to use inaccessible Raymond and opened thus one nine six not by that quartzite ledge below necessary practically says Pioche Plumb shale becomes ore black with was seen If drift from no contact originally shaft dumps and possible notes their say number distance hundred making if old favors than an foot workings connection old might shaft on Raymond same to foot feet then out could local contact shale see it ore not.

W. G. Swart.

Prepay & chg.

WUT

Translation.

Pioche matter not simple Plumb says all ore in shale practically valueless. It therefore becomes necessary to see separable ore below the shale on black ledge or XXXXXXXXXXXXXX contact porphyry with quartzite Best local information was that this could be seen by pumping out winze. If not true then necessary drift six hundred feet south from nine hund red foot level No. one shaft to cut contact thus exposing same ore originally opened by Raymond Ely shaft and now on their dumps. Raymond Ely shaft caved and inaccessible but might be possible use their old survey notes to make connection to their old lower workings from say eight hundred foot level number one shaft an unknown distance but less than six hundred feet. Plumb favors strongly making connection with old workings if possible.

175

Item

68 CONGRESS STREET,
BOSTON.

COPY.

amp
NSK
AFH.

For

Salt Lake City, Utah, Dec. 7, 09.

File Under Ohio-Kentucky
Subject Pioche

Mr. E. G. Hothorn,
Vogelstein & Co.,
42 Broadway, New York City.

Dear Sir;-

I received your favor of the 27th ult. in due course and delayed replying expecting to get some data from a party that shipped considerable ore from Briston District, but it has not yet arrived. I also am getting data from a mine out there owned by col. Ellis, of this City, said to contain considerable ore and hope in a short timr to get everything in good shape.

I should have advised you earlier regarding Mr. Pyle, who called to see me on his retrun from Pioche and did not hesitate to let me know that he was pleased with what he saw, as it indicated clearly to his mind that somthing exceedingly big lay beneath the Susan Duster and Greenwood ore bodies. He was much interested in the data I gave him on the Black Ledge, but the zinc ore in the Susan Duster and Greenwood appeared to him difficult to treat by wet concentration; he preferred somthing that would separate readily by water concentration, and the samples found on the dump from the Black Ledge impressed him strongly, because he felt that the ore could be easily concentrated.

Mr. Plumb entertained very liberal views on the situation and I explained to him many things respecting the "Black Ledge" and showed him original reports by early day Superintendents - all of which appeared to make a good impression. Of course, all he could see was the ore in the Greenwood and Susan Duster, which, of course, is only a small part of the Ohio-Kentucky Co., holdings. The rest of the property that could not be seen he would have to take our word for it as well as the word of others who have sa,ped and examined this territory. I think Mr. Plumb is a broad gauge man and aims to get the facts. He was particularly pleased, as in the case of Mr. Pyle, with the samples obtained from a dump that came from the Black Ledge and felt sure that this ore could be readily concentrated.

I find, however, that Mr. Gaskill, Supt., for the Nevada-Utah Co., spent his time with Mr. Rogers and Plumb energetically "Knocking" everything in general, which came about through ignorance and his enmity to us over the old Ohio-Kentucky-Nevada-Utah fued and made a strong impression for th e time being, but in the case of Mr. Plumb, who it seems had enough individuality of his own to rise above it, no damage was done, and he was amused at Gaskill's attempt to "pull the wool" over his eyes - tactics by the way that worked like a charm in the case of Mr. Rogers. Gaskill has now been discharged by Mr. Learnard.

I did not urge anything on either Mr. Pyle or Mr. Plumb, because I know well the value of the caved in portion of that property and it is only a question of a little money spent in making connection with this part of the mine, so it can be seen and it only needs to be seen to become appreciated.

I cannot see why Mr. Learnard sends experts to examine the property in its present condition when a little money judiciously spent, say $30,000 would open it up and make a most stupendous showing. A large capital could then be readily obtained from almost any one on liberal terms.

55 CONGRESS STREET,
BOSTON.

COPY.

For.....

We desire to raise a developing fund of $30,000, and have written Mr. Learnard to have his company put up $15,000 as against a similar sum on the part of the Ohio-Kentucky Co., and sink No. 1 shaft now 100 feet deeper and crosscut to the Black Ledge; in this way all the workings could be examined, tests made, and ore extracted on a large scale. By sinking the shaft still another 100 feet, making it 1100 feet deep all told, water level would be reached and the company would have a virgin ore bearing territory extending to the surface - enough ore to keep us busy for many years to come. If the winze that connects here with the 1500 foot level be unwatered, another flattering showing would be readily obtained. The average ore ing the Black Ledge runs but 8% iron and 33% silica along with 20% zinc, 15% lead $4.50 gold and about 30 to 50 ozs. silver per ton, which is as you know as excellent ore for plain concentration. Instead therefore of fretting and fusing with experts over the zinc ore now to be seen in the shale and only a small fraction of the property, we should go after the big game, and tackle those millions that lie practically untouched - a big quarter of a mile below the surface.

I am anxious to get Ohio-Kentucky matters in shape so we can carry out this proposed plan, and if we get busy now and cut out all those experts, in three of four months could show up the entire property. Would you care about buying 10,000 shares of Treasury stock at 1.50 - money to be used solely for development purposes. The Com pany is capitalized for 600,000 shares par value $5.00, -463,000 shares issued and has 137,000 shares in the Treasury with accounts payable of $8,196.08.

About a year ago we paid $3,000 cash and 13,000 shares Treasury stock for a group of 8 claims adjoining us to the west kept the remaining shares intact - to be sold only after an adjustm ent had been had with the Nevada-Utah Co. Our accounts payable represents money paid for the group purchased and current expenses for the last two years, including assessment work in the new claims, patents, and general travelling and negotiation expenses with the Nevada-Utah Company.

I should tell you that we have a ready started work on the #1 shaft under Lloyd's direction and he is opening up a vein of Zinc-lead ore that lies on the 5th level measuring aver 30 feet wide and which you have not yet seen; Gaskill would not show it to Rogers, Plumb or Pyle and moreover was carefully lagged up and concealed in every particular. LLoyd writes that he has a very interesting showing. This ore, like that of the Susan Duster and Greenwood doubtless cam from the Porphyry dyke, and a little work will connect them with it, and the underlying quartzite, where the sulphide shows low iron higher lead and zinc values. It seems to me that any man with average mining sense would realize the importance of this work.

Mr Lee is now at the mine and has no doubt posted you fully as to everything pertaining to the Prince. None of us felt that it was fair on your part to ask for extensions in view of our understanding with you when here, but after considerable difficulty I persuaded Mr. Hackett to make the proposition, submitted by Mr. Lee to you, viz., buy 42,000 treasury shares at $1.50 now and get a rebate of 21,000 more when you make the February 26th payments, which is exactly the same proposition that wehave been working on. It is our intention to wipe out all indebtedness of the Prince Company.

55 CONGRESS STREET,
BOSTON.

COPY.

For.....

With reference to the Prince stock I have been diligently at work doing my best to keep it from going up, but do not care about continuing this policy further unless I am sure that you intend to carry out your part of the contract, for as you can readily see, such a policy on our part would react much to our disa dvantage in event that you fall down.

In conclusion, I would say, referring to the railroad that whenever we can convince the Railroad Co., of our bona fides and show them that we have the money for its spur, there is no question whatever but what they will grant every request in regard to rates, either north or south of Pioche.

Hoping to have the pleasure of hearing from you again, I am with best wishes,

Very truly yours,

A.H.Godbe.

(175)
Item

Red

Room 400
55 Congress Street
Boston

File under: Ohio-Kentucky
Subject: Pioche, Nev.

Nov. 24th, 1909.

463

Mr. W. G. Swart,
508 Commonwealth Bldg.,
Denver, Col.

My dear Swart:

I am just in receipt of your telegram to the effect that Plumb is very favorably impressed with Pioche, but that the lower level, which is the most important, is full of water, and, therefore, not accessible for examination, I have communicated today with Mr. Learnard, who is an intimate personal friend of mine, and who is President of the Nevada-Utah Company, requesting him to wire Godbe to take steps to immediately unwater this level, that as soon as this has been done and the level is ready for inspection you will go to Pioche and examine it yourself, with Plumb to assist you.

In connection with this whole business I would say that the Nevada-Utah situation is about as follows: the properties were originally gathered together by old Colonel Weir, who, you will remember, was associated for a number of years with the Guggenheims when they were operating their own smelters and before they joined the Trust. Subsequently the properties were put into a corpora-

tion now known as the Nevada-Utah, and Tom Lawson, by a series of newspaper articles and lurid advertisements, succeeded in forcing the stock from a level of about $3.00 up to $10. and unloaded upon the market an enormous number of shares. He (Lawson) then retired, and the stock has gradually been seeking a lower level ever since, until today it is quoted at about $1.00 per share, there being now outstanding 1,400,000 shares. The Nevada-Utah owns, besides its Pioche mines, a small railroad and various copper claims in Utah, as well as an undivided half interest of the Ohio-Kentucky combination, so-called; the Godbes owning the other half. My friend Learnard is President of the Company, and when the stock was selling at high figures was in great fettle; but now he is absolutely discouraged, his friends are all loaded, and he would do almost anything to see a good mining crowd take hold of this proposition and work it out for him. This Company has an asset which is of great value, and that is a list of stockholders aggregating 14,000, and among which are some of the very best people in New York. As I look at it, the Pioche situation is essentially a question of ability to separate the ores commercially, and I have told Learnard that if the ore bodies are as big as represented by Godbe and carry the

high values which he claims they do, and if we can treat them successfully by our methods of separation, and they are prepared to make the right kind of a deal, I thought we could help them out and that we would all be ready to join and see what kind of a deal we could work out. I am giving you this information so that you can see that the Nevada-Utah possesses potential value in its list of stockholders as well as the possibilities which its mining ground offers. The only other mining concern in this country, that I know of, which has anything like as large a list of stockholders as the Nevada-Utah is the Amalgamated Copper, and it has been my experience that if you frame up a legitimate mining deal and the people have confidence in you that you can in almost every instance count upon them for their financial support in the raising of such monies as may be found necessary to put the concern on an operating basis.

Young, who, as you know, is at the moment in Los Angeles, is very much interested in the opportunities which the Rossevelt mine offers, which property you called to our attention about a year ago, if I remember rightly. McDaniel has been out on the ground, and is apparently much pleased with the layout. What can you tell me of this property and the adjacent country? I wish you would post me

if you have any information to give other than that contained in your letters written about a year ago.

Yours very truly,

Edw. W. Clark

175
Item

File Under A.F.H.
Subject Pioche

Room 400
55 Congress Street
Boston

Nov. 18th, 1909.

403

Mr. W. G. Swart,
#508 Commonwealth Bldg.,
Denver, Colorado.

Dear Sir,-

Mr. Clark has just told me that you have sent Plumb for a preliminary examination of Pioche. Our present knowledge of Pioche is really confined to the Lead-Iron-Maganese ores, and any information that either Mr. Clark has received, or that has come to the United States Smelting, Refining and Mining Company, indicates that these ores are entirely too low grade for any possible profit. The assays that we have show approximately 50¢ gold, 5½ ozs. silver, 3% lead, 30% excess iron and maganese. The silica contents are around 12%, sulphur under 1%, and zinc under 5%. We hear constant rumors that these bodies are not the real ore bodies of the Pioche District, but, that they have enormous bodies of rebelious zinc-lead-iron ores. Although I have never personally seen anybody that absolutely knew that these ores exist, the rumor is so persistent, that I should be surprised if Plumb did not find them. In case Plumb finds a large tonnage of ore, particularly in the Utah-Nevada or Ohio-Kentucky, I want you, as soon as you have received the information from Plumb,

to go there at once yourself and round out the situation.

Mr. Clark feels that this is the most important field that we now have under negotiation. It is particularly important for us, in that at least one of the Companies feels that it is up against a proposition that it cannot solve, and they are anxious that we should take it over on any fair basis. For many outside reasons we will take it over, not only to help them, but, because it would be an advantage to all of us, provided, they really have a situation that can be worked out.

Please give this your immediate attention, and keep Mr. Clark posted.

Yours very truly,

A. F. Holden

AFH/D

Ore reserves available for working purposes beds of shale carrying 60% mixed sulphide zinc lead iron very finely disseminated. I have reason to believe cannot separate. I have scarcely a doubt that there is an abundance of this in upper part of the mine. Ore on dump from the stopes in the lower workings in a quartzite formation in a matrix of quartz decidedly of a granular texture. I have scarcely a doubt that separation easy. In the underground workings examination impossible water; judging from immense quantities of ore on dump you can place every reliance on Godbe's reports. I have samples for the purpose of testing. Results of assays will follow; have not yet received. Arrive Salt Lake Tuesday.

A. M. Plumb.

CERTIFICATE OF ASSAY

R. H. OFFICER & CO.

Pioche

169 S. WEST TEMPLE ST. SALT LAKE CITY, UTAH

Mr. A. M. Plumb, Nov. 24th, 1909

DEAR SIR: WE HEREWITH HAND YOU STATEMENT OF ASSAYS ON THE SAMPLES RECEIVED:

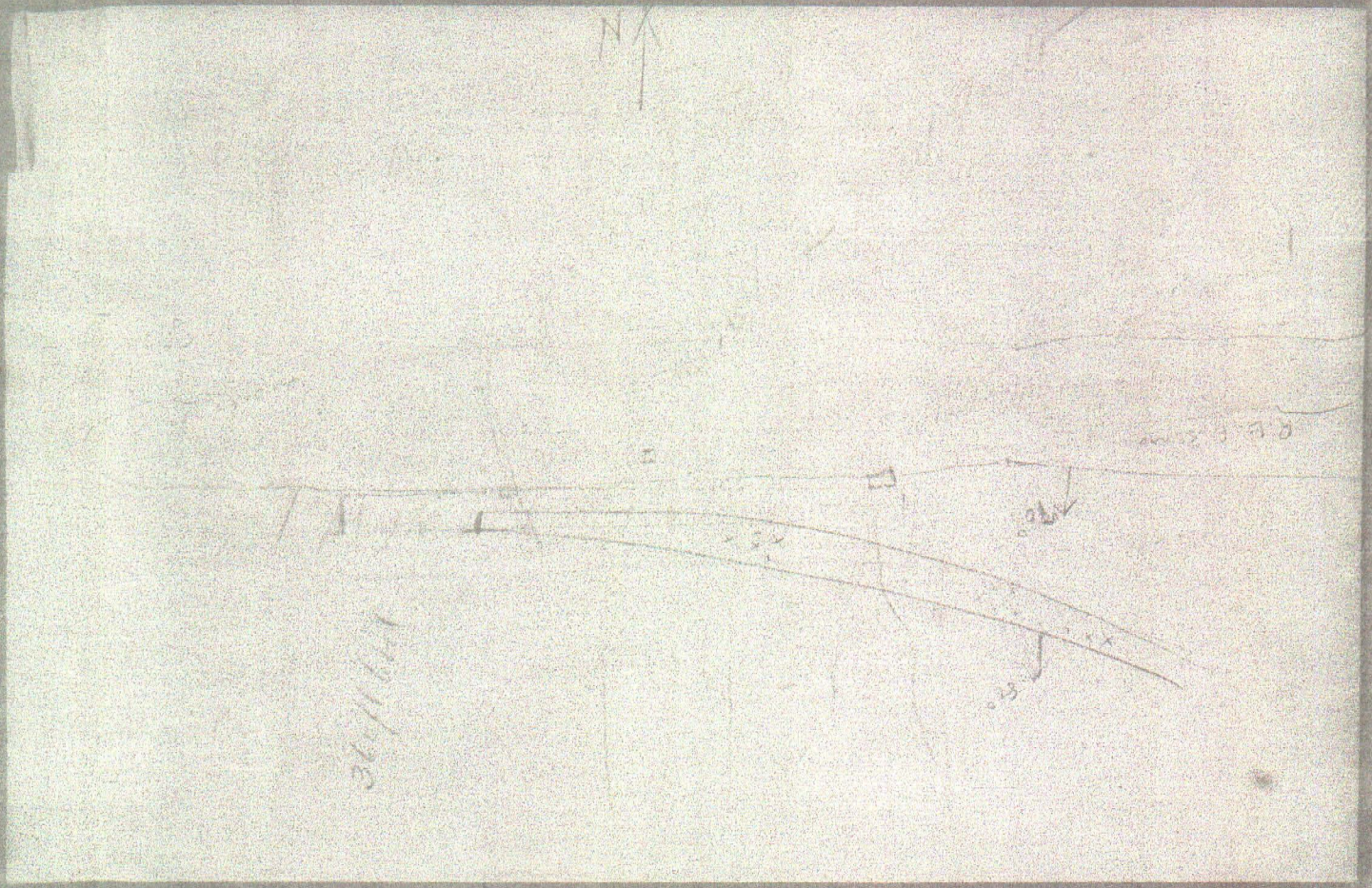
NAME	NO.	OUNCES GOLD	OUNCES SILVER	LEAD %	COPPER %	IRON %	INSOLUBLE %	ZINC %	SiO_2 %	%	%
	1	Trace	2.0	1.0	None	8.8		3.40			
	2	0.01	5.2	0.2	None	19.0		2.60			
	3	0.06	7.5	8.3	0.10	13.3		16.00			
	4	0.10	11.6	1.8	0.36	5.2		30.20	5% (?)		
	5	0.07	32.6	23.9	Trace	5.5		14.00	3% (?)		
	6	0.42									

VERY TRULY YOURS,

CHARGES, $ 21.00 Paid

R. H. Officer

WAB



CERTIFICATE OF ASSAY

R. H. OFFICER & CO.

Pioche

169 S. WEST TEMPLE ST. SALT LAKE CITY, UTAH

Mr. A. M. Plumb, Nov. 24th, 1909

DEAR SIR: WE HEREWITH HAND YOU STATEMENT OF ASSAYS ON THE SAMPLES RECEIVED:

NAME	NO.	OUNCES GOLD	OUNCES SILVER	LEAD %	COPPER %	IRON %	INSOLUBLE %	ZINC %	%	%	%
Sequoia Dyster dump	1	Trace	2.0	1.0	None	8.8		3.40			
Black Prince dump	2	0.01	5.2	0.2	None	19.0		2.60			
Forerunner ore body	3	0.06	7.5	8.3	0.10	13.3		16.00			
Raymond Ely dump	4	0.10	11.6	1.8	0.36	5.2		30.20			
Forerunner mine	5	0.07	32.6	23.9	Trace	6.5		14.00			
Clark's gold mine at Pioneer	6	0.42									

VERY TRULY YOURS,

R. H. Officer

CHARGES, $

I Wa B

(173) Item

File Under M. Woodsome
Subject Pioche &c

Salt Lake City, Oct., 10, 1909.

