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January 6th, 1917

Mr. W. R. Ingalls, Editor,
ENGINEERING & MINING JOURNAL,
10th Avenue at 36th Street,
New York.

BIG LEDGE COPPER CO.

Dear Sir:-

Re Kennett's mine

Referring to your letter of November 16th, and to my previous letter of December 4th, 1916, I am indeed sorry to be so slow in answering your request for information concerning the operations of the Company mentioned above. I was obliged to be away in Utah and California for a considerable length of time and since returning here have been much occupied with matters incident to the close of our yearly operations.

Meantime, as you are doubtless aware, the Big Ledge has been thoroly examined by Mr. Walter Harvey Weed, and I understand from Mr. Dunning that a copy of Mr. Weed's report was to be furnished you. If such has been the case you are already well posted concerning the Big Ledge and can make a comparison yourself between the statements which they have published, or which have been published apparently with the knowledge and consent of their officials, and the statements of fact as reported by Mr. Weed, whose report I have also had the pleasure of seeing. I might mention that at the same time that Mr. Weed examined the property, Mr. S. H. Brady of San Francisco also made an examination and from conversation with him, subsequently, I gathered that his opinion was even more unfavorable than that which was formed by Mr. Weed. In fact he told me that he had reported that there was no commercial ore body which he could measure and sample. -

Mr. Ingalls #2

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The Big Ledge Co. at the present time owns no mining property in Arizona, as far as I know. They are operating under bond and lease with options to purchase three groups of Mining Claims property in this section. The first group (the original Big Ledge holdings) consist of 1160 acres, and the Big Ledge Co. carried on development for a period of a year, starting about two years ago. During part of this time they operated with two churn drills and had a gang of some twenty or thirty men doing surface work and a small amount of shaft sinking. As a result of their operations, statements were widely published proclaiming that they had developed a new porphyry copper, "located between the United Verde and the Copper Queen" and constituting a "second Inspiration." Their consulting engineer estimated that they had proved up 15,000,000 tons of porphyry copper ore containing on the average 2 1/2% copper. In spite of these truly remarkable results, particularly considering the small amount of drilling and development work done, this wonderful group of claims has been apparently entirely abandoned for the past year except for one care-taker and at the present time it forms the subject of a law-suit between the owners and the Big Ledge people, the former alleging, I understand, that the Big Ledge have not carried out the provisions of their option agreement.

I have seen these claims personally, having in the past examined some of the outcroppings and test pits and the dumps from the underground workings and as far as I have ever been able to see the formation is almost entirely granite and there is no porphyry whatever in the property; in fact there is no porphyry copper formation in this particular section of Arizona. There are a few

Mr. Ingalls #3

January 6th, 1917

small stringers or veins which contain a very ^{little copper} low grade mineral but there is absolutely no workable ore exposed or developed in these claims and altho I have not any personal knowledge concerning the drillings which were obtained, I have very good reason to believe that they developed nothing but waste. I agree entirely with Mr. Weed when he states that "this group of properties is entirely valueless for mining purposes" and that following his inspection he is convinced that the payment of taxes or the doing of further assessment work on this group is an entire waste of money. Apparently the Big Ledge have also come to this conclusion since they have not expended any money for these purposes for several months past.

There is a little humor in the statement that the group is located between the United Verde and the Copper Queen, for, while these two well known mines are 300-miles apart, there is a little prospect a short distance south of the Big Ledge known as the "Copper Queen Gold Mine," so that it cannot be said that the statement made in this respect is absolutely false, altho it is evidently made with the intent to deceive.

The second group of properties is the Henrietta and adjoining claims and I am told that the Big Ledge have an option on the Henrietta until October 1918 and have made some payments on the option price. I do not know the amount of the purchase price, nor the amount of the payments which have been made to date.