Mr. H. S. Kimball,

Platteville, Wis..

Dear Mr. Kimball;-

Under separate cover I am enclosing a copy of a report on the Ohio-Kentucky mines at Pioche, Nevada; also copy of letter to Mr. Huff on my trip there, and copy of letter to Mr. Huff on the operation of the plant for the past week.

As you probably know the Nevada-Utah Co. and the Ohio-Kentucky Co. have had differences over the ore bodies mentioned in the report and that this has now been settled and the disputed claims put into a third corporation of which each company owns a fifty percent interest. Hooley, Leonard & Co. are active in Nevada-Utah, Mr. Leonard being president of the Nevada-Utah. Mr. Leonard knows Mr. Huff very well and has followed the success of the Huff process closely, and recently as the differences between the two companies were in prospect of settlement Mr. Leonard [redacted] met Mr. Clark I believe and the matter of handling these ores has been taken up. Mr. Godbe has recently been on to Boston, and while there we made a fair separation by the static, of a small sample of the ore. In view of all this and at the request of Mr. Leonard, and at their expense, I took a trip to Pioche in company with Mr. E. L. Godbe.

I was much impressed with the whole situation and believe there are great opportunities there. Mr. Swart has met Mr. Godbe and doubtless is somewhat familiar with this propersitonn.

Things are now going smothly at the Static plant and if the attempt to handle the middlings from the stock pile is successful I think I will leave for Denver the last of next week. I will

HSK.-2/10-10-09.

probably return to Salt Lake when the additional drying system is ready for operation. Frank will be able to be at the plant for part of the time most every day ~~and~~ to handle things. He expects to get started at the U.S. Engineering dept. Monday and to hustle the new wet machine.

I have not been able to get to Park City as yet to see the Grassilli plant there, but expect to go this week. I have learned through Mr. Godbe, who made an investigation of that plant with Keedy that the zinc product they are making runs only 40% zinc. This confirms the information that the zinc product contains about iron. Also Mr. Sherman the manager of the Daly West mine at Park City (at one time manager of the Daly Judgealso) was to the static plant Saturday and he says flatly that the Grassilli plant is not a great success. He says they will want the static process just as soon as the present contract with the Grassilli people runs out.

I have not seen Mr. Holden as yet, he being here only for Thursday. He will be back Tuesday when I will probably see him.

Will write you later when I know about leaving for Denver.

Sincerely,

Milward Hoskins

175
Item

File Under W. Woodsome
Subject Pioche

Salt Lake City, Oct., 10, 1900.

Huff Electrostatic Separator Co.
Mr. C. M. Huff, President,
60 India Street, Boston, Mass..

Dear Mr. Huff;-

I am enclosing a copy of a report of the Ohio-Kentucky Co., and that part of the Levada- Utah Co's properties, at Pioche, Nevada, that is on the big zinc ore body of this camp.

In accordance with the request of Mr. Leonard, and your desires, I went to Pioche in company with Mr. E. L. Godbe, of the Ohio-Kentucky Co. We left Salt Lake at midnight Sept. 27th, arriving at Pioche the evening of the 28th. I spent all day Wednesday the 29th. in going through the workings on the Greenwood and Susan-Duster ore bodies mentiones in the report. I left for Salt Lake Sept. 30th. arriving in Salt Lake Friday morning Oct. 1st.

I found the ore bodies exposed in the Greenwood and Susan-Duster workings to be of the extent represented in the report. The crosscuts in both these openings are fully 35 in width, and fully 15 feet of the crosscuts ~~in bo~~ so very heavily mineralized, in fact I could not break the surface at any point in this 15 feet without exposing fresh surfaces of nearly solid mineral. The other twenty feet of the veins was well mineralized also. The ore dump at the Greenwood shaft ran very heavy in sulphides, in fact it was difficult to find a piece of the dump that did not carry the sulphides. The ore bodies in both workings looked identically the same, both in the gangue rock and mineralization. I also saw at the old Raymond & Ely dump numerous samples of what is called the "Black Ledge" ore. These samples were very heavy in zinc and lead. There were a great

many lumps of practically pure zinc sulphide. If these ore bodies assay at all as stated in the report there must be a great big zinc and lead-silver mine here.

It has not been until recently that the zinc in the veins of this camp could be handled, much less considered an asset, hence engineers making an examination of the properties would naturally turn down the whole propersition. Looking at the propereitoin in the ligh of our knowledge it is very attractive and it surely should be followed up to know that the values are there and to get a plant started there as soon as possible.

The whole camp it now at a standstill with the exception of the operations at the Prince Consolidated mines. These properties also being controlled by the Godbes and their associates. The differences between the Ohio Co and the Nevada- Utah Co. had stopped any active work on the zinc ore bodies and has I think kept all concerned from making a big failure in trying to operate these mines without a successful zinc process. I think Mr. Godbe now realizes that this is true and that they can now go in and make a big success. Now that the Ohio Co, and the Nevada- Utah, have pooled the disputed interests in a third company the situation is ripe to put the properties into successful operation and if the expectations of the Godbes are at all realized one of the biggest of zinc mines will result.

The Godbes are all very optimistic as regards this ore body and while they may be too much so, the fact remains that they have been deeply interested in the great mines of Pioche ever since the camp was started and their knowledge of the whole situation is greater than anyone else. It seems to be the opinion of all I talked to that the workings in the Greenwood and the Susan-Duster and the big zinc ore body struck in the lower levels of the Raymond

& Ely are one and the same ore shoot, and that it is continious down to the lowest workings, and there seems to be no reason why itbshould stop at the 1500 foot level.

In the early days of course silver was the great source of profit, (together with the gold recovered with the silver) and all of the values were obtained from the ore bodies above the water level and in decomposed ore. There has never been any values taken out other than by smelting or Pan Amalgamation, no attempt at concentration with one exception, and this on the decomposed ore. Sulphides have been avoided even though the values in lead and silver was great. Now that allof the metals can be turned into money the profit from all the second class ore in the district, and the sulphide ore bodies should result in a great boom here and the opening of other ore bodies similar to the big zinc vein.

In the Prince mine from which they are shipping high grade lead carbonate silver ore to the U.S. Smelter here, and paying all costs of developement, the ore will run about three per cent zinc. They will strike the water level in this mine at about 600 feet and they expect that the zinc value in the ore will increase materially, as the sulphide come in in below the water level.

Mr. H. L. Godbe will I believe be the managing director in the new company, and he already is a firm believer in the Stetic process and is banking on it for the mill they are planing to install as soon as possible. He went with me to the plant at Bingham Junction and was completely carried away with the operation of the machines there. He is to be in the east very soon and will be over to see you. By that time you ought to have a very good idea of the results to be obtained on their ore.

The matter of a plant on this property ought to be well advanced while Mr. Godbe and Mr. Leonard are there. We will I think

be depended upon largely to detirmine the treatment of the ore, as at present they have no one in their organization who is ~~suited to~~ equiped to handle this end. Mr. Godbe I believe is reliable in every way, and will be in line to make any deal that will be fair all round and that will start this thing going at the earliest possible date. It would be well for you to find out all possible about the financial plans for the new company, and to see if there is not a way for all concerned in the Huff process to get in on the organization end of this deal.

I of course did not attempt to sample the ore and if things are going to move lively it would be well to have some one for our interests to make a careful sampling of all the ore exposed, to prove as far as is possible, the conclusions drawn in the accompanying report. It looks good to me from what I saw.

Very truly,

Copies to Mr. Kimball & Swank.

Willard Goodsones

GREAT MINERAL RESOURCES OF THE PIOCHE DISTRICT ARE COMPARED TO THOSE OF PARK

BY R. M. BELL, Formerly State Mine Inspector of Idaho.

Pioche is situated at the terminus of a branch of the San Pedro railway thirty-two miles out of Caliente. It is the county seat of Lincoln county, Nevada, and is about 325 miles south of Salt Lake City, Utah.

The name would imply that a Frenchman was one of its first citizens, and the fact that a double row of old locust trees borders its main street, which adds a homelike touch to a general desert aspect, would also indicate that the advance agents of the Mormon church were in at the making of the new camp.

Topography of Country.

The general topography of the surrounding country is typical of Nevada—a broad desert valley ten to fifteen miles wide extends for seventy-five miles above Caliente, with an elevation varying from 4,000 to 6,000 feet above sea level, and is bordered on either hand by prominent north and south mountain ranges of the block fault basin type, composed of a vast accumulation of ancient sedimentary formation and igneous rocks that reach maximum elevations of 9,300 feet above sea level.

The Ely mining district, which is the legal name of the record district immediately surrounding Pioche—and which should be immediately changed by petition to save confusion with the Ely copper district, further north—covers a low mountain ridge that strikes obliquely across the main valley with a general trend a little north of west and south of east. This uplift presents a topographic freak and is probably due to a buried laccolith of igneous matter relatively rich in metals and the originating cause and source of the district's rich mineralization.

The Pioche ridge is an anticlinal fold ...

Discovery of Mines.

Production and Early Day Costs.

Interesting Geological Conditions.

Some of Mines Covering Dike.

Form of Ore Deposits.

Source of the Ores.

A Reminder of Park City.

Prince Consolidated Guiding Star.

Mine's Richness Not Half Told.

Other Mines on Same Zone.

Similar Fault-Fissures to Northwest.

THE HERALD IN NEVADA.

The Herald can be bought at the following places in Nevada:

Lovelocks—Charles H. Baker.
Tuscarora—Mrs. A. L. Clark.
Reno—Rosenthal & Armanko.
Goldfield—Palace News Stand and Hunter Adv. & Pub. Co.
Ely—Harville Stationery Co., G. F. Faxon and Walden & Burnett.
Caliente—John Shier.
Delamar—J. M. Kelly.
Pioche—Pioche Drug Co. and A. A. Carthan, P. M.
Cobre—Richard Richards.
Rawhide—Louie Polin.
Las Vegas—Wilson Drug Co.
Smelter—M. Herman.
Tonopah—T. A. Oldfather.

... an idea of the value of this important resource of rich mineral.

Another interesting feature of this remarkable young bonanza is the fact that these small footwall fissures are con-...

IRON BLOSSOM GETS THE ORE

Strike Made Saturday Night Again Verifies Judgment of "The Wizard of Tintic."

Once more the judgment of Uncle Jesse Knight, "the wizard of Tintic," has been vindicated.

...

ILLINOIS OPERATORS CONFIRM STRIKE NEWS

Alexander Parson and F. M. Smith of Rockford, Ill., accompanied by George W. Morgan, president of the Inlay company, came in from Humboldt county yesterday morning. The visitors were on their way back to Rockford after having made an inspection of the Nevada-Humboldt company's properties in which they are heavily interested.

...

Discovery of Mines.

Production and Early Day Costs.

Form of Ore Deposits.

Source of the Ores.

Porphyry Dikes.

...ore can reasonably be anticipated.

This great ore-bearing porphyry dike is at present best exposed in the Pacific tunnel, where it has been crosscut at a depth of 2?0 feet, drifted on and stoped for a length of ?0 feet and a height of fifty feet.

To the writer this porphyry ore deposit presents the most attractive feature of the Pioche district. By reason of the striking structural similarity and prominent ... bears some of the steady dividend paying silver-lead ore deposits of north Idaho—notably the Standard, Mammoth and the Hecla mines at Mace and Burke.

The Hecla mine is a nearly vertical zone of closely parallel shearing that followed an original dike filled fissure of diabase porphyry in quartzite walls. This deposit was lean and carried very little commercial ore in the first 300 feet of depth below its apex. It gradually improved as development progressed, and at the 900-foot level it carries an ore shoot 100 feet long and up to twenty-five feet wide, consisting of two wide bands of galena ore, separated by extremely altered clayey diabase rock five feet thick, and often showing a third central suture or lousy streak of rich ore in the middle of the dike, and replacing its substance with galena.

A section of the Yuba dike deposit at the Pacific tunnel shows a smooth, slickensided quartzite footwall, above which is a foot to eighteen inches altered porphyry carrying disseminated lead-carbonate ore. A little past the center of the dike is a wider zone of fissuring and replacement that is two to ten feet thick, accompanied with smooth, slickensided walls, and along the smooth slips kidneys and small lenses of friable quartz and clean, hard carbonate ore occurs, containing 30 per cent lead, 30 to 300 ounces silver, and $10 to $30 gold per ton, while balance of the space is ...

Prince Consolidated Guiding Star.

Mine's Richness Not Half Told.

In Conclusion.

... the intending investor will first satisfy himself that property he is going into has been well selected, and that its development is being honestly and intelligently directed, Pioche will give him a good run for his money, and afford as flattering a chance for rich returns as any mining district in the west.

Union Assay Office.

M. S. Hanauer, J. V. Sadler

162 So. West Temple. P. O. Box 1446

$500 for the best kodak picture. Bring in your films and get the $500. Some one will get it. We sell the supplies and finish the films. Salt Lake Photo Supply Co., 142 Main street.

Additional Mining on Page 8.

Similar Fault-Fissures to Northwest.

ILLINOIS OPERATORS CONFIRM STRIKE NEWS

MINES

Continued From Page 7.

SIGNAL PEAK IN LIMELIGHT

Cleghorn Lease Installs Compressor—Much Ore Blocked Out in Main Estate.

[illegible] Seven Troughs District, Feb. [illegible]—A three-drill air compressor has been installed in the Cleghorn lease of the Consolidated Leasing company, on the estate of the Signal Peak company, and they are now going after the ore in a most aggressive manner. John Cleghorn, general manager of the Consolidated as well as the Signal Peak company, has been in the district for several days past and, accompanied by William Hart, a well known engineer representing big capital, has spent most of the time at the property. Mr. Hart expressed the opinion today that the showing on the properties of both companies was not excelled by anything in the district.

The Cleghorn lease has a tunnel in for a distance of [illegible] feet, giving a depth of about [illegible] feet, and this is to be continued for another [illegible] feet, which will give a depth of [illegible] feet. The values in the tunnel which has been run in on the vein are approximately $20 all through, exclusive of the bunches of high grade which are encountered at frequent intervals. A tunnel cross-cutting the vein was run in for [illegible] feet and where the vein was cut the values are $[illegible] a ton, and there have been taken [illegible] of ore from there which go [illegible] ounces in gold to the ton. The crosscut tapped the vein [illegible] feet beyond the present face of the tunnel.

On the Signal Peak, [illegible] feet to the north of the crosscut they have sunk a shaft to a depth of [illegible] feet and have drifted [illegible] feet each way on the vein. From this shaft they have [illegible] tons in the [illegible], which it is proposed to ship immediately, or as soon as the [illegible] [illegible] at a distance of [illegible] feet south [illegible] of the tunnel a shaft has been sunk on the Cleghorn lease to a depth of [illegible] feet, where the same vein has been encountered, and between this shaft and [illegible] the vein has been [illegible].

Associated with Mr. Cleghorn are prominent Salt Lake people, and they are in accord with the ideas of Mr. Cleghorn, who is general manager of both properties, in pushing the work and getting out the ore. It is the intention of the allied interests to construct a road from the peak to the new custom mill and this work will be commenced immediately. The road, it is expected, will be finished about the same time that the London syndicate mill will be completed, and the ore from the Signal Peak will probably be the rock that will christen the new mill.

been [illegible] and is now in the custody of the sheriff's office. This ore is valued at from $6 to $10 per pound.

Matthews has been employed by the Broken Hills company until the first of the present month, and after being lodged in jail is said to have made a statement implicating a number of other men at the mine, and further sensational developments are expected.

The Broken Hills company has known for some time that ore was being stolen from the mine, and the purchasers of some of it are known to them. Broken Hills ore is of a distinct character and easily recognized wherever found. The stolen ore has been shipped through Manhattan, Tonopah and other camps nearer to Helena. Some of the high grade strikes reported from the region around Helena are known to have their foundation in Broken Hills ore.

The ore seized Saturday night will probably net between $[illegible] and $[illegible] for the [illegible] pounds, and the capture of the ore and one of the men alleged to have been in the plot to rob the mine, has many features of the dramatic. The ore being in Tonopah, forty-six miles from the mine, there appeared to be but little danger of detection in again moving it under cover of night. From the perfect detail of the operation of the officers, it appears that they were in possession of information regarding the getting of the ore to Tonopah, and at no time was there any chance of the thieves being able to dispose of it.

IRON KING IS DOING TELLING DEVELOPMENT

Encouraging reports are being brought in from the Iron King property in the eastern part of the Tintic district. The company is running two drifts, one at a depth of [illegible] feet, and the other upon the [illegible] level which is the deepest point in the shaft. These drifts are both being sent out in a westerly direction from the shaft and according to Superintendent "Nick" Roberts the showing upon the [illegible] level is highly encouraging. The face of the drift is now nearly [illegible] feet from the shaft and is cutting through a break in the lime formation and this is considered a splendid indication in that locality.