The third group of properties comprises the Butternut and adjoining claims, located a short distance from the Henrietta and the Big Ledge holds an option on the Butternut also

Mr. Ingalls #4

January 6th, 1917

until October 1918, the purchase price I understand being \$50,000.00 on which ^{I am told} they have made two payments of \$5000.00 each.

Concerning the underground workings at these two groups of claims I cannot speak from recent personal knowledge since I have not attempted to visit them since they were operated by the Big Ledge, but I have been fortunate in securing direct information from several competent engineers who have visited and examined these properties, including Mr. Weed and Mr. Brady and I have also had them examined in part by one of our own engineers, and previous to the operations by the Big Ledge I was more or less familiar with the workings at the Henrietta which was then operated by leasers who took out a car load or more of good copper ore every three or four months and shipped same to our smelter.

The ore bodies at the Henrietta are reliably described as consisting of three or four lenses, not one of which is very long and the width varying from $1\frac{1}{2}$ to 3'. The total amount of ore which can be estimated from present indications is less than 20,000-tons and the grade of same is more or less uncertain, but even according to statements by the Mine Superintendent it does not greatly exceed \$30.00 and being so narrow will either have to be mined at a high cost, or else about twice as much waste or low grade material will be broken than mined at the same time, necessitating either sorting or handling a low grade material. It will be noted, more-over, that in mining from a narrow vein of this kind, it will be impossible to handle any large tonnage daily and probably the production cannot be made to exceed 50-tons. The ore is highly siliceous and can only be smelted direct at considerable fluxing expense and the values in most portions of the

Mr. Ingalls #5

January 6th, 1917

Henrietta are nearly all in gold, the copper generally not exceeding 2%, except in very small lenses from which the lessers formerly operated.

The ore body at the Butternut has been claimed by the management to contain 8% copper, but independent sampling which was carried on ^{in the drifts} and also of the broken rock on the dump indicates that it actually contains less than 2% and I believe that I am perfectly safe in stating that no commercial ore has as yet been developed in this property, altho it has possibilities of developing a considerable amount of low-grade ore which may possibly be concentrated with profit.

The Big Ledge people have recently organized the Great Western Smelting Co., purchasing the old Treadwell Smelter for the sum of \$4000.00. This smelter contains a blast furnace (idle since 1903) and a small amount of accessory equipment. Considerable new equipment is now being added by the Big Ledge people and the statement was made a few months ago that the smelter would blow in in November and that production would then be made by the Big Ledge Co. at the rate of 15,000,000 lbs. of copper per annum, from which a net profit at the rate of \$3,000,000.00 was to be derived. However, ^{they further stated that} by July 1st, 1917, the smelter will be in a position to handle a larger amount of ore variously stated at from 600 to 1000 tons per day and the Big Ledge would then be producing at the rate of 30,000,000 lbs. of copper per annum with net profits of \$6,000,000.00. Analyzing these figures, it will be noted that they assume a net profit of 20¢ per pound of copper produced which presumably allows for a cost of production of 10¢ and a sale price of 30¢ per pound, but where the enormous amount

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January 6th, 1917

of copper involved is to come from is not definitely stated and considering that the Henrietta is essentially a gold mine (if it is any mine at all) and that the Butternut is ^{too} very low grade in copper to be commercial, as a smelting proposition, it may be confidently stated that the above estimates are wholly unreliable and absurd; more-over, any one familiar with copper smelting knows that it is impossible to build up a smelter capable of such production in the short limit of time mentioned and as a matter of fact the smelter has not yet blown in or produced any matte whatever. Of Course, if enough money is spent and a converting department, (which is now lacking,) is added to the smelter and custom ore is purchased the Great Western Co. can undoubtedly operate on this basis and possibly they may be able to derive some profit from their operations, but the profit on custom smelting is comparatively small and the 20¢ per pound profit that they expect to derive on their copper production is a dream of the most visionary kind.