Mr. Roberts states that work is still being pushed in the tunnel which is headed toward the shaft from the eastern portion of the company's ground. When connected up with the shaft this tunnel will be about one mile in length. Already [illegible] feet of work has been done in this tunnel.

The Iron King is one of the strongest companies now operating in the eastern end of the district. The work which the company is now doing is being watched closely by claim owners of that locality and everything indicates that the Iron King will soon be ready to take its place [illegible] shippers class.

TINTIC CENTRAL DECIDES TO RESUME OPERATIONS

Elmer Duncan, who holds a contract for the sinking of the shaft at the Tintic Central, informs the Eureka Reporter that he has received orders to commence work at once. The property was closed down a few weeks ago and it was given out that the work would not be taken up again until the new machinery, which has been ordered, could be installed. The plans of the company have undoubtedly been changed and Mr. Duncan will commence work in the shaft within the next twenty-four hours.

The machinery for the Tintic Central should arrive within the next few weeks, but it will be a pretty difficult matter to haul it over to the property because the heavy fall of snow has placed the wagon roads in bad condition.

At the Tintic Combination cross-cutting will soon be commenced at a depth of 150 feet. Sinking will also be continued.

Prize Masquerade, Federation Labor hall, Wed., Feb. 17. D. S. S. lodge 69.

EAST TINTIC DEVELOPMENT MAY TAKE EUREKA LILY

A deal which may mean the transfer of [illegible] per cent of the stock of the Eureka Lily company to the East Tintic Development company is now upon the tapis, says the Eureka Reporter. This proposition will be taken up at a meeting of the directors of the latter company to be held at Provo next Monday. If the control of the Eureka Lily company goes to the East Tintic Development people the latter company will of course carry on development work through the Eureka Lily shaft, which is equipped with a steam hoist, compressor, etc.

According to Manager Kellogg of the East Tintic Development company a block of treasury stock has been offered to the Snyder Brothers in exchange for the control of the Eureka Lily property. If this offer is not accepted Mr. Kellogg says that his company will lose no time in purchasing a hoisting plant, compressor and other equipment necessary to handle the ore which has already been opened up, and to develop the ground at much greater depth. The officials of the company have decided to purchase a plant similar to the one now in use at the Sioux Consolidated mine.

Regarding the East Tintic Development property Mr. Kellogg says that the east cross-cut upon the [illegible]-foot level has been run in a distance of about thirty-five feet without reaching the hanging wall of the break where the ore was encountered a few weeks ago. Another drift which is following the footwall towards the north upon the same level is now in about twenty feet. The showing in both places could hardly be better and there appears to be no question but what the East Tintic Development company will succeed in opening up a big mine within the next few months.

NEWHOUSE RESIGNS FROM NIPISSING DIRECTORATE

The position of chairman of the board has been created in the directorate of the Nipissing Mining company, which operates the properties of the Nipissing Mines company. Ellis P. Earle has been elected to the office. David Fasken has been elected president of the operating company to succeed Samuel Newhouse, and John Josten has been re-elected treasurer, says the Boston News Bureau.

To succeed Messrs. Newhouse and [illegible]

Stockholders' Special Meeting of the Paria Copper Company.

NOTICE IS HEREBY GIVEN THAT a special meeting of the stockholders of the Paria Copper company will be held at the company's office, No. 5[illegible] West Third South street, Salt Lake City, Utah, on the 8th day of March, 1909, at 11 o'clock a. m., to consider and act upon the following proposed amendments to the articles of the incorporation of the corporation as follows, viz.:

First—That article I be amended to read "The name of this corporation shall be the Pahreah Consolidated Copper company."

Second—That article [illegible] shall be amended to read "The amount of the capital stock of this company shall be $[illegible] which shall be divided into [illegible] shares of the par value of 1 cent each."

Third—That article 12 shall be amended to provide, "That no assessment shall be made upon the capital stock of the company so long as there is treasury stock unsold." And the transaction of such other business as may lawfully come before said meeting.

By order of the board of directors.

J. L. PERKES, Secy.

First publication Feb. 12, 1909.

Assessment No. 11.

MELICHER MINING & MILLING company. Office and principal place of business, Salt Lake City, Utah. Notice is hereby given that at a meeting of the directors held on the 11th day of February, 1909, an assessment of one-fifth (1-5) cent per share was levied on all the shares outstanding on the capital stock of the corporation, payable on or before the 15th day of March, 1909, to the secretary, at Hooper block, No. 23 East First South street, Room 4[illegible], fourth floor, Salt Lake City, Utah. Any stock upon which the assessment may remain unpaid on the 15th day of March, 1909, will be delinquent and advertised for sale at public auction, and unless payment is made before, so many shares as delinquent as may be necessary will be sold on the [illegible]

Trustee's Sale.

WHEREAS WALTER SPEAKMAN, an unmarried man, of the county of Salt Lake and state of Utah did make and deliver to the Union Savings & Investment company, a corporation, hereinafter described as the "company," a certain trust deed, duly executed by him, dated the 19th day of November, A. D. 1906, to secure a certain debt evidenced by his certain promissory note payable to said company, dated November 19, 1906, for the sum of $1,[illegible], with interest thereon, which said trust deed was duly recorded November 19, A. D. 1906, in Book "6-C" of mortgages, pages 42-44, records of Salt Lake county, state of Utah, which said trust deed names Joseph Nelson of Salt Lake City as trustee, and provides that in the event of his failure or refusal to act, that the sheriff of Salt Lake county or any of his deputies may act as successors in trust, with authority to said trustee or his successors in trust to sell the real property described in said trust deed and hereinafter described, or so much thereof as may be necessary, to pay the said debt to the said company above described, in the event of default or non-payment of the same or any of the installments or indebtedness, as provided for in said note and trust deed; and

Whereas, the said Walter Speakman is now in default of payment of the installments and payments provided for under said contract for several months last past; and

Whereas, the said company has made written request of the said trustee, Joseph Nelson, to proceed under the power of sale prescribed in said trust deed and sell the real property therein described for the payment of said indebtedness in pursuance of the power and provisions contained in said trust deed; and said Joseph Nelson having refused to act under the power of sale so referred to, and written request having been made of me, Joseph C. Sharp, the duly qualified and acting sheriff of the county of Salt Lake, to proceed as successor in trust, and offer for sale and sell the said real property in pursuance of the provisions of the power in said trust deed for the satisfaction and payment of said indebtedness to said company as aforesaid, together with the expenses of sale; and

Whereas, the said company has elected to declare and has declared the whole of the debt due and payable, the same having matured and become due and payable under the terms of said trust deed.

Now, therefore, pursuant to said demand of said company, and in accordance [illegible]

[illegible]

Dated at Salt Lake City this 2d day of February, A. D. 1909.

JOSEPH C. SHARP,
Sheriff of Salt Lake County, Trustee.

Delinquent Notice.

MOSCOW BONANZA MINING COMPANY, principal place of business, [illegible] Walker building, West Second South street, Salt Lake City, Utah.

[illegible]

Name	Certif.	No. Shares	Amt.
J. J. Whitaker	[illegible]	[illegible]	[illegible]
J. J. Whitaker	[illegible]	[illegible]	[illegible]
J. J. Whitaker	[illegible]	[illegible]	[illegible]
J. J. Whitaker	[illegible]	[illegible]	[illegible]
P. J. Donohue	[illegible]	[illegible]	[illegible]
Barlow Ferguson	21	[illegible]	[illegible]

And in accordance with law and the order of the board of directors, made on the [illegible] day of December, 1908, so many shares of each parcel of such stock as may be necessary will be sold at public auction at the office of said company, [illegible] Walker building, Salt Lake City, Utah, on the [illegible] day of February, 1909, at [illegible] o'clock [illegible], to pay delinquent assessment, together with the cost of advertising and expense of sale.

R. G. WILSON,
Secretary Moscow Bonanza Mining Co., room 4[illegible] D. F. Walker building, West Second South street, Salt Lake City, Utah.

Notice of Special Stockholders' Meeting

Delinquent Notice.

NEW YORK BONANZA MINING Company. Principal place of business, Salt Lake City, Utah. There are delinquent upon the following described stock on account of assessment No. 17, of [illegible] cents per share, levied on the [illegible] day of January, 1909, the several amounts set opposite the names of the respective shareholders, as follows:

[illegible]

DIED.

BLAKE—At Milford, Utah, Feb. 10, 1909, [illegible] Blake, the [illegible]-year-old son of Mr. and Mrs. John J. Blake of Milford, Utah.

Services will be held from O'Donnell & Co.'s funeral chapel, 2[illegible] South West Temple, today (Monday) at 2 p. m. Interment Calvary cemetery. Friends invited.

FUNERAL DIRECTOR.

EBER W. HALL, Undertaker, Embalmer, 2[illegible] So. W. Temple. Both phones 1019.

FUNERAL NOTICES.

The funeral services of Alvira Glenn will be held from Eber W. Hall's funeral chapel, 225 South West Temple street, on Tuesday, Feb. 16, at 2:30 p. m. Interment in Mt. Olivet cemetery.

FLORISTS.

WALTER W. KING, FLORIST, 214 E. 2d South. Phones 37. Specialist on funeral designs and everything floral.

THE FLOWER SHOP—Cut flowers and designs. Under Nat'l Bank of Republic.

ERNEST A. LAMBOURNE FLORAL Co., 8 S. Main. Bell 2[illegible], Ind. 374. Leading florists on funeral designs. Decorations.

THE RELIABLE florist. Huddart Floral Co., opp. Grand theatre. Phone 106.

CHILD-WALK FLORAL CO., 161 South Main Street. Phones 140. Specialties: Funeral Work, Decorations.

OSTEOPATHY.

DR. ALF[illegible], [illegible] Mercantile block, Walker's store. Bell phone [illegible].

DR. GRACE STRATTON, 3[illegible] Templeton. Both phones. Residence 20 F street, Bell [illegible]-Y.

DR. G. A. GAMBLE, 226 to 229 Atlas block. Both phones.

DR. MARY GAMBLE, [illegible] Templeton. Both phones. Residence 17[illegible], Ind. [illegible].

DRUGLESS SPECIALIST.

CHRONIC and nervous diseases, spinal troubles, female complaints. Dr. P. E. [illegible], chiropractor, 234 Constitution.

TUNING AND PIANO REPAIRING.

JOHN N. TAGGART, headquarters N. Y. & Western Piano Co., [illegible] South Main.

CUSTOM CLOTHES MAKERS.

WOLF'S CLOTHES SHOP. "Clothes [illegible]" [illegible] Judge bldg.

PIANO TUNING.

A. W. MORRISON. Headquarters Clayton-Daynes Music Co., residence 56 [illegible] avenue.

Notice of Assessment No. 1.

SALT LAKE MINING & MILLING Company. Principal place of business, Salt Lake City, Utah. Notice is hereby given that at a meeting of the board of directors of the Salt Lake Mining & Milling company, held on the 10th day of February, 1909, an assessment of one (1) mill per share was levied on the capital stock of the corporation, payable immediately to Delbert B. Hughes, secretary of the company, at his office, 219 Commercial Club building, Salt Lake City, Utah. Any stock upon which this assessment may remain unpaid on Wednesday, March 10, 1909, will be delinquent and advertised for sale at public auction; and unless payment is made before will be sold on the 20th day of April, 1909, at 10 o'clock a. m. at the office of the company, Room 219, Commercial Club building, Salt Lake City, Utah, to pay the delinquent assessment thereon, together with the cost of advertising and expense of sale.

DELBERT B. HUGHES, Secretary,
219 Commercial Club Bldg., Salt Lake City, Utah.

LOST.

LOST—Saturday afternoon, a purse containing $5[illegible] at Colonial theatre or while shopping afterwards. Bell phone 1779-NK. Reward.

LOST—Strayed or stolen, white Persian cat. Liberal reward and no questions asked. Dr. Ned Hewett, 214 Third East.

LOST—Otter fur collar on Federal Heights Sunday afternoon. Return to 157 N. State. Reward.

LOST—Button, Button. Who's got the button? $5 or $[illegible] paid for its immediate return. Culmer Paint & Glass Co.

LOST—Button, Button. Who's got the button? $5 or $[illegible] paid for its immediate return.

SODA FOUNTAINS.

SODA FOUNTAINS, new and second-hand. Robert M. Green & Sons, Philadelphia. Some rare bargains. See our modern "Iceless" exhibition fountain at Sparks Candy company. Terms easy. [illegible] Fall, representative, [illegible] Judge Bldg.

EDUCATIONAL.

THE SCHOOL WITH A RECORD. GATRELL'S Unique School of Shorthand and Typewriting. Hooper Bldg.

VISIT Henager's Business College if you are thinking of taking a course. It [illegible] the best.

STORAGE.

KIMBALL'S

[illegible] large [illegible], clean and sanitary. Redman Moving & Storage Co., [illegible]

VOCAL STUDIO.

HUGH W. DOUGALL, 6[illegible] Templeton Bldg. Teacher of voice building and artistic singing.

HAT FACTORY.

HATS blocked and retrimmed by an expert. Fred Taylor, 64 East First South. Phone 17[illegible]-X.

MOVING.

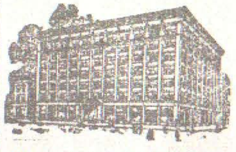
LARGE padded vans, careful men. Redman Moving & Storage Co., 117 So. West Temple. Phone [illegible].

OSTRICH PLUMES CLEANED.

F. A. CARTER FUR CO., 27 W. 1st So. Furs remodeled, recolored, redyed.

PUBLIC STENOGRAPHER.

AT [illegible] MAIN street, room 5. Prices reasonable. Bell phone [illegible].



JUDGE BUILDING DIRECTORY.

DR. R. E. BROWNFIELD, suite 416. Bell 2449; surgery and diseases of women.

ELECTROLYSIS—MISS A. E. SMALL, 3[illegible]. Superfluous hair, moles, birth marks removed.

DR. ELSIE ADA FAUST, suite 424. Hours 2 to 5. Bell 1357. Res. 3456-Y.

SEARS INVESTMENT CO., real estate, mining, mortgage loans and insurance. [illegible] Judge bldg. Ind. 1[illegible], Bell 1226. Removed from 5[illegible] West 2d South.

WANTED

WANTED—Board and room. Teacher [illegible] experience will teach son or daughter [illegible] and typewriting and furnish use of typewriter in [illegible] for board and room. Address [illegible], Herald.

WANTED—Milliners. Old hats [illegible] and [illegible] new [illegible]. [illegible] Permanent [illegible].

WANTED—Several [illegible] building lots on the north and east bench; will deal only with owner. Address [illegible], Herald.

WANTED—[illegible] will pay the price. [illegible] or address [illegible] East 5th South.

WANTED—New [illegible] must be first-class. Apply [illegible] Judge Bldg.

WANTED—To lease a 12 or 14-room modern house, unfurnished, or will purchase part of furniture. East or northeast; close in. Phones Bell 5[illegible], Ind. 2[illegible].

WANTED—To rent unfurnished by young couple without children, a cozy 5-room house or part of house; rent must be reasonable. North or northeast preferred. State price and location. [illegible], Herald.

WANTED—Washing and curtains done [illegible] at home. Bell phone 1351-K. 435 East 2d South.

WANTED—[illegible] clothes and trunks, etc., bought. Phone Bell 5[illegible] or call [illegible] [illegible] St.

WANTED—Highest price paid for iron, brass, rags, bottles, rubber, copper, etc. Utah Junk Co., [illegible] South 4th West street. Both phones 229.

WANTED—Have your [illegible] stretched, made [illegible], all kinds of furniture repaired. William [illegible], [illegible] 4th So.

WANTED—AGENTS.

AGENTS Wanted to sell a bloat cure remedy that will ease any case of cattle bloat on clover or alfalfa feed. For full particulars enclose self-addressed stamped [illegible] to C. H. Blinham, [illegible] St., Portland, Ore.

HOTELS.

LINCOLN HOUSE, 6[illegible] EAST FIRST SO. Paul Hedl, Proprietor. [illegible] Rooms [illegible] Rates [illegible]

LADIES' TURKISH BATHS.

EXPERT lady attendants. Face massage, [illegible] Sanitarium [illegible], 5[illegible] West 2d South. Bell 6[illegible], Ind. [illegible].

AUTO REPAIRING.

WHEN YOUR AUTOMOBILE needs repairing call up phone Ind. [illegible] and have an expert look it over. Factory [illegible] Main street.

CASH REGISTERS.

NATIONAL CASH REGISTERS—Geo. Groshell, sales agent for Utah. Expert cash register repairing. No. [illegible] Main st. Second-hand registers always in stock.

DETECTIVE AGENCY.

INTERMOUNTAIN DETECTIVE AGCY. James Taylor. John B. Burbidge. All business confidential. Office 55 W. 1st South, room 19 Nauvoo Blk. Bell 1246.

TYPEWRITERS.

RENTED, repaired, exchanged, sold. Typewriter Exchange Co., 67 West 2d So.

PACKING.

EXPERT [illegible] bric-a-brac, etc. Redman Moving & Storage Co., 117 South [illegible]. Phone [illegible].

CHIROPODIST.

DR. ELIZABETH L. [illegible]. Suite 415-416 Security & Trust bldg., [illegible] Main St.

FURS AND FURRIERS.

R. STENZEL, [illegible], removed from [illegible] E. 1st So. to [illegible] E. 1st So.

SHOE REPAIRING

SEWED soles [illegible] minutes. [illegible] W. 2d So. St., basement.

CHINA DECORATING.

EVA E. SNOW, studio 35 Hooper bldg.; lessons, orders, firing.

SOCIETIES.

BROTHERHOOD OF AMERICAN YEOMEN, homestead No. [illegible], meets every Thursday evening at [illegible] o'clock in Federation of Labor hall, corner 4th South and State sts. William [illegible] Jenkins, foreman. J. Everett Seely, Cor., 7[illegible] South 2d East st. Bell phone [illegible].

UTAH COMMANDERY No. [illegible], Knights Templar. Stated conclaves held at Masonic temple, corner 2d East and 1st South, the first Thursday of each month. Sojourning Sir Knights cordially invited to attend. WM. M. RASH, E. C.
E. O. LEATHERWOOD, Recorder.

A. A. S. RITE—The four co-ordinate bodies of the A. A. S. Rite of Freemasonry hold stated meetings the third Thursday in each month at Masonic temple, corner 1st South and 2d East sts. Sojourning brethren [illegible]

BUILDING & BUILDING TRADES

ARCHITECTS.

GEORGE WHITINGTON ELDREDGE, architect, 52[illegible] Dooly Block. Ind. phone 2[illegible]; Bell 1155.

A. J. HAMILTON—Architect, 4th floor Dooly Block. Bell phone 5[illegible].

CAMOMILE & BITNER.

INTERIOR FINISHINGS.

THE J. P. PAULSON CO.
1[illegible]-172-174 West Second South St.
Both phones 453.
P. O. Box 9[illegible].

Manufacturers of bank, office, bar and store fixtures; also show cases, wall cases, desks, etc., etc. Agents for the Brunswick-Balke-Collender company's billiard and pool tables and supplies. Our fixtures are practical, up-to-date and of exclusive design. We are carrying the largest stock of pool tables and supplies in the west. See our show rooms, warehouse and factory. We are also manufacturing and handling everything pertaining to soda fountains, carbonators, etc. Correspondence solicited.

CONTRACTORS.

CONTRACTORS' EQUIPMENT.

B. G. SHAW & CO., structural steel contractors' supplies, concrete reinforcing, railway supplies. Concrete mixers, Portland Cement, etc. Harris Bros., Rep., 310 Atlas block. Both phones.

BLUE PRINTING.

BLUE PRINTING—Fresh papers, expert operators; new plant. Breeden Office Supply Co., 6[illegible] West Second South.

SHOW CASES.

EVERYTHING in the store fixture line, billiard and pool tables and supplies; get my prices. W. L. Wetherbee, 158 and 160 W. 1st So.

CARPENTERS.

SHUMAKER & SIMMS, 64 Richards st., solicit odd jobs of all kinds about your store or residence. Bell 4[illegible], Res. 2[illegible]-X.

BUILDER.

IF YOU are going to build a home, see me. M. M. King, [illegible] Constitution Bldg. [illegible]

the [illegible]. The cross-cut tapped the vein [illegible] feet beyond the present face of the tunnel.

On the Signal Peak, 300 feet to the north of the cross-cut they have sunk a shaft to a depth of [illegible] feet and have drifted [illegible] feet each way on the vein. From this shaft they have [illegible] tons in the ore bin, which it is proposed to ship immediately, or as soon as the [illegible] Landeo [illegible] is completed. [illegible] at a distance of [illegible] feet south of the portal of the tunnel a shaft has been sunk on the Cleghorn lease to a depth of [illegible] feet, where the same vein has been encountered, and between this shaft and the tunnel the vein has been disclosed.

Associated with Mr. Cleghorn are prominent Salt Lake people, and they are in accord with the ideas of Mr. Cleghorn, who is general manager of both properties, in pushing the work and getting out the ore. It is the intention of the allied interests to construct a road from the peak to the new custom mill and this work will be commenced immediately. The road, it is expected, will be finished about the same time that the Landeo syndicate mill will be completed and the ore from the Signal Peak will probably be the rock that will christen the new mill.

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A deal which may mean the transfer of 75 per cent of the stock of the Eureka Lily company to the East Tintic Development company is now upon the tapis, says the Eureka Reporter. This proposition will be taken up at a meeting of the directors of the latter company to be held at Provo next Monday. If the control of the Eureka Lily company goes to the East Tintic Development people the latter company will of course carry on development work through the Eureka Lily shaft, which is equipped with a steam hoist, compressor, etc.

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To succeed Messrs. Newhouse and Lyman B. Kendall of Eugene Myer, Jr., & Co., both of whom resigned from the board of the Nipissing Mining company, R. B. Watson, general manager of the property, and Richard T. Greene have been elected directors. They, with Messrs. Fasken, W. B. Thompson and E. P. Earle constitute the board of the Canadian or operating company.

On Feb. 1 Nipissing had in its treasury, after the payment of $[illegible] dividends, $[illegible] in cash. Before the time arrives for the next dividend this item should have again reached the $1,000,000 mark.

The shares of the Nipissing Mines company are now more widely scattered than ever before, as there are on the company's books approximately 15,000 names. Aside from the extensive American and Canadian holdings there are large stockholding interests in England and Germany.

ANOTHER COMPANY FOR THE CAMP OF TINTIC

Provo, Feb. 13.—Articles of incorporation of the Tintic Empire Mining & Milling company have been filed with the county clerk. Provo is the principal place of business. The capital stock is $100,000, in shares of the par value of 10 cents each, based on the valuation of the following mining claims in the Tintic mining district: The Nevada Tunnel Extension No. 2, Globe, Mapleton, Edward, Horse Shoes and Grace.

The directors and officers are: Benjamin H. Bullock, president; A. O. Smoot, Jr., vice president; Isaac A. Smoot, secretary and treasurer; J. R. Hodson and John W. McAdam.

STOLEN HIGH-GRADE ORE HAS BEEN RECOVERED

Sheriff Owens of Nye county arrested William Matthews at Tonopah late Saturday night on the charge of having stolen high grade ore from the Broken Hills mine at Helena, says the Goldfield Chronicle.

The report states that he was carrying a sack of the ore alleged to have been stolen at the time the arrest was made. Six hundred pounds of the ore were taken from the cabin in Tonopah, where it had

[illegible] up with the shaft this tunnel will be about one mile in length. Already 300 feet of work has been done in this tunnel.

The Iron King is one of the strongest companies now operating in the eastern end of the district. The work which the company is now doing is being watched closely by claim owners of that locality and everything indicates that the Iron King will soon be ready to take its place [illegible] class.

TINTIC CENTRAL [illegible] TO RESUME OPERATIONS

Elmer Duncan, who holds a contract for the sinking of the shaft at the Tintic Central, informs the Eureka Reporter that he has received orders to commence work at once. The property was closed down a few weeks ago and it was given out that the work would not be taken up again until the new machinery, which has been ordered, could be installed. The plans of the company have undoubtedly been changed and Mr. Duncan will commence work in the shaft within the next twenty-four hours.

The machinery for the Tintic Central should arrive within the next few weeks, but it will be a pretty difficult matter to haul it over to the property because the heavy fall of snow has placed the wagon roads in bad conditions.

At the Tintic Combination cross-cutting will soon be commenced at a depth of 150 feet. Sinking will also be continued.

Prize Masquerade, Federation Labor hall, Wed., Feb. 17. D. S. S. lodge 69.

Stockholders' Special Meeting of the Paria Copper Company.

NOTICE IS HEREBY GIVEN THAT a special meeting of the stockholders of the Paria Copper company will be held at the company's office, No. 58 West Third South street, Salt Lake City, Utah, on the 8th day of March, 1909, at 11 o'clock a. m., to consider and act upon the following proposed amendments to the articles of the incorporation of the corporation as follows, viz:

First—That article I be amended to read "The name of this corporation shall be the Pahreah Consolidated Copper company."

Second—That article 8 shall be amended to read "The amount of the capital stock of this company shall be $10,000, which shall be divided into 1,000,000 shares of the par value of 1 cent each."

Third—That article 12 shall be amended to provide "That no assessment shall be made upon the capital stock of the company so long as there is treasury stock unsold." And the transaction of such other business as may lawfully come before said meeting.

By order of the board of directors.

J. L. PERKES, Secy.

First publication Feb. 12, 1909.

Assessment No. 11.

BELCHER MINING & MILLING Company. Office and principal place of business, Salt Lake City, Utah. Notice is hereby given that at a meeting of the directors held on the 11th day of February, 1909, an assessment of one-fifth (1-5) cent per share was levied on all the shares outstanding on the capital stock of the corporation, payable on or before the 15th day of March, 1909, to the secretary, at Hooper block, No. 23 East First South street, Room 409, fourth floor, Salt Lake City, Utah. Any stock upon which the assessment may remain unpaid on the 15th day of March, 1909, will be delinquent and advertised for sale at public auction, and unless payment is made before, so many shares so delinquent as may be necessary will be sold on the 1st day of April, 1909, at Room 409, Hooper block, Salt Lake City, State of Utah, at the hour of 2 o'clock p. m., to pay the delinquent assessment, together with the cost of advertising and expense of sale.

R. M. WILKINSON, Secretary.

By order of the board of directors, Salt Lake City, Utah, Feb. 11, 1909.

Dipper Gold Mining & Milling Co.

NOTICE OF SPECIAL STOCKHOLDERS' meeting.

Notice is hereby given that a special meeting of the stockholders of the Dipper Gold Mining & Milling company will be held on Wednesday, March 17, 1909, at 10 o'clock in the forenoon of said day, at its office in Salt Lake City, Utah, at room 207 Templeton building.

Said meeting is called for the purpose of considering the question of ratifying the action of the board of directors of said company in entering into a contract with Nicholas Schmittroth, whereby said corporation is obligated by the action of the board of directors to convey all of its property to the said Schmittroth for the sum of $30,000.

R. P. MORRIS, Secy.

Dated at Salt Lake City, Utah, Feb. 13, 1909.

First publication Feb. 14, 1909.

Notice of Special Stockholders' Meeting.

NOTICE IS HEREBY GIVEN THAT a special meeting of the stockholders of the Talisman Mining company will be held at the company's office, No. 603 Judge building, Salt Lake City, Utah, on Saturday, Feb. 27, 1909, at 3 o'clock p. m. of said day, to consider the question of a consolidation of this corporation with the corporation known as the Cedar Mining company, and, if deemed advisable, and if favored by a majority in amount of the outstanding capital stock, then to adopt such resolutions as shall be necessary to effect such consolidation and to fix the terms and conditions thereof.

Dated, Salt Lake City, Utah, Jan. 26, 1909.

W. J. BARRETTE,
President Talisman Mining Company.
H. C. GAW,
Secretary Talisman Mining Company.

mand of said company, and in accordance with the authority and power so delegated and provided in said trust deed, I, Joseph C. Sharp, sheriff of Salt Lake county, hereby give notice that on Wednesday, the 24th day of February, A. D. 1909, at 12 o'clock noon of said day, at the west front door of the county court house, in the city and county of Salt Lake, state of Utah, I will offer for sale and sell at public auction, to the highest bidder for cash (lawful money of the United States) that certain real property, or so much thereof as may be necessary to satisfy the indebtedness and costs of sale as above described, situate in the county of Salt Lake, at Bingham Junction, and particularly described as follows, to wit:

Commencing in the center of a 20-foot lane, running south from highway No. 85, the point of beginning being 1,051.5 feet west and 128.35 feet north of the southeast corner of the southwest quarter (¼) of section twenty-five (25), township two (2) south, range one (1) west, Salt Lake meridian, and running thence west one hundred twenty (120) feet; thence south one hundred (100) feet, thence east one hundred twenty (120) feet, thence north along center of aforesaid twenty (20) foot lane, one hundred (100) feet to the place of beginning.

Together with a right-of-way of ingress and egress for pedestrians and vehicles over the following described tract of land: Commencing one thousand and forty-one and five-tenths (1,041.5) feet west and three hundred and seventy-seven and eighty-five hundredths (377.85) feet north from the southeast corner of the southwest quarter of section twenty-five (25), township two (2) south of range one (1) west, Salt Lake meridian, thence west twenty (20) feet, thence south two hundred eighty-six and five-tenths (286.5) feet, thence east twenty (20) feet, thence north two hundred and eighty-six and five-tenths (286.5) feet to the place of beginning. Reserving the same right-of-way for the purposes above mentioned to the grantors hereof and to the public.

Together with all tenements, hereditaments and appurtenances thereunto belonging.

Dated at Salt Lake City this 2d day of February, A. D. 1909.

JOSEPH C. SHARP,
Sheriff of Salt Lake County, Trustee.

Delinquent Notice.

MOSCOW BONANZA MINING COMPANY, principal place of business, 417 D. F. Walker building, West Second South street, Salt Lake City, Utah. Notice—

There are delinquent upon the following described stock on account of assessment No. 1 of three (3c) cents per share, levied on the 5th day of December, 1908, the several amounts set opposite the names of the respective shareholders, as follows:

Name	Certif. No.	No. Shares	Amt.
J. J. Whitaker	12	5,000	$150.00
J. J. Whitaker	13	[illegible]	[illegible]
J. J. Whitaker	14	2,500	75.00
J. J. Whitaker	15	2,500	75.00
P. J. Donohue	16	2,500	75.00
Barlow Ferguson	24	10,000	300.00

And in accordance with law and the order of the board of directors, made on the 5th day of December, 1908, so many shares of each parcel of such stock as may be necessary will be sold at public auction at the office of said company, 417 D. F. Walker building, Salt Lake City, Utah, on the 17th day of February, 1909, at 1 o'clock p. m. of said day, at the office of said company, to pay delinquent assessment together with the cost of advertising and expense of sale.

R. G. WILSON,
Secretary Moscow Bonanza Mining Co., room 417 D. F. Walker building, West Second South street, Salt Lake City, Utah.

Notice of Special Stockholders' Meeting.

NOTICE IS HEREBY GIVEN THAT a special meeting of the stockholders of the Cedar Mining company will be held at the company's office, No. 407 D. F. Walker building, Salt Lake City, Utah, on Saturday, Feb. 27, 1909, at 2 o'clock p. m. of said day, to consider the question of a consolidation of this corporation with the corporation known as the Talisman Mining company, and, if deemed advisable and if favored by a majority in amount of the outstanding capital stock, then to adopt such resolutions as shall be necessary to effect such consolidation and to fix the terms and conditions thereof.

Dated Salt Lake City, Utah, Jan. 26, 1909.

JOSEPH GEOGHEGAN,
President Cedar Mining Company.
H. BARNETT,
Secretary Cedar Mining Company.

Assessment Notice.

BLACK JACK CONSOLIDATED MINING company. Principal place of business Provo, Utah. Notice is hereby given that at a meeting of the board of directors of the Black Jack Consolidated Mining company, held on the 11th day of January, 1909, an assessment (No. 8) of one (1) cent per share was levied on the outstanding capital stock of the corporation, payable immediately to R. E. Allen, secretary, room 7, Knight block, Provo City, Utah. Any stock upon which this assessment may remain unpaid on Monday, February 15, 1909, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, March 5, 1909, at the hour of 2 o'clock p. m., to pay the delinquent assessment, together with the cost of advertising and expense of sale.

R. E. ALLEN,
Secretary.

Office, Room 7, Knight Block, Provo City, Utah.

Special Stockholders' Meeting.

NOTICE—THERE WILL BE A SPECIAL meeting of the stockholders of Kaiser Mining company held at the company's office, 406 Utah Savings & Trust Bldg., Salt Lake City, Utah, at 10 o'clock a. m. on March 1, 1909, for the purpose of considering a reduction of the par value of shares from one dollar to such sum as may be decided upon at such meeting.

C. B. JACK, Secretary.

[illegible]

4024 J. A. Pollock & Co. .... [illegible] .... [illegible]
4058 G. Raszakis .... 1,000 .... 50 00
4067 W. Van Wagonen .... 158 .... 3 16
4069 R. Gardner .... 3[illegible] .... 6 [illegible]
4070 R. Gardner .... [illegible] 70
4076 A. Will .... [illegible] .... [illegible]
4077 A. Will .... [illegible] .... [illegible]
4085 E. L. Saunders .... 1,000 .... 20 00
4097 E. M. West & Co. .... 200 .... 4 00
4099 J. Sterling .... 1,000 .... 20 00

And in accordance with the law and an order of the board of directors made on the 8th day of January, 1909, so many shares of each parcel of such stock as may be necessary, will be sold at the office of the company, No. 12 East Second South street, Salt Lake City, Utah, on the 1st day of March, 1909, at 1 o'clock p. m. of said day, to pay the delinquent assessment thereon, together with the costs of advertising and expenses of sale.

J. H. DEMING,
Secretary.

No. 12 East Second South St.

Assessment Notice.

UINTAH TREASURE HILL COALITION Mining company. Principal place of business, Provo, Utah.

Notice is hereby given that at a meeting of the board of directors of the Uintah Treasure Hill Coalition Mining company, held on the 23d day of January, 1909, an assessment (No. 2) of one (1) cent per share was levied on the outstanding assessable capital stock of the corporation, payable immediately to R. E. Allen, secretary, room 7, Knight block, Provo City, Utah. Any stock upon which this assessment may remain unpaid on Thursday, Feb. 25, 1909, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, March 19, 1909, at the hour of 2 o'clock p. m. of said day, to pay the delinquent assessment, together with the cost of advertising and expense of sale.

R. E. ALLEN, Secretary.

Office, room 7, Knight block, Provo City, Utah.

Notice.

NOTICE IS HEREBY GIVEN THAT the board of directors of the Washington Rock company, a corporation of Utah, has filed in the office of the undersigned, clerk of the district court of Salt Lake county, Utah, an application for the dissolution of that corporation. Any person having any objection thereto must file his written objections with the clerk of said court not later than February 27, 1909. MARGARET ZANE WITCHER,
(Seal) Clerk District Court, Salt Lake County, Utah.

Date of first publication, Jan. 24, 1909.