Sometime ago one of the broker's letter^s announced that the Big Ledge management estimated that their total cost of "mining, transporting and smelting" would be \$2.50 per ton. This figure is, of course, too absurd to merit consideration and a short time afterwards it was definitely announced that the Big Ledge had closed a contract with the Great Western Smelting Co. to handle their ore at a smelting cost of \$9.00 per ton, which figure, considering the siliceous character of the ore, is not at all out of the way.

To sum up the whole situation, the Big Ledge have options on three properties, one of which is worthless and apparently abandoned. Second, the Butternut is a prospect which so far has not

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January 6th, 1917

developed any commercial ore but which has possibilities of developing a very low grade concentrating ore body and no facilities for concentration have as yet been provided, altho there are indications that the erection of a concentrator will be the next step taken by the Big Ledge people. The third property, the Henrietta, has some small ore bodies which were and can be profitably mined by leasers, operating on a very small scale, but from which it will be utterly impossible to make any such production as has been estimated and announced by the Big Ledge management and their own statements in connection with the property are so absolutely contradictory and at times absurd that it is impossible to reconcile one set of reports with another, nor to determine where they actually do stand. It is almost certain that during the present year, unless they entirely change their method of operating, or are fortunate enough to strike a "bonanza" ore shoot, the Big Ledge will make no profit whatever instead of \$6,000,000.00 which they estimate and in my personal opinion it will be impossible for them to make any large production ~~whatever~~, unless they operate their smelter on custom ores from which under the circumstances they can only expect to derive a very small smelting profit, not nearly sufficient to pay for the deficit that will be incurred by their mining operations and the attempt (if they make it) to smelt direct the low grade siliceous ores that their own mines will produce.

The statement which have been issued from time to time by the Big Ledge people appear to be written out in advance, or at least to lack ^{any} ~~absolutely~~ co-relation whatever to the actual developments of their properties. Their allusion to the development of \$50,000,000.00 worth of ore between the workings of the Henrietta

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and the old McCabe-Gladstone is absurd on the face of it, since the McCabe-Gladstone is at best a property of very doubtful value having been closed down for over 10-years and full of water during that period of time and the McCabe-Gladstone vein, in any event, runs nearly at right-angles to the vein system of the Henrietta. A recent statement proclaiming^{ed} that the Big Ledge is "one of the best examples of the quick making of a mine - the 'mine' as far as I can see has been made on paper and the duration of the operations of this Company seems to be only a question of how long a time they will be able to keep on fooling the people who are buying their stock at the present market figures. In Mr. Weed's report he figures that the intrinsic value of the stock is about 40¢ per share, but considering the conditions under which they will have to operate their mines and smelter and considering the methods which the management have employed and are still employing, I cannot see where the stock has any intrinsic value at all and I expect that a great many others will come to a similar conclusion in the course of a short time.

I am giving you all of the above information in confidence because I do not feel that in my position here I want to come out openly to attack the Big Ledge people. They are, of course, employing a considerable number of men and doing a considerable amount of work and if they confined themselves to ^{even} half truthful statements they would deserve to be encouraged as much as possible, but from the start they have misrepresented and exaggerated in a manner which certainly calls for the most severe condemnation. It has been my hope that either the United States Postal authorities of some concern like the New York Curb would start an investi-

Mr. Ingalls #9

January 6th, 1917

gation of the methods of these people and in any such investigation I shall be only too glad to co-operate since I believe that such publicity as they are now giving this district is bound to re-act as a "boomerang" and be extremely harmful to the development of this section of the country and if you can use the information given in this letter in any manner which will tend to induce an investigation of this kind, I shall be very happy indeed to have you do so.