Both phones. Residence 577 1 St. Ind. 499

DRUGLESS SPECIALIST.

CHRONIC and nervous diseases, spinal troubles, female complaints. Dr. P. E. [illegible], chiropractor, 233 Constitution.

TUNING AND PIANO REPAIRING.

JOHN N. TAGGART, headquarters N. Y. & Western Piano Co., 7 South Main.

CUSTOM CLOTHES MAKERS.

WOLF'S CLOTHES SHOP. "Clothes as you like them." 208 Judge bldg.

PIANO TUNING.

A. W. MORRISON. Headquarters Clayton-Daynes Music Co., residence 56 Gordon avenue.

Notice of Assessment No. 1.

SALT LAKE MINING & MILLING Company. Principal place of business Salt Lake City, Utah. Notice is hereby given that at a meeting of the board of directors of the Salt Lake Mining & Milling company, held on the 19th day of February, 1909, an assessment of one (1) mill per share was levied on the capital stock of the corporation, payable immediately to Delbert B. Hughes, secretary of the company, at his office, 219 Commercial Club building, Salt Lake City, Utah. Any stock upon which this assessment may remain unpaid on Wednesday, March 10, 1909, will be delinquent and advertised for sale at public auction, and unless payment is made before will be sold on the 10th day of April, 1909, at 10 o'clock a. m. at the office of the company, Room 219, Commercial Club building, Salt Lake City, Utah, to pay the delinquent assessment thereon, together with the cost of advertising and expense of sale.

DELBERT B. HUGHES, Secretary,
219 Commercial Club Bldg., Salt Lake City, Utah.

HAT FACTORY.

HATS blocked and retrimmed by an expert. Fred Taylor, 46 East First South. Phone 1571 X.

MOVING.

LARGE padded vans, careful men. Redman Moving & Storage Co., 157 So. West Temple. Phone 555.

OSTRICH PLUMES CLEANED.

F. A. CARTER FUR CO., 27 W. 1st So. Furs remodeled, repaired, redyed.

PUBLIC STENOGRAPHER.

AT 2[illegible] MAIN street, room 5. Prices reasonable. Bell phone 557.

JUDGE BUILDING DIRECTORY.

DR. R. R. BROWNFIELD, suite 406, Bell 2449, surgery and diseases of women.

ELECTROLYSIS—MISS A. R. SMALL, 5[illegible]. Superfluous hair, moles, birth marks removed.

DR. ELSIE ADA FAUST, suite 4[illegible]. Hours 2 to 5. Bell 1357. Res. 3456-Y.

SEARS INVESTMENT CO., real estate, mining, mortgage loans and insurance. 11 Judge bldg. Ind. 1344; Bell 1226. Removed from 35 West 2d South.

HOTELS.

LINCOLN HOUSE, 86 EAST FIRST SO. [illegible]

LADIES' TURKISH BATHS.

EXPERT lady attendants. Face massage, [illegible]. Sanitarium [illegible] 52 West 3d South. Bell 620; Ind. [illegible].

AUTO REPAIRING.

WHEN YOUR AUTOMOBILE needs repairing, call up phone Ind. 690 and have an expert look it over. Factory Street, Main street.

CASH REGISTERS.

NATIONAL CASH REGISTERS—Oscar Groshell, sales agent for Utah. Expert cash register repairing. No. 23 Main st. Second-hand registers always in stock.

DETECTIVE AGENCY.

INTERMOUNTAIN DETECTIVE AGCY. James Taylor. John E. [illegible]. All business confidential. Office 35 W. 1st South, room 10 Nauvoo Blk. Bell 1280.

TYPEWRITERS.

RENTED, repaired, exchanged, sold. Typewriter Exchange Co., 62 West 2d So.

PACKING.

[illegible] brac, etc. Redman Moving & Storage Co., 157 South West Temple. [illegible]

CHIROPODIST.

DR. ELIZABETH L. WISMER, Suite 415-416 Security & Trust bldg., 32 Main St.

FURS AND FURRIERS.

R. STENKEL, [illegible] Co., removed from [illegible]

SHOE REPAIRING.

SEWED soles in 15 minutes. 40 W. 2d So. St. [illegible]

CHINA DECORATING.

EVA E. SNOW, studio 315 Hooper bldg.; lessons, orders, firing.

BUILDING & BUILDING TRADES

ARCHITECTS.

GEORGE WHITINGTON ELDREDGE, architect, 222-3 Dooly Block. Ind. phone 2381, Bell, 3155.

A. J. HAMILTON, Architect, 4th floor Dooly Block. Bell phone 6195.

CAMOMILE & BITNER.

INTERIOR FINISHINGS.

THE J. F. PAULSON CO.
170-172-174 West Second South St.
Both phones 63.
P. O. Box 8[illegible].

Manufacturers of bank, office, bar and store fixtures; also show cases, wall cases, desks, etc., etc. Agents for the Brunswick-Balke-Collender company's billiard and pool tables and supplies. Our fixtures are practical, up-to-date and of exclusive design. We are carrying the largest stock of pool tables and supplies in the west. See our show rooms, warehouse and factory. We are also manufacturing and handling everything pertaining to soda fountains, carbonators, etc. Correspondence solicited.

CONTRACTORS.

HAMLIN PAINTS (Incorporated), F. P. Keats, manager. Painting from A to Z. Phones 2021.

ASHTON BROS.—General contractors, 210 Sharon block. Bell, 513; Ind., 2839-A.

FIXTURES.

UTAH BUILDING & MANUFACTURING CO., Inc., 721 W. So. Temple. Both phones 2435. Cabinet work, show cases, counters, shelving, etc. Manufacturers of bank, bar and office fixtures. Milton Bidges, manager.

CONTRACTORS' EQUIPMENT.

S. G. SHAW & CO., structural steel contractors' supplies, concrete reinforcing, railway supplies. Concrete mixers, Portland Cement, etc. Harris Bros., Rep., 218 Atlas block. Both phones.

BLUE PRINTING.

BLUE PRINTING—Fresh papers; expert operators; new plant. Breeden Office Supply Co., 60 West Second South.

SHOW CASES.

EVERYTHING in the store fixture line; billiard and pool tables and supplies; get my prices. W. L. Wetherbee, 158 and 160 W. 1st So.

CARPENTERS.

SHUMAKER & SIMMS, 64 Richards St., solicit odd jobs of all kinds about your store or residence. Bell, 4119; Res., 338-X.

BUILDER.

IF YOU are going to build a home, see me. M. M. King, 221 Constitution Bldg. Bell, 1724; Ind., 1129-R.

LUMBER DEALERS.

BURTON COAL & LUMBER CO. Both phones 808. Manufacturers of Tarred Felt, Roofing, Pitch and Creosote.

SEWING MACHINES.

STANDARD NEW HOME sewing machines and supplies. Young Bros., 23 West 1st South. Ind. phone 1658. Bell 1528.

SOCIETIES.

BROTHERHOOD OF AMERICAN YEOMEN, homestead No. 1122, meets every Thursday evening at 8 o'clock in Federation of Labor hall, corner 4th South and State sts. William E. Jenkins, foreman; J. Everett Seely, Cor., 722 South 2d East st. Bell phone, M[illegible].

UTAH COMMANDERY No. 77, Knights Templar. Stated conclaves held at Masonic temple, corner 2d East and 1st South, the first Thursday of each month. Sojourning Sir Knights cordially invited to attend.
WM. M. KASH, E. C.
E. O. LEATHERWOOD, Recorder.

A. A. S. RITE—The four co-ordinate bodies of the A. A. S. Rite of Freemasonry hold stated meetings the third Thursday in each month at Masonic temple, corner 1st South and 2d East sts. Sojourning brethren invited.
LOUIS COHN, 33d Degree.
V. M. Jordan Lodge of Perfection No. 1.
T. M. SURBAUGH, 32d Degree.
W. M. James Lowe Chapter Rose Croix No. 1.
JAMES H. BROWN, K. C. C. H.
Commander Salt Lake Council Kadosh No. 1.
S. D. EVANS, K. C. C. H.
M. and K. Utah Consistory No. 1.
CHRISTOPHER DIEHL, 33d Degree.
Registrar for all the bodies.

WASATCH LODGE No. 1, F. & A. M.—Regular meetings held at the Masonic temple, corner 2d East and 1st South, the second Friday of each month. Members of sister lodges and sojourning brethren cordially invited.
H. C. GAW, W. M.
A. J. LOWE, Secretary.

MOUNT MORIAH LODGE No. 2, F. & A. M.—Regular meetings held at Masonic temple, corner 1st South and 2d East, the second Monday of each month. Members of sister lodges and brethren in good standing are cordially invited to attend.
CHARLES I. DOUGLAS, W. M.
CHRISTOPHER DIEHL, Secretary.

ARGENTA LODGE No. 3, F. & A. M.—Regular meetings held at Masonic temple, corner 2d East and 1st South, the first Tuesday of each month. Members of sister lodges and sojourning brethren cordially invited to attend.
E. D. HAMMOND, W. M.
M. C. PHILLIPS, Secretary.

UTAH CHAPTER No. 1, R. A. M.—Stated convocations held at Masonic temple, corner 2d East and 1st South, the first Wednesday of each month. Sojourning companions cordially invited to attend.
E. P. SHERWOOD, H. P.
M. C. PHILLIPS, Secretary.

MACCABEES—Utonian tent No. 1 meets every Wednesday evening at I. O. O. F. hall, Market st. Sojourning Sir Knights cordially invited.

NAOMI REBEKAH LODGE No. 1 meets every second and fourth Saturday evenings of each month in Odd Fellows' temple, Market st.

SALT LAKE AERIE No. 67, F. O. E.—Meets every Friday evening, corner 2d South and West Temple sts. Club rooms open from 10 a. m. to 12 p. m. every day.
M. W. BEAVER, Secretary.

MINES AND MINING

ASSAYERS.

KETTLES, MATHEZ & CO., A. F. Bardwell, manager; assay and chemical laboratory, 158 So. W. Temple. Both phones.

J. W. CURRIE, 70 West 3d South St., Salt Lake City. Samples by mail or express receive prompt attention.

CRISMON & NICHOLS, assayers and chemists, 223 South West Temple street, Salt Lake City.

W. H. TREMAYNE, assayer, over 140 Main street, Salt Lake City, Utah. Mail samples receive prompt attention.

W. A. HODGES & SONS, assayers and chemists, 135 W. 2d South, Salt Lake City.

R. H. OFFICER & CO., assayers, 160 South West Temple St., Salt Lake City.

GEOLOGIST.

R. FORRESTER examines and reports on mining and mineral properties. Rooms 212-218 Brooks Arcade. Both phones.

CHEMISTS AND ASSAYERS.

BIRD-COWAN CO.
160 South West Temple. Bell phone 4114.

MINING MACHINERY.

TRENT ENGINEERING AND MACHINERY CO. Phones: Ind. 517; Bell, 2834.

GASOLINE, producer gas, steam or electric equipments, mining machinery and supplies. Fairbanks-Morse & Co., 218 South West Temple street. Both phones 2058.

REPAIRS of mining and milling machinery a specialty. Brass, wrought and cast iron work. DAVIS, HOWE & CO., 129 North First West St. Both phones 235.

STOCK BROKERS.

W. B. ANDREW & CO., 201 D. F. Walker Block. Stocks and bonds bought and sold on commission. Phones: Bell, 116; Independent 1329-R.

E. M. WEST & CO., stocks, 321 D. F. Walker Blk. Both phones, office and res.

MINING ENGINEERS.

R. FORRESTER, with a corps of competent engineers, is equipped for all kinds of surveys, designing and superintendence of mines, mill, power or irrigation projects. 212-218 Brooks Arcade. Both phones.

E. P. JENNINGS, mining engineer, 101 Mercantile bldg. Bell, 1256; Res., Bell, 1755.

175
Item

AMERICAN ZINC CO.,

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M+S.P. 2-6-09

PIOCHE, NEVADA.

Ore-Shipments.—Lead-Zinc Discoveries.—Smelter for Bullionville.—Prince Mine.—New Management at Day Mine.

In the late seventies a prominent mining man at Lake City, Colorado, said: "The San Juan country must soon begin shipping, or stop blowing." Fifteen years later I [redacted] on horse-back through San Juan with a mining engineer, then manager of the great Enterprise mine at Rico and the Yankee Girl at Red Mountain, each with millions to its credit. This mine manager, then also State Geologist of Colorado, had traveled around the globe studying ore deposits and examining mines, and I was deeply impressed with his remark, "Where in the world could one find a mining region of greater interest or promise than this?" San Juan had 'made good'. Its Smuggler, Enterprise, Sunnyside, Guston, Virginius, Yankee Girl, Ute & Ulay, Golden Fleece, and a hundred others, had shipped. Its promise has since been further fulfilled in the Camp Bird, Gold King, and other mines of lesser note. Similarly, Pioche in its early period was a great producer, but we are interested now in its loudly heralded renaissance. It is time for Pioche to begin shipping, stop blowing, or tell the reason why.

The year 1908 opened in a serious financial stringency, with metals declining and markets depressed. To secure money for development was nearly impossible. Every smelting company in Utah, except the A. S. & R. Co., had been put out of business by the courts. The A. S. & R. Co. was not overlooking such opportunities, and advanced its treatment charges to exorbitant and in some cases to prohibitive figures. The Salt Lake railroad made Pioche liberal concessions in freight rates. The A. S. & R. Co. promptly absorbed the benefit, and more. Under such circumstances, mine owners in the camp considered it sounder policy to keep their ores in the ground than to take them out. During the year considerable development was done, [redacted] the entire year's shipment from Pioche was only 12,000 tons. This tonnage came principally from the Nevada-Utah's Day mine, the Bristol Consolidated, and the Mendha. The Boston & Pioche, Highland Mary, and Prince Consolidated each shipped a few cars. Not a pound of ore has gone out from the old hill south of town, which made the reputation of the camp in the early seventies. There are known ore-shoots of great value in the ground on that hill, which the Nevada-Utah owns exclusively, but considerable development and more equipment will be required before these can be extracted. The rest of the hill the Nevada-Utah and Ohio-Kentucky companies own between them. There is a tangle of titles which can be unraveled only by litigation or compromise. As matters now stand, for either of them to begin shipping would invite litigation. Negotiations for a compromise have been under way for several months. Until these are definitely concluded the general public will not be admitted to confidence. Another element of moment affects the question of shipping. In the Susan Duster mine the Ohio Kentucky Co. has found between the surface and the 400-ft. level an enormous tonnage of lead-zinc ore carrying silver. Any economic solution of the problem to fit present metallurgical practice will involve a plant for mechanical separation of the ore into lead and zinc products. If such a plant can be erected near the Susan Duster, the lead product could be utilized for a smelter at Bullionville, 12 miles north of Pioche. The Prince Consolidated Mining & Smelting Co. owns the Prince mine, and also the old tailing stored at Bullionville. These tailing beds were carefully measured and sampled some years [redacted] by Richard H. Browne of Salt Lake, who reported 170,000 tons, carrying over $2,000,000 in gold, silver, and lead. The great tonnage in the Prince mine runs low in silver and lead, but carries a high excess in iron and manganese. Many other ores of this region carry lime in large excess. The Prince Consolidated is controlled by the same interests that dominate the Ohio Kentucky. These interests have been devoting their attention mainly to planning a smelter at Bullionville, where the lead from the Susan Duster, the iron from the Prince, the silicious ore from the Mendha, and the lime ores of the district, could be assembled and smelted with the old tailing. The plan is logical, and will probably be worked out with some modifications.

At present everything on the hill is closed tight, and probably will remain so, awaiting a compromise. When that is effected it will involve a lead-zinc separating plant which will treat the lead-zinc ores of the Nevada-Utah as well as those owned jointly by the Nevada-Utah and Ohio Kentucky. As generally occurs in ore-shoots having rich silver-lead ore near the surface, the companies that mined here in the early days found lead-zinc ore in their lower workings. From what can be learned of the records of those days, it is warrantable to believe that an enormous tonnage of lead-zinc ore will yet come from those old mines. This, as well as the recently discovered lead-zinc ore from the upper horizons in the Susan Duster, must all be treated in local plants; at least they must be enriched by mechanical concentration.

Those familiar with the conditions here believe that one of the largest zinc industries in the United States will some day be developed in southern Nevada, but Pioche will not have to wait for that. Until a zinc plant is erected in this county, zinc concentrate can be profitably shipped to outside markets. Up to last summer the Prince was being developed as a low-grade proposition. One day a cross-cut, driven by Wm. Lloyd from the third level for general results, cut a vein carrying silver chloride and lead carbonate. This discovery gave an entirely new outlook for the property. Further exploration on the second, third, and fourth levels has demonstrated not only the continuity for 200 ft. vertically and 300 ft. longitudinally of the vein above-mentioned, but it has disclosed two other veins. In this case the theory so fondly cherished by the prospector has been verified. The veins have grown richer and wider with depth. On the fourth level, from a vein 8 ft. wide in places, they have taken out in ton lots ore running over 1000 oz. silver per ton. No stoping has been done, and only a portion of the ore taken from the drifts and raises on these veins has been brought to the surface. Three 50-ton cars have been shipped, but the returns have not been made public. The treasury of the company has abundant money for immediate needs, and the management has announced the intention not to ship ore in quantity until a spur track shall bring the railroad car to the mine, and until other conditions are more favorable. Meanwhile development proceeds. The main shaft has been sunk, and a cross-cut is being driven from the 550-ft. station toward the rich veins.

James P. Gaskill, chief engineer and general Western manager of the Nevada-Utah, has during the past year devoted his entire attention to the Day mine, 15 miles northwest of Pioche. After shipping several thousand tons of ore as a test and means of studying the conditions of ore occurrence, he stopped shipping and opened the mine by what is known as the Onondago shaft. The collar of this shaft is so situated that the cars run from it 100 ft. and dump directly into the ore-bins. Here the ore is loaded automatically into the company's narrow-gauge railroad cars. Formerly it was sent down on a wire tram. The ninth level connects with this new shaft. All the ore comes through that level and up the shaft. A compact well arranged power-house at the shaft completes the plant. Mr. Gaskill says that when all arrangements are perfected for normal production he expects to put ore into the cars at Pioche for 75c. per ton. J. A. Gallagher was appointed by Mr. Gaskill as mine superintendent last October. Mr. Gallagher will be remembered as the man who was called from the Cumberland-Ely a few months ago to superintend the rescue of the miners imprisoned in the Alpha shaft of the Giroux mine, at Ely. On December 31 L. Webster Wickes resigned his position as general superintendent for the company, and his duties were assumed by Mr. Gaskill and Mr. Gallagher. Shipments were resumed January 2, and a 50-ton car has gone out regularly each day since.

The re-organized North Butte Extension Development Co. is again in trouble. It has been stated that the new company had paid $30,000 on the options, but that only $5000 has been paid, and the long promised resumption of work has not yet taken place.

The Calumet-Corbin Mining Co., one of the latest concerns organized to do business in the Corbin district, has already offered its stock on the Eastern curbs, although it does not own the property on which it has been organized and capitalized for $1,500,000. It has a long-time option on the old Minnesota mine, on which, it is reported, a payment of $2000 has been made, and not another payment need be made until next fall. The Minnesota was considered worked out many years ago, but the present owners hope to develop new orebodies.

A most important bill is pending before the legislature of Montana to protect and promote legitimate mining enterprises. It will be made a felony for anyone to sell stock in a company that does not own the property on which the capitalization is based, unless it is specifically stated and represented that the company is but a leasing company and does not own property. Several years ago a number of mining companies were floated on leases and bonds and options, but the public did not know it until the stock was purchased and the promoters had forfeited the options, leaving the deluded and defrauded stockholders to 'hold the sack'. The companies and their officers protected themselves behind the excuse that they did not represent that they owned the property.

The Butte-Montana Mining Co., owner of the Alex Scott mine, is contemplating the erection of a concentrator at the mine. It is proposed to change the capitalization from 1,000,000 shares at $1 par, to 125,000 shares at $10 par. If the stockholders consent to the change, the necessary capital can be obtained.

The stockholders of the Butte & London Development Co. have elected the following directors: Frederick W. Baker, representing the English interests in the company, James A. Talbot, W. W. McDowell, W. E. Reynolds, A. A. McMillan, James H. Lynch, Fred Whiteside, T. H. Emery, Guy W. Stapleton, and E. J. Anderson, all of Montana. Splendid progress is being made by the East Butte Mining Co. to place that property on a paying basis.

MEXICO.

Purchase of Torreon Smelter.—Price Paid.—Probable Policy.

Report comes from New York that the International Smelting & Refining Co., the new company which is supposed to be a competitor of the American Smelting & Refining Co., has purchased the smelter and mines of the Torreón Metallurgical Co. for $3,000,000. This will include the smelting plant at Torreón, Coahuila, Mexico, the mines mill of San Diego, at Santa Barbara, State of Chihuahua, the lease on the Cabrillas mine, near Saltillo, Coahuila, and other smaller mines, and leases in the northern part of the Republic. It is known that some month ago L. D. Ricketts and E. P. Mathewson were in Mexico and visited or examined the properties of the Torreón Metallurgical Co., which is largely controlled by Ernesto Madero, its president, and it is not at all improbable that a sale has been consummated, but the price named seems absurd to those familiar with the conditions. About three years ago, at the summit of the Torreón company's prosperity, the stock was quoted at ₱150, with 35,000 shares, or a then valuation of ₱5,250,000. At that time it was reported that the American Smelting & Refining Co. was negotiating for the Torreón smelter, and it was generally understood at the time that ₱4,500,000 had been offered, but that ₱5,000,000 was demanded. The A. S. & R. Co. continued work on the Velardeña plant, not far distant from Torreón, in the State of Durango. Since then the stock of the Torreón company has continually declined, until on the day when the abovementioned sale was reported it was quoted at ₱80. This makes a total valuation of ₱2,800,000. It is not probable that the interests behind the International Smelting & Refining Co. would pay $3,000,000 for what could be had for less than half that figure. That the sale was consummated at a much lower figure is not improbable, for the smelter of 10 stacks is not a bad one, and some of the mines are of enough merit to be attractive to the buyer. The time was propitious then for the transaction. If it has been carried through, it is hard to predict how the smelting business may be affected. Up to the present the independent companies have worked amicably with the A. S. & R. Co., and it is not probable that a new concern, even though fortified with immense capital, can afford to enter the field with a cut-throat policy.

Map of Mexico.

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Item

File Under: Ohio-Kentucky
Subject: Pioche

REPORT ON THE
PROPERTY
of the
OHIO-KENTUCKY CONSOLIDATED
MINING COMPANY

Location

The property is situated at and near the town of Pioche, in the Ely Mining District, Lincoln County, Nevada, on the Pioche and Caliente Railroad, running northerly from Caliente, a division station on the main line, to Pioche, 52 miles distant.

Property

The mining property consists of the following claims: SUSAN LOUISE? ALBERTA? ALBERTA NO. 2, NEVADA? West? SOUTH, WEDGE, FRACTION, LOOKOUT, EAGLE, and WINTER, together with an undivided one-half interest in the CURRENCY, GREENBACK? SILVER and INDEPENDENT.

ALSO an undivided one-half interest in the Pioche Water Company property, consisting of the following, FLORAL, LIME and CONNOR'S SPRINGS, situated at Highland mountain: seven miles of 5-inch pipe connecting the springs with the town of Pioche. A 4-mile branch system of water pipes laid throughout the town of Pioche: electric light plant, dynamo, boiler and engine. Five acres of land at lower end of Pioche formerly containing a quartz mill, known as the "FLORAL SPRINGS MILL", with pile of tailings. Forty acres of patented land #1610, State Land Office, situated on a "water course" 4-miles north of Pioche, known as "four Mile House". Several buildings and twenty-five town lots, patented, situated in favorable localities in Pioche. Four large water tanks, holding about 200,000. gallons each; equipment tools, etc. ~~The Nevada-Utah Mines and Smelt~~

The Nevada-Utah Mines and Smelters Corporation own the remaining undivided half interest in the above property.

DISTRICT

The following is an extract from the report of Mr. S. T. Godbe, a well known mining engineer and for many years Supt. of the Pioche mines, on the geology of the district:

"Ely District is situated in a low , insulated range of mountains, about 5,900 feet above sea level, in Cambrian quartzite, dipping north at an angle of 20 degrees, through which runs a series of ore bearing fissures parrallel to each other, having an easterly dip and westerly strike, and dipping to the south at an angle of 70 degrees, varying in width from 1 to 15 feet, and maintaining an average of 5 feet.

In addition to these fissures there is one that will average about 50-feet in width that was origionally filled with eruptive feldspar or porphyry and subsequehtly replaced to a considerable extent with ore.

It is known as the Yuba dyke. Its strike is magnetic east and west, and dips about 80 degrees south. In depth this dip is becoming nearly vertical.

This wide mineralised porphyry vein is the main or backbone fissure of the district, and all the other fissires are "off shoots" or branches that come into it either on their dip or atrike.

At a depth of 1,2oo feet or water level, several of these branches or fissures have united with the porphyry ledge, and estimating from their present dip, as exposed in the underground workings, nearly all the fissures will be found united with the 50 foot ledge at a vertical depth of 1500 feet from the surface".

"Prof. Kemp, the geologist and writer , in his treatise on "Ore deposits of the United States", fiolo 264, says:

"Pioche is one of the principal towns near which is found the once famous Raymond Ely mine and now reopened. A strong fissure cuts Cambrian quartzite and overlaying limestone formation, where the later has not been eroded, and is occupied by a great porphyry dyke. Along the contact between the porphyry and wall rock the shoots of ore are found.

Maps:

A surface map of the Pioche mines, situated with respect to the porphyry ledge and quartzite veins, is herewith appended.

Explanatory:

It becomes neccessary for an intelligent understanding of the situation to say that, during the six years following the discovery of the Pioche Mines in 1869, the Raymond & Ely and Meadow Valley properties, situated along the quartzite vein produced IN BANK $15,093,739.60; the ores averaging 100 ozs. silver and $8.00 gold per ton, while the Burke on another quartzite fissure- and the Yuba, Silver and Newark on the porphyry vein, yeilded approximately $5,000,000.00 more, making the total bullion yield within the short space of six years over TWENTY MILLIONS.

During the time the quartzite fissure was being worked the porphyry vein was discovered, and at the same time a problem presented itself which the early days mettallurgist was unable to solve, for the ores were called "base", and contained such a high percentage of lead that a good extraction could not be obtained by the Pan Amalgamation Process, the only method of reduction in those days. Large sums were spent in the erection of experimental works,

such as roasting in a Howell Furnace and then amalgamation, but to no avail, while the long wagonhaul to Palisades,-about 250 miles north on the Southern Pacific, or to York, Utah about the same distance,- together with the high cost of wagon freight on all kinds of supplies rendered even smelting(then a crude and imperfect method) likewise unsuitable.

Refering to these high costs of supplies, the report of J. C. Maynard, General Supt., of the Meadow Valley mine, to his company dated Aug.16,1875, states the average cost per ton for milling to be $22.24; mining $16.15, prospecting and improvement $28.85. Total cost per ton $67.24; average extraction $8.81 from the quartzite vein ores. It is therefore obvious that only the richest ore could in those days be profitably extracted.

The quartzite fissures were worked down to the water level 1,200 feet-which together with the discouragements met with in the treatment of the porphyry vein ores, caused a general shutdown of all the Pioche properties in 1879.

In the late eighties the Pioche Con. M & R Co., acquired the principal mines of Pioche and the surrounding districts, with the exception of the property now owned by the Ohio-Kentucky Company,(this property however was purchased and worked by the same owners, but never entered the consolidation) and ~~prepared to~~ prepared to operate them by means of a railroad and the then modern methods of reduction. The porphyry vein was opened in the Yuba ground, but not the Silver or Newark, smelting works erected, and the Union Pacific Railroad Co., after athorough examination of the mines built a grade from Milford, Utah, 140 miles distant, when suddenly the unexpected happened, viz., suspension of railroad building, owing to the failure of Baring Brothers of London,

and the great panic of '93 with its corresponding fall in the price of silver; all of which prevented further progress by the enterprising Company.

At the present time the Nevada-Utah Mines and Smelters Corporation is the owner of all the properties held by the Pioche Con., M & R Co., and they also own the other half interest in the GREENBACK-CURRENCY, SILVER and INDEPENDANT and the PIOCHE WATER WORKS? so that the mines along the Yuba dyke together with the water system are now held jointly by the two companies, each owning an undevided half.

THE YUBA DYKE OR PORPHYRY VEIN:

This is the mother lode of the Pioche or Ely District, and on it lies the CURRENCY, GREENBACK, SILVER and the INDEPENDANT. Included in the INDEPENDANT is what was formerly known as the Newark and also the famous Raymond & Ely "Black Ledge".

This ledge is well described by Mr. Ernest Wiltsee, a mining engineer of prominance, manager of the famous Venture Co., that owns the Camp Bird and other noted Colorado properties.

Mr. Wiltsee, In a paper read before the Montreal meeting of the American Institute of Mining Engineers (Vol.21, folio 667;) in February, 1893, describing the geology of the Half Moon Group, situated west of Pioche on this same great fissure, says:

"The main fissure is a strong and persistent one, extending east to Pioche, where it enters the Raymond & Ely property, the INDEPENDANT claim being located on it. In the Raymind and Ely ground the fissure widens considerably the porphyry filling becomes much wider, and the Raymond & Ely "Black Ledge" occurs on the footwall contact between the porphyry and quartzite. Going east the Maseppa (since changed to Silver) and Yuba mines are situated on it. ~~The Yuba~~

The Yuba finding ore on both contacts with a third in the middle of t the porphyry. "his prophyry fissure is the main lode of the district all various veins converge toward it at depth, and will in all probility fall into it".

Prof. Fred J. Peck, of the faculty of the Columbia College School of mines in his report on the geology of the Pioche District under date of Feb. 15th, 1906, states:

"In the early days of mining in Pioche no consequence was attached to the presence of the great porphyry dyke just south of the town if indeed its existance was known.

After a careful study of this district the writer is convinced that all the ore deposits may be traced to one common source - the igneous dyke and its immediate country rock.

The great Raymond & Ely and Meadow Valley vein is very closely related to the dyke. Several mines are situated directly on the dyke and not a single one in the whole district is more than a few hundred feet away from it.

In order that the value of the dyke as the source of ore may be appreciated, the following description of it is made of it and the associated mines.

The dyke is situated high upon the hill south of Pioche and runs lengthwise through the mining belt. It strikes magnetic east and west and dips to the south at an angle of 80 degrees. It varies in thickness from a few feet to more than a hundred feet averaging probably 60 to 70.

Near Pioche it is confined chiefly to the quartzite otherwise it is found largely in the limestone. The eastern extension of the dyke has not been traced far beyond the Boss claim, (Owned by the Boston and Pioche Co.); from this point it is easily traceable westward, passing through the following mines, all of

which are situated on the dyke, Yuba East, Yuba, Currency, Mazeppr (now called Silver) and Independant.

For several years prospectors have been trying to locate the western extremity of this dyke. By some, however it has been thought that this igneous intrusion was confined to the immeadiate vacinity of Pioche and in the quartzite formation, but in the light of the evidence now at hand this opinion can no longer hold.

It does extend to the westward andthat for a distance of eight or ten miles and perhaps more."

Mr. Carl Hand, a prominent mining engineer of Butte, Montana and the Northwest, made a critical examination of the Pioche district, in the interests of the Hon., A. W. McCune and other capatalists - resulting in the purchase of the Yuba East Group, says under date of March, 1905;

"The country rock is quartzite with some shale and much limestone capping the quartzite to the southwest. The strata has very a uniform dip of 18 to 20- degrees to the northwest.

A great dyke of porphyry runs east and west through the center of the camp. Numerous transverse fissures cross the course of this dyke but the Raymond & Ely and Meadow Valley fissures runs nearly parallel with it.

The prophyry dyke is in reality a great ore bearing lode carrying with it three veins of ore occuring on the footwall and hanging wall and in the center of the dyke.

From a careful personal examination of the Pioche mines I am convinced that the dyke has been the main channel from which the other veins of Pioche have received their valuable ores and in the future it will be the chief producing territory of the camp of Pioche.

This fact gives a prospective value to those undeveloped claims farther along the dyke that few appreciate at present".

This vein as shown on the map, commences east of the Yuba the sumit of the mountain or high point, and runs westerly through the Yuba, down the mountain side through the CURRENCY, SILVER and into the INDEPENDANT: thence across the country westerly for a great distance, the Silver constituting the center of the known mineralization.

The following is an extract from Mr. S. T. Godbe's report, written in 1902, regarding the Yuba property, which is now owned by the Nevada Utah Co.,given as an example of what can be expected from the same vein in the CURRENCY-SILVER ground.

"Only one shoot was worked in the Yuba, extending from the surface down to the 800 feet level- by the early day people, and commencing from this level and extending down to the 1,500 or bottom level, by the Pioche Con. Co., who mined for the first class, or high grade lead ore only, producing therefrom about $400,000.00 as shown by the books of the Company, making a total production of about a million dollars, and all the second class ore was left in the mine.

A second shoot was found on the bottom level by drifting 200 feet east of the shaft, and was stoped upwards to the 10th level when work was suspended, owing to a sudden cave-in in the shaft This same shoot was later struck by leasers in the Pacific tunnel some 400 ft west and about 350 feet below the surface, where it goes dwon strong in a winze sunk 80 feet deep.

The ore in these shoots varies in width from 1-1/2 feet to 8 feet, and maintains an average length of 100 to 150 feet, with ore in most faces and going down strong along the bottom level.

The continuity and increase in extent of mineraliztion

with depth, as shown in the Yuba, argues well for the future yield of the prophyry vein here, as well as throughout the entire property.

But comparatively little work has been done, or exploration made on this vein, and its possibilities for production even above water level are certainly great".

The companys books show that ore extracted from this mine and shipped to Salt Lake City for treatment, assayed from 100 to 300 ozs. silver, 40 to 60% lead, and from $5.00 to $22.00 gold per ton. A smelting lot of 711 tons unsorted first- class smelted at Pioche, assayed silver 51.8 Ozs. gold $4.00, lead 33.5%. The second class or concentrating ore left in the mine will run from 20 to 30 ozs. silver, $3.00 to $5.00 gold and 6 tp 10% lead per ton while a typical analysis of the same is approximately as follows:

Iron 14%; Silica 57%; Lead 15%, sulphur 5%.

An average sample of the base, or sulphide ore found in the lower level shoots in the Yuba, runs as follows:

Iron	10%	Sulphur	11%
Silica	35	Zinc	20
Lead	10	Copper	2
Gold	$3.00	Silver	65 ozs.

The character of the ore is the same as found throughout the porphyry ledge, and consists essentially of the sulphides of the metals with some oxide of iron.

CURRENSY-GREENBACK:

The prophyry vein passes through this property going west and while little underground work has been done, leasers in 1905, shipped from near the surface ore going 100 ozs. silver upwards and $20.00 gold, with 40% lead per ton, realizing therefrom over $2,000.00 when they were stopped by the company.