Wishing you all the Compliments of the Season,

I remain,

Yours very truly,

S. M. Colver

SPECIAL MINING REPORT

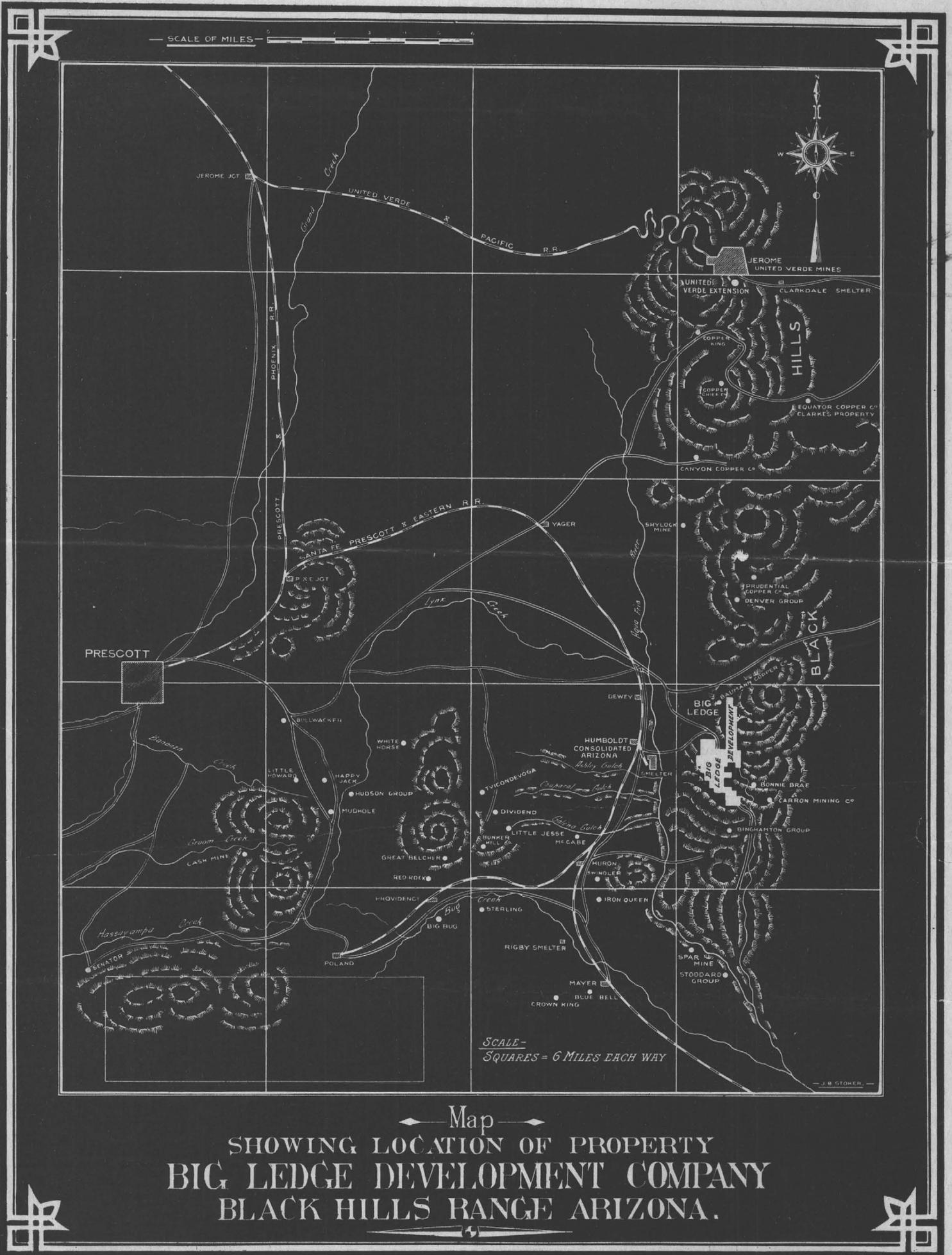
Individual

Service

IRVING K. FARRINGTON & Co.