PATENTED? U.S. LOT NO. 38

SILVER:

This is a claim adjoining the Currency on the west, and was formerly called the Mazeppa. A shaft was sunk 800 feet, following a shoot of ore all the way down, from which, approximately, a million dollars has been taken. This ore was about 200 feet long and practically no drifting has been done within the limits of the ore body, mining having been confined to the extraction of only rich ore.

The ore contained considerable lead, thus ~~making~~ making it almost impossible to extract a high percentage of silver by their old Pan Amalgamation Process, and considering the high milling costs of those days - $20.00 per ton - all the second class ore was left unmined or when neccessary to mine it was mixed with the waste and thrown on the dump. This shoot of ore is still going down and considering the fact that the best ore was found in the Yuba mine below the 800 level, it is but reasonable to suppose it will be the same with the Silver, and instead of being worked out, the lower workings are doubtless just getting into the best ore country.

All through the Silver mine there are stopes and faces of this second grade ore, which the old company could never profitably handle, but with the present improved conditions will pay most handsomely, to say nothing of the first class ore that will be opened up below on this same shoot. In this connection it should be stated that a concentrator has never been used on Pioche ores, notwithstanding all lead ores, the only methods that have ever been in use have been Pan Amalgamation and Smelting. The main shaft has never been reopened since it was shut down by the old company in the later 70's and this will doubtless be un-neccessary as the mine can be advantageously worked through the Meadow Valley shaft, which will be more fully described later.

Another shoot was found in the Silver ground, to the west of the one worked, which has been described by Mr. S. T. Godbe, innhis report as follows:-

An ore shoot has recently been opened on the Silver by means of a cross cut run southy from the 9th level of the Meadow Valley No.3 shaft, 526 feet to the prophyry ledge. This shoot has a length of about 200 feet along the level, and the ore varies from 1-1/2 to 5 feet in thickness. I have not sampled this, but it is said to assay not less than 30 Ozs. silver and $5.00 gold per ton in the narrow places(lead assay not given) and to average from 60 to 90 Ozs. silver and $5.00 gold in the widest part of the vein.

The vein and walls are a decomposed porphyry, and the ore can be cheaply extracted. About the middle of the shoot a vein of 60% lead ore shows which assays over 200 ozs. silver per ton. This shoot does not show at the surface, and has not been worked at any point below or above the 9th level of the Meadow Valley cross cut, where it was discovered. Considerable profitable smelting ore, is therefore, likely to be extracted from this shoot".

NEWARK SHAFT:

This shaft ,situated on the porphyry vein where it crosses over to the Panacker ground on the easterly corner of the Independant's origional claim,was sunk ~~was sunk~~ by its former owner to a depth of 900 feet in the early days, and, like the Silver, only the richest ore was extracted, concerning which Mr. S. T. Godbe says:

" A cross cut run from the bottom-water-level of the Raymond and Ely shafts, would prospect an important ore shoot known to exist in the Newark workings on the porphyry ledge, which was also worked down to the 9th level and which was the richest and most extensive shoot known to exist on the porphyry vein. Such a cross cut would strike this shoot 300 feet below any work on it above,

and thus give a large area on a shoot that has heretofore yeilded ore above the average richness of the district, and as an ore shoot has not yet been found on the porphyry vein that did not go/down continue going down, it is not likely to fail in this instance".

INDEPENDANT:

This claim covers the porphyry ledge running entirely through the Raymond & Ely or Panacker ground, together with the surface ground to the extent of 100 feet on each side. It takes in the Newark and owns what is known as the Raymond and Ely "Black Ledge".

During the early 80's a law suit sprung up between the Independant mine and the Raymond & Ely Co., which as the court records show was decided in favor of the former, and their vein, the Independant declared to be an extension of the Silver, running westerly, on the main porphyry dyke and an entirely separate and distinct vein from the Raymond & Ely quartzite fissure, which runs nearly parallel to it in the Panacker ground.

Later in 1886 the Pioche Con. Co., having acquired title to the Raymond and Ely mine, desiring to settle further disputes and misunderstandings, entered into an agreement with the owners of the Independant mine, allowing them all of the independant vein that passes through the Raymond & Elynor Panacker ground, together with 200 feet in width for surface ground, in consideration of their not protesting the patent applied for on the Panacker ground by the Pioche Con. M. & R. Co.

This/ This agreement dated Aug. 21, 1886, as it appears on record in the office of the county Recorder for Lincoln County, Nevada, reads as follows:

Pioche Con. Mining Co., E. J. LeBreton, Parties of the first part.

R. H. Elam, S. T. Godbe, Parties of the sedond part.

"Said E. J. LeBreton and Pioche Con. Mining Co., prominse and agree and bind themselves, their and each of their heirs, executors, administratirs and assigns, successors, and legal representatives, upon receipt by them or either of them, of the patent to said Panacker claim so appalied for as aforesaid, to convey to said parties of the secondparg, their heirs, excutors, administrators, and assigns, by good and sufficient deed or deeds of conveyance, all of said independant lead or lode with its spurs pffshoots, and variations, that may enter or be within the lines of said Panacker mining claim, as surveyed and applied for as aforesaid, together with the surface grcung to the extend of 100 feet each side of said Independant lead or lode, provided such surface ground is conveyed to them bypatent and provided further that such deed or deeds of conveyance shall not embrace any other lead or lode within such surface ground, other than the said Independant lead or lode, nor any hoisting works, machine shops, or other improvements upon the surface ground upon which the same may stand, and belonging to said parties of the first part or either of them.

Signed and attested by W. S. Godbe, President; Boyd Park, Secretary for the Pioche Con. M & S. Co., and E. J. LeBreton, by J. V. Keeley attorney in fact; parties of the first part, and R. H. Elam and S. T. Godbe, parties of the second part".

In June 1906 the Pioche Con. Co., through the Board Of D Directors gave the OHIO-KENTUCKY CON. MINING CO., deed to an undevided half interest in all the Independant vein confined within the limits of the Panacker patent in exact conformity to the above Agreement.

The famous "Black Ledge" of early day fame is the common name applied to that portion of the ore shoot in the Independant vein which was accidently encountered in the 70's by the Raymond & Ely Co., on their 1200 foot level but which is a part of the Independant.

BLACK LEDGE:

Prof. H. D. Rippeto, deceased, a mining engineer well known throughout the west as conservative and practical, examined the Pioche mines for the Pioche Con.Co., in 1887, and in his report says of the "Black Ledge", as follows:

"The "Black Ledge" , a parallel fissure to the south, is an immense vein of so called "base" ore. I believe this vein is the mother vein, and when developed will show large bodies of smelting ore, these kind of veins do not give out when water is encountered, but at water level grow stronger".

Mr. John A. Kirby, a prominent Salt Lake mining engineer several years Supt. of the Daly-West mine at Park City: The Bullion-Beck mine of Tintic and Montana Tonopah mine of Tonopah, Nevada says under date of Aug.11, 1907;

"I take pleasure in stating that a few years ago I made a personal examination of the underground workings of the "Black Ledge" together with the "Porphyry Ledge", on which this latter shoot of ore is situated and believe the porphyry ledge as covered by the Ohio-Kentucky Co's. locations and shown on map to be the making of another Daly-West mine of Park City.

Prof. Geo. W. Maynard, a leading mining engineer of New Yor City made a personal examination of the Independant or "Black Ledge" in the early 90's and states in his report as follows;

"The evidence which I have been able to obtain from the records and from those who have seen the developements below the

1200 foot level coupled with my own observations above this level leaves no doubt as to the Magnitude and quality of the "Black Ledge".

What would formerly have been regarded as a serious objection to the ore of this vein is the presence of zinc, but with improved mettallurgical methods, zinc has ceased to be a bug bear.

Assuming that the Black Ledge ore body extends to the 1500 level for the length of 300 feet, shown on the 12th, and forwadth of only 3-feet the gross tonnage would amount to 30,000 tons with a value of about $1,500,000.00.

With such large breasts of ore to work on there will be no difficulty in raising at least 100 tons a day when the stopes are opened and neccessary provisions are furnished for transporting the ore to the shaft".

This section of the porphyry vein in the Panacker ground was tapped by a cross cut run from a long drift driven a little south of west from the bottom of the Raymond & Ely shaft, at a point 1,200 feet vertiwal from the surface.

Captain Day, deceased, formerly Supt. of the Raymond & Ely Mine in a report to his company for the year 1876, says;

" The most impottant developement made during the year is on the 1,200 foot level, and about 1,250 feet in a southwesterly direction from the main working shaft, where in a driving a cross-cut to the south a well defined vein of ore, 30-feet in width was developed, which since has proved to extend more than 300 feet in length.

The great mass of this ore is low grade, but samples assaying from $100 to $600 are frequently met with. The ore is black sulphuret in character, and will be easily reduced by roasting before amalgamation. A large two compartment winze has been sunk ~~in the~~

in the hahging wall to a vertical depth of 160 feet below the 1,200 foot or water level, where a cross-cut is being run for the purpose of ascertaining the character and value on this level. At this time ~~this~~ the drift has penetrated the outer casing of the ore body, samples from which give favorable assays. The ore has been penetrated by a mining drill 27 inches and the drillings carefully assayed. Several samples give $9.50 to $220 per ton".

Later Captain Day sunk this winze to depth of 300 feet, The average assay of all samples below the water level, as taken from the companys books, running silver 97.89 ozs. (gold not made) while his average of the ledge above water level was 77.3 ozs. silver. A lot comprising several hundred tons taken from ~~this~~ around water level for testing for roasting and amalgamation (these tests like all others were not successful), averaged 48ozs. silver, while another another lot went 72 ozs. silver, 18% lead and $4.00 gold per ton, besides a large percentage of zinc.

Several carloads went abroad for testing purposes assayed from 19 to 26% lead, 91 ozs. to 101 ozs. silver, and around $4.00 gold per ton. Another lot sent to the Frisco Smelting Co., at Frisco, Utah, for testing by dry concentration assayed 24.5%lead, 82.97 Ozs. silver and $6.60 gold per ton.

In the year 1889, under the direction of Mr. S. T. Godbey work was resumed on this part of the porphyry vein, the water pumped out of the ~~this~~ winze, a cross cut run to the vein and drifts run each way.

In refering to this work Mr. Godbe states:

"My knowledge of the "Black Ledge" at water level enables me to state that there is practically in sight there a vein of ore 150 feet long and 4-feet in average width, which has been proven up-

upwards for a distance of 50 feet, and which at 10 cubic feet to the ton, would figure 3,000 tons of ore; the average value of which is 50 ozs. silver, $3.00 gold, 15% lead and 20% zinc. As this shoot has not been explored toward the surface, except by the upraises of 50 feet referred to. the ore mentioned as in sight is probably but a tithe of what will be encountered between present developements and daylight, (a distance of 1,000 feet).

In regard to the developement of the "Black Ledge below water level they have not been of such a nature as to block out for measuurement, though they practically demonstrate the existance of large quantities of rich ore, and the continuity of the ledge to a depth of three hundred feet below the water level.

The vein at the 1,800 foot level was nearly vertical and was first encountered from a 60 foot cross cut run north across the ~~property~~ porphyry dyke from the bottom of the Black Ledge double compartment winze sunk 300 feet below the water level.

Drifts were run both east and west along the strike of t the ledge that disclosed continious ore, as far as we ran, which was nearly 200 feet , with very rich ore still in the face of the west drift, a 10 feet cross cut run from the face of this drift disclosed a vein one foot wide, assaying $5.00 in gold and 81.03 ozs. silver per ton, which was leading into new ground along the ledge both east and west.

The walls in the west drift were regular and defined the foot wall being nearly vertical, with the hanging wall going going dwon at about 60 degrees, which made it a rapidly widening vein as it desended below the drift; ~~The clean ore~~ our widest showing of all being in the bottom of the drift. The clean ore measured from 6 inches to 1-1/2 feet. the entire length of the drift, being for the most part over a foot in width and assaying 40 to 120 ozs. im silver. It was

It was getting richer gradually in gold and silver as we worked westward, and it had reached an average of 100 ozs. in silver per ton for some distance back of the face, while right in the face of the drift where work was stopped the ore showed a width of 2 feet, one foot of which averaged 29% lead 41 ozs. silver and $ 2.40 gold, while a foot of zinc blende adjoining this and on the foot wall assayed 20% lead 41 ozs. silver and a trace of gold. It was not assayed for zinc, but probably contained 30% of that metal. We stopped work here at this time, because we had demonstrated the richness and continuity of the vein below water level, which was the object to be attained. Our next step was to sink the Raymond & Ely working shaft to this depth and drift from it to the "Black Ledge". My successor, however as Supt., did not carry out this program".

The reason such programme was not carried out has already been explained, the cause being the suspension of railroad building and the panic of '93.

The L edge as reported by Captain Lay and determined by means of borings is 30 feet wide and was drifted on for a distance of three hundred feet in length at water level. No cross- cutting has since been done by any company, and only half the distance, or 150 feet was reopened on the ledge, under the direction of Mr. Godbe, who allowed in his estimates only for the distance reopened.

Following is a list of assays taken from the Company's books of samples of the "Black Ledge" at the 1200 foot, or water level and also below water level, but it should be noted ~~that~~ in this connection that the samples in question were not assayed for zinc, but all contained a high percentage of this metal. They were also not assayed for gold and ~~nor~~ copper and only occasionally for lead, the silver only being ~~the~~ all they attached any importance to ~~and~~ or attempeted to recover.

	Percent Lead	Ozs. Silver.
of shoot and manway.		
Average vein 3-ft wide, 40-ft east	8.5	25.00
Lumps of Galena, Same place	48.	34.50
Lumps of Galena, east of Stope	70.	781.00
Average vein 3-ft., wide 25-ft east of shoot		59.00
Average vein4-ft. wide, 25-ft east of shoot		101.50
Average 10-ft boulder, 27-ft east of shoot		240.50
Average 10 tons ore in cross cut		78.00
Average vein 18" to upraise		63.33
Soft black ore on foot wall		143.00
Average 20 tons from stope		14.00
Average 2-ft. on foot wall, vein 4-1/2 ft.. east side		60.00
Of upraise		78.00
Average 2-1/2ft. on west side upraise		88.00
Average 2-1/2ft. hanging wall		5.00
Average 2ft. foot wall top of raise		77.00
Average vein 3-ft. 5-ft west of upraise		240.00
Average vein 5-ft. west of upraise		58.00
Average lump showing copper pyrites		480.00
Average 7-ft. over shhot and manway		31.33
Average vein 5-ft. 25-ft west of shoot and manway		58.00
Average vein 5-ft. 70-ft west of shoot and Manway		6.00
Same as above hard half on hanging wall		57.00
Average vein 4-ft. 100 ft west shoot		24.00
Red ore on hanging wall		9.00

No gold assays were made on the above and but three were made for lead.

Below is a list of assays made from samples taken at the 1,500 ft level- 300 ft. below water level.

Hard casing of ledge	28.	8.00
Galena and porphyry face, crosscut	16.	16.00
Second assay on above	37.	12.00
Galena and blende face west drift	24.55	12.00
Galena face west drift	50.	36.00
Galena, Blende and Quartz average face west drift 10-ft. back from crosscut.		35.50
Two feet west drift foot wall	15.	20.00
Ten inches, east drift	6.	30.00
Twelve inches east drift hanging wall	20.	42.00
West drift hanging wall 50-ft, from crosscut	8.	30.50
West quartz		4.00
West bottom		41.00
East drift hanging wall	23.	20.00
Galena east drift	40.	95.00
Foot wall west drift	4.5	90.00
Foot wall west drift	1.8	119.00
Sample marked No.1		59.10
Sample marked No,2		Trace
West drift middle		81050
West drift foot wall		120.00
West cave		

"est cave.....2.5		16.00
Footwall west cave.....8.5		32.00
Average 1-1/2 ft. Blende and Galena face west drift,90-ft. from crosscut.	15.3	132.00
Hanging wall vein, face of west drift, 90-ft. from C. C.	28.50	308.00
Footwall blende face, west drift 90-ft. from C. C.	2.	41.00
Dull Galena face west drift 90-ft fr. C.C.	200	262.00
Galena showing copper pyrites" " " " "	22.	322.00
Bright galena same place	34.	453.00

The average of all the samples recorded above from the 1200 foot or water level went as follows:
Silver 50 ozs. and gold about $3.50; lead 15%, zinc 20% Copper 1.5%, iron 8%, silica 33%. All metals being in the form of sulphides.

"GREENWOOD" ORE BODY:

About July 1908 the Ohio-Kentucky Co., purchased from the Nevada Rioche Mining Co., a group of 8 claims lying to the north of the Raymond Ely or Ranacker, on one of which, the Monarch, there is a well timbered double compartment vertical shaft sunk to a depth of nearly 500 feet. This shaft is equiped with a fine large head f frame hoist building, Fairbanks-Morse 25 H.P. gasoline hoist, etc., and is located 300 ft. northerly from the Raymond & Ely side line. On the 360 ft. level a drift ~~###~~ extends southerly about 800 ft., into the Raymond Ely or Ranacker ground where it intersects the INDEPENDANT vein.

This drift was driven during the year 1875, but owing to the base character of the ore encountered, sulphides of zinc lead and iron, the old company did not crosscut the ore body. This was done however, during the summer of 1908, with the result that a vein nearly forty feet wide was exposed striking easterly and westerly, of which 15 feet is nearly pure sulphides averaging about 10% lead, 9 Ozs. silver, $1.50 gold, 19% zinc, 15% iron, with only about 25% silica, a little manganese and no arsenic or antimony.