Established 1900

30 BROAD STREET NEW YORK CITY



Map
 SHOWING LOCATION OF PROPERTY
 BIG LEDGE DEVELOPMENT COMPANY
 BLACK HILLS RANGE ARIZONA.

Our Daily and Weekly Market Reports

Our Weekly Market Letters are free to anyone interested.

We publish a Daily Market Report, which takes up the important daily happenings in the mining market, with closing quotations on ninety active stocks. Mailed under letter postage for 50 cents a month.

While we believe the information herein to be correct, it is not guaranteed.

COMMISSIONS FOR BUYING AND SELLING

AUTHORIZED BY THE N. Y. CURB ASSOCIATION

Under 10 cents.....	25 cents per 100 shares
10 to 24 cents.....	50 cents per 100 shares
25 to 99 cents.....	2% on money involved
\$1.00 to \$2.99.....	\$3.12 per 100 shares
3.00 to 4.99.....	5.00 per 100 shares
5.00 to 9.99.....	6.25 per 100 shares
10.00 and over.....	12.50 per 100 shares

GUARANTEED PAYMENT CONTRACTS

We have worked out a plan, whereby our clients can purchase the better class of mining, railroad and industrial securities, on time payment,—running over periods of six, eight or ten months,—the accounts being guaranteed against margin calls.

To meet the requirements of this service, the stock purchased must be a legitimate mining or industrial security, backed by an operating property and an active market.

TO PROTECT SUCH ACCOUNTS, WE REQUIRE:

A cash deposit of one-third of the total cost of the stock purchased. The balance due being paid in six, eight, or ten equal monthly payments.

Or,—if desired, will accept instead of a one-third cash deposit,—stock collateral having a market value equal to the total cost of the stock purchased. The stock collateral being returned at the expiration of the contract. Payments being made in six, eight or ten equal monthly payments. The advantage of being able to use stock,—instead of one-third cash margin, will be very apparent in a low market—for when prices are at really attractive levels,—many investors are not financially in shape for any extended investments.

THE PURCHASER OF STOCK ON OUR GUARANTEED PAYMENT CONTRACT:

Has the right to close out his account at any time, either by paying the total balance due,—or by selling the stock purchased, or the stock collateral (if any) deposited to protect the account. Has the privilege of selling the stock purchased, (or stock collateral) and purchasing some other stock of equal value. All dividends declared on stock purchased (or on stock deposited as collateral to protect the account) are remitted to the purchaser as soon as paid.

OUR GUARANTEE AGAINST MARGIN CALLS:

It will be seen by the above, that in order to guarantee our clients against margin calls, we are naturally forced to eliminate many stocks from consideration. We would not consider a speculative issue, bought at or near the top of an advance; but experience has shown us, that under ordinary conditions, **THERE IS A TOP AND BOTTOM TO EVERY MOVE IN AN ACTIVE LISTED STOCK**,—and at certain levels a stock cannot react (during a limited period of time)—to a quotation which would destroy a 33 $\frac{1}{3}$ % cash equity, or a 100% stock margin.

Therefore, there is nothing startling or impossible in our **GUARANTEED PAYMENT CONTRACTS**, when based on the purchase of stocks selling at low levels,—any more than there would be in finding some bank or banker to loan on real estate. Once in a while, the price of a stock may temporarily react below its cash, or stock equity, but the same conditions have happened in first mortgages on approved real estate. And if the stock purchased is backed by actual intrinsic value, a permanent loss would be almost impossible,—especially as the equity is increased each month, by the cash payments.

We do not offer or recommend this plan as a speculative medium; but simply as a safe method of investment, which will enable our clients to take advantage of low quotations,—which as stated, usually come when one is financially unable to make a large cash investment. This service is also recommended to the investor who has purchased a stock interest at high levels, and who wishes to average down on a pronounced reaction.

COST OF THIS SERVICE:

In purchasing stocks, we charge our regular cash commission, or New York Stock Exchange rates. And if the stock is sold during the life of the contract, the regular commission and stamp tax for selling. Interest charged at the rate of 6% per annum on debit balance.