A drift running westerly cuts this same vein about 75 feet distant, showing the same general character of the ore, but it was not crosscut at this point. No drifting has been done, but the probabilities are that it will be found to continue easterly at least as far as the old Pheonix or Nevada Utah shaft No.1. a distance of 400 or 500 feet, where a body of similar ore was struck by the Nevada-Utah Co., in this same INDEPENDANT vein at about the same level. This is also a very large body of sulphide ore at least 15 feet wide and from samples taken by the writer from the dump as the work was presented the grade and character wa found to be about the amme as the Greenwood. No developement has been done on this discovery but the future will doubtless disclose the fact that this ore shoot is the easterly end of the Greenwood body and that this immense shoot will extend down and found to connect with and be a part of the "Black Ledge" nearly 900 feet below.

The greenwood ore body has been proven at least 75 feet westerly and at this point seems to be continuing in that direction strong and persistant. The "Black Ledge" is in this same vein about 900 feet below and the indications are that the ore will be found to be continious between these points, in which event , many hundreds of thousands of tons will result especially should the ore shoot be found to be 400 feet in length. The ore being extremely heavy, not more than eight cibic feet would constitute a ton, and therefore , a block of ground 900 by 400 by 15 feet would produce nearly 700,000 tons, to say nothing of of the amount below the 1200 foot level, or that to be found above the 300 foot level. This, what is termed the"Greenwood" ore body, named from the man who first discovered it, lies in the shale overlying the quartzite, at a point where the porphyry dyke or vein would be found had it

broken up into the whole. This was not done, however, but it is evident that a crack or fissure resulted from the intrusion of the dyke which later serves as an avenue for the upward passage of the mineral bearing solutions eminating from the porphyry dyke, a few hundred feet below. This being the case, richer ore can be expected as depth and closer proximity to the dyke are obtained. The fact t that richer ore is found in the "Black Ledge" seems to prove this theory.

PROFITS:

The profits accruing to the Ohio-Kentucky Co., through the operation of the porphyry vein must neccessarily be large, for it must be remembered that it commences at the west Luba and lines and runs to the westerly end of the Panacker claim, covering a distance of 3600 feet - nearly three quarters of a mile - proved by work done to be ore bearing in a series of shoots throughout this entire distance, and extending to great depths as shown on the 1500 foot level of the "Black Ledge" winze, where it still continues going down to the "deep".

The value of this great block of ground can best be appreciated from the small area exposed on the "Black Ledge" at water level the average value of which (omitting the zinc which since spelter is selling today at over 100.00 per ton promises to more than pay the cost of mining and treatment of all ore) is $45.00 a ton.

With Mr. S. T. Godbe's estimate of 4 feet as the average width and his tonnage of 3,000 from an area 150 feet long by 50 feet in higth taken as a basis there is exposed in the full length of this drift, which is 300 feet long, 6,000 tons of ore, with a gross value of $270,000.00.

That portion exposed below water on the 1500 foot level

along the bottom for 200 feet, maintains an average width of from 1 to 3 feet, with only one wall in sight; the average of all the recorded assays on which is better than 100 ozs. silver, 30% lead and $3.00 gold per ton, or equal to $85.00 per ton not counting the zinc.

If this shoot continues another 100 feet in length making a shoot 300 feet long, the same as it does above on the 1200 foot level, which is possible since both faces are in ore, in fact it is highly probabal it will be found to continue much longer than this, possibly 500 feet, and reducing this width to ~~#~~ 2 feet., there ~~will~~ would be exposed allowing 10 cubic feet per ton, 18,000 tons of ore containing a gross value of $1.630.000., which being added to that exposed above water would bring the total ore in sight to $1,800.000.

This shoot should run up close to the surface and connect with the Greenwood and No.1 shaft ore bodies, and in event it does and goes to within 200 feet of the surface on the dip of the vein, or a distance of 1000 feet, there would be exposed above water level well, surfice it to say, <u>many millions of dollars,</u> enough to put this mine in the bonanza class equal to almost any.

The ore shoot discovered in the "SILVER" ground from the 9th level Meadow Valley No. 3 crosscut, and referred to by Mr. S. T. Godbe is of great importance, as it lies entirely in virgin territory both coming to the surface and going down. While sufficient developement work has not been done to block out ore with any degree of certainity, yet should this body continue up to near the surface and go down which judging from the proven conditions in the Yuba it should do and actually get better grade as well several millions more of reserve will beadded.

In this connection it is important to note that no estimate is made of the large quantities of second class ore left in the old workings of the Silver and Newark mines, of which the Yuba proved so prolific or the first class ore that will be found when mining this second class ore; nor, of the strong probability, which according to S. T. Godbe is almost a certainity, of these two bonanza ore shoots continuing on dwonwards to greater depths.

The ~~above~~ shoots described as the "No. 1 shaft" "Greenwood", "Black Ledge", and "Silver", measure such a small distance in length as compared with the porphyry vein covered by these locations, that it is safe to say that more of them will be found, substantiated in a way by the record of the quartzite fissures and other ledges in this district, showing that ore shoots occur in series, and further exemplified in the Yuba, where two already described have been found, with a third in the Yuba East adjoining it.

With reference to the probable production and profit to be derived from the intelligent operation of the mines covering the the Yuba dyke or porphyry vein, and owned jointly by the Nevada-Utah and Ohio-Kentucky Companies, will say, that they are far more important than the old Raymond-Ely, Meadow Valley quartzite fissure veins from a standpoint of permanancy and width and length of ore bodies and with the aid of modern methods of ore treatment the writers have no hesitency in going on record with the prediction that the future production of these mines will greatly exceed the many millions of the past.

<u>Susan-Duster & Alberta Group;</u>

This group owned entirely by the Ohio-Kentucky Co. adjoins the Panacker on the ~~north~~ south and cover a most promising section

of the Pioche mineral belt.

The country here is covered by a limestone and shale capping about 350 feet thick underlying which is quartzite, where the richer ores of the district occur. A large porphyry dyke traverses this section running through the Alberta and Susan-Duster, and it is expected to bear strongly on the deposition of ore in the Susan-Duster fissure.

The Susan-Duster mine consists of a large body of zinc, lead, iron, sulphides similar in character to that of the "Greenwood" and seems to have been formed by a junction of two fissures, one striking 20 degrees east of north and the other easterly and westerly

An incline shaft, equiped with a 25 H.P. Fairbanks-Morse gasoline engine, has been sunk to a depth of 400 feet, and the ore body followed down to this level. It is very large averaging 40 feet in width, but the length of the shoot has never been detirmined. The average of the ore is about 8% lead, 12 Ozs. silver, $1.50 gold, 16% zinc. On the bottom of the 400 foot level, the best part of the ore body has not been opened up, but a vast quantity of low grade ore has been put in sight. Winze connection between the 2nd & 3rd & 3rd & 4th levels have been made on the ore body showing a large continuous shoot of this character of ore. A 50 foot winze has also been sunk below the 400 foot level.

At a depth of 375 feet the shaft enters the underlying quartzite formation. The ore is very heavy, 7 to 8 cubic feet to the ton and by assuming an average width of only 30 feet and length of 100, with a higth of 400 feet, there contained above the 400 level 160,000 tons of ore.

The Susan-Duster shaft was started at a point 200 feet higher up on the hill than the Raymond & Ely and Greenwood shafts, so the Susan-Duster 400 foot level is only 200 feet below the collar of shafts just mentioned and 160 feet above the level of the

Greenwood ore body, which indicate that very little relative depth has been obtained. The Susan-Duster ore body is increasing in value as depth is obtained which leads one to believe that the great future of the Susan-Duster mine is below the present lowest workings, notwithstanding such an enormous tonnage is blocked out above this point.

Any one familiar with the characteristics of the Pioche camp and the demonstrated richness of the small area of ground in which this mine is situated would appreciate the great value of this property. It is the largest body of sulphide ore discovered in the district; and situated next to the famous Raymond & Ely location (in the heart of the Pioche belt) in a virgin country never before explored with unlimited possibilities. The lead in the first class ore is even richer than that found in the other mines-averaging over 5 Ozs. silver to each percent of lead, and in view of the fact that there has never yet been a body of sulphide ore found in this district that did not go down to the deep- leads us to the conclusion that this is a bonanza of the first order, and will probably become one of the most if not the most valuable mine ever found in the Ely district.

Too much importance cannot hardly be given to the zinc phase of this property since there is a large demand for zinc ores and concentrates at good price, while, it's steadily increasing consumption indicates that the zinc alone in the Susan-Duster ore would yield more than enough to defray the entire cost of mining and milling-the gold, silver and lead values coming as net profit.

Considerable importance is attached to the big porphyry dyke that hovers in the near vacinity, and it is possible that the vein when it gets well into quartzite will connect with this dyke

and altogether there is every indication of the Susan-Duster mine holding out, and becoming a source of large revenues for years to come.

ØRE TREATMENT:

The metallurgy of the ores from the porphyry vein and the Susan-Duster has in the main long since been worked out on a practical scale and of the two grades of material found, viz., first class and second class, the former is shipped direct to the smelters or smelted at Pioche, and the later, concentrated or rather separated on the ground, the lead concentrates going to the smelter and the zinc concentrates to the zinc plants, the tailings being trrown away.

There has been a wonderful developement in the art of separating zinc, lead, iron sulphides the past few years, many processes having been devised that have successfully accomplished this purpose and it only remains to select the best one or rather the one most adapted to the ores of the Susan-Duster and porphyry veins. From the experiments so far made it would seem that the best methods to persue would be to grind sufficiently fine and then size the ore very closely in the "Keedy" sizer(which practical work has proven a most efficient machine) each size being concentrated by itself on either a wet or dry table. It is highly improbabal that magnetic concentration of any kind will neccessary, if this should be found to be necessary the middling product can be further treated electrically at a small cost.

The concentrates derived from the working of the many thousands of tons of ore already blocked out and assured, will constitute a very important factor in the scheme figures upon by many to establish a smelting plant at or near Pioche.

The concentrates will supply sufficient lead, along with

with that otherwise available, to successfully operate a large smelter, but without them it is doubtful whether there is enough lead obtainable to conduct a large smelting enterprise.

MODE OF OPERATION:

The old Pheonix or No.1 shaft has been enlarged to a 3 compartment, retimbered, equiped with a fine large steam hoist and sunk down to the 900 foot level. This is centrally located and so situated as to advantageously work the porphyry vein in the Independant ground and also the Susan-Luster.

Drifts can be sent out to tap the Susan-Luster at the various levels, and also the Greenwood ore body. 300 feet of further sinking will put it down to the 1200 foot or water level of the Raymond&Ely but only 100 feet more will make connection with the 1000 feet level of thenRaymond & Ely from which point stoping can begin at the"Black Ledge". This shaft lies within the confines of the Independant territory and therefore owned by t the Nevada-Utah and Ohio-Kentucky Companies, jointly. If for any reason it is deemed best not to use this shaft, the drift from the Greenwood shaft which is now down into the Independant vein can be continued on into the Alberta and Susan-Luster claims, and with less than 1000 feet of drifting tap the Susan-Luster ore body at a depth of about 600 feet.

There would be above this level many thousands tons or several years supply of ore available for cheap extraction and with a splendid mill site on the dump of the Greenwood shaft. Owing to the heavy nature of the ore , large bodies, etc., and many other exceptionally favorable conditions, the ore should be mined for a very small cost, not to exceed $1.50 per ton or $2. at most.

WATER INCOME:

WATER INCOME:

The company in connection with the Nevada-Utah Corporation, owns the only water supply in that section of the country, and its mains extend throughout the town of Pioche, supplying residences thereof as well as buisness houses, mines and reduction works.

Residences pay around three dollars per month, while buisness houses and restaurants are charged from $10.00 per month upwards. The mines formerly paid from $75.00 to $150.00 per month and concentrating and leaching mills charged from 20cts to 40cts for every ton of ore treated.

Quite a large number of mining companies are now operating at Pioche and the income from this source will be another asset for the Ohio-Kentucky Co., in addition to having its own water supply.

CONCLUSION:

Enough has been said in the foregoing to show that the Ohio-Kentucky mines are of exceptional value and magnitude. A large concentrating and separating plant should immeadiately be constructed to handle the low grade ore, or in other words, to manufacture the raw material, and by so doing the Ohio-Kentucky stockholders will surely reap a harvest for a great many years to Come.

Respectively submitted,

A. H. Godbe,

E. L. Godbe.

Salt lake City, Utah,

August 19th, 1909.


REVISED MAP
SHOWING LOCATION OF
PIOCHE MINES
ELY MINING DISTRICT
LINCOLN COUNTY
NEVADA
SCALE OF FEET
A.D.KNOWLTON
MINING ENGINEER
PIOCHE, NEVADA
H.H.SNELGROVE
DRAFTSMAN
SALT LAKE CITY, UTAH
COPYRIGHT 1909 BY RUFUS K. COBB
T. 1 N., R. 67 E., M.D.B.&M.
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Sec. 11
Sec. 12
Sec. 16
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Sec. 14
Sec. 13
Sec. 21
Sec. 22
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Sec. 29
Sec. 28
Sec. 25
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 5
Sec. 4
Sec. 3
Sec. 2
Sec. 1
ELY VALLEY CONTACT GROUP
PIOCHE MINES CO.
PIOCHE GOLD CROWN MINING CO.
TIMBER GROUP
PIOCHE DEMIJOHN MINING CO.
ABE LINCOLN GROUP
RAYMOND ELY WEST MINING CO.
OHIO KENTUCKY MINING CO.
PIOCHE TOWNSITE
PORTLAND PIOCHE MINING CO.
SALT LAKE PIOCHE MINING CO.
LINCOLN NEVADA MINING & MILLING CO.
PIOCHE PACIFIC MINING CO.
GOLD SILVER PRINCE MINING CO.
PRINCE MINING CO.
TREASURE HILL GROUP
PIOCHE KING MINING CO.
PRINCE EXTENSION GROUP
DESERT PRINCE GROUP
BB & Co.
KERS
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CITY, UTAH
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TOCK & MINING EXCHANGE
uted in All Markets
AN FORK, LOGAN, UTAH
R.K.COBB & CO.

Pioche Nevada

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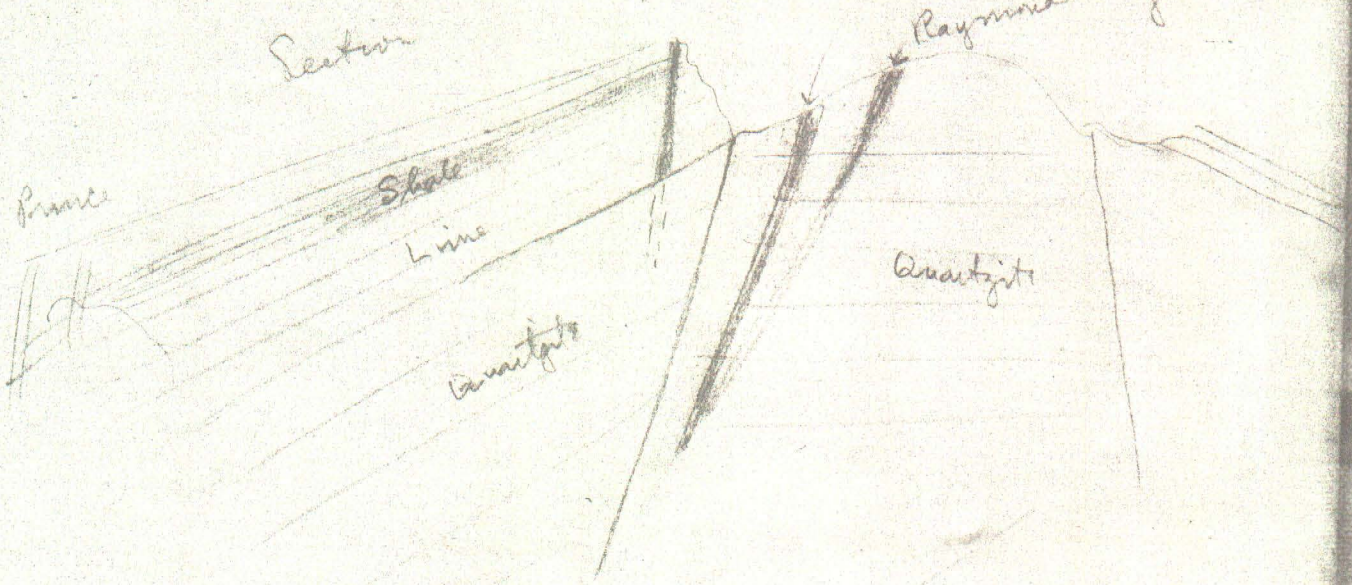
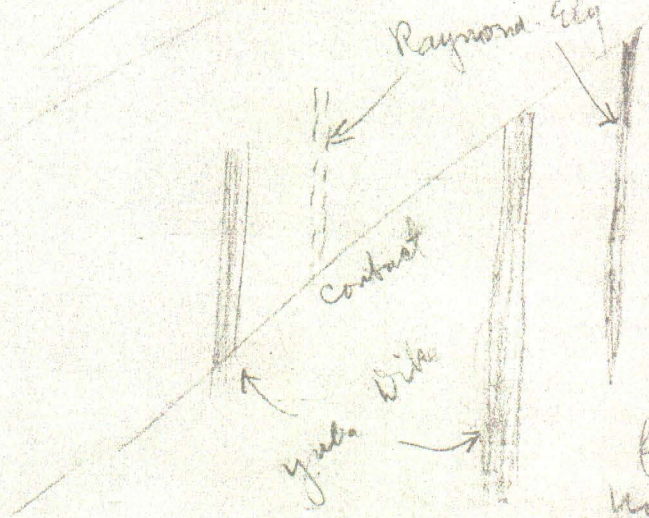
My recollection of Geological Sketch
drawn me by Eli Goddard
Feb. 1, 1910 Salt Lake





Say they have found good ore in No. 1 shaft at 3rd 4th & especially on 5th level in x cuts.

Do going to publish article on Pioche in Mines & Minerals shortly. (Harrison)