ILLUSTRATION

This illustration has been figured on an investment of \$100.00 to enable the easy calculation of the cost of purchases in excess of this amount.

BOUGHT

100 shares of stock at \$1.00 a share.....	\$100.00
Commission	3.12
Total purchase price.....	\$103.12
$\frac{1}{3}$ cash on confirmation of purchase.....	34.38
Balance due	68.74

The balance due on this account is paid in six, eight or ten equal monthly instalments.

Now, if instead of the one-third cash payment to protect the account, a customer wishes to deposit stock collateral,—the same commissions and interest rates are charged. But instead of depositing with us one-third in cash, the purchaser sends us marketable stock property endorsed, if in his name, worth at current quotations \$100.00 paying the total purchase price and interest, in six, eight or ten equal monthly instalments, as he prefers.

IRVING K. FARRINGTON & CO.

ESTABLISHED 1900

30 BROAD STREET

NEW YORK CITY

Telephone 4420 Broad

REPORT
on the
BIG LEDGE DEVELOPMENT COMPANY
by
J. H. SHOCKLEY

*Published
by
John*

New York, July 27th, 1915.

Irving K. Farrington Company,
30 Broad Street,
New York City.

Dear Sirs:-

In accordance with your request I have made examination of the properties of the Big Ledge Development Company situated near Humboldt, Yavapai County, Arizona.

ACCESSIBILITY:

A branch of the Santa Fe Railroad running from Prescott passes Humboldt, within four miles of the Big Ledge mines, where the smelter of the Consolidated-Arizona Company is now in operation. The new Clarkdale Smelter and the United Verde mines belonging to Senator W.A. Clark, and the United Verde Extension mines near Jerome, lie about twelve miles directly north. The Blue Bell and De Soto mines of the Consolidated-Arizona Company lie respectively seven and twelve miles southerly.

The property is reached by wagon or automobile from Humboldt Station, crossing the Agua Fria River and the well eroded foot hills of the Black Hills Range of mountains to a basin, where is situated the principal camp, or headquarters, established by the Big Ledge Company for

the exploitation of its properties. Another camp a mile and a half northeasterly from this point is also provided. These camps consist of ample housing room, boarding houses, etc. for large forces of workmen.

AREA: The area embraced in the holdings of the Big Ledge Company amounts to more than 1100 acres. This area is at present more or less opened by 70 odd open cuts, tunnels and shafts. These developments run from six feet to eight hundred feet in depth, and in nearly every one copper ores, or indications for important underlying copper ore bodies exist. More than 10,000 feet of development has been done on the property.

GEOLOGY: The geology of the area together with that of the surrounding territory is favorable for copper mines. The oldest rocks being schists, no doubt in part of volcanic origin, but now highly altered by the intrusive rocks by which they have been invaded. In the vicinity of these intrusives, near their contacts with the schists, deformation has been greatest, and at these points all the rocks, especially the schists, are highly crystallized and metamorphosed. So much so that large areas bear but small resemblance to their original appearance. The surface indications in general being similar to those found on the Inspiration mines at Miami, Arizona.

Much of the formation resembles monzonite-porphry, although a field determination of many of these rocks is difficult owing to its changed conditions. Suffice it to say that geological conditions for large copper mines are good.

It is interesting at this point to note that

Walter Harvey Weed, in the employ of Senator Clark of the United Verde mines, has been doing considerable examination geological work lately in this vicinity with the result that Senator Clark has taken over the Hull properties a few miles only from the Big Ledge. It is also interesting to know that the United Verde Extension mine at Jerome has made good lately and has gathered in nearly all of the surrounding claims.

**ORE
DEPOSITS:**

Ore deposits of the Big Ledge occur of two classes: (1) Fissure veins of normal type. (2) Zones of replacement and impregnation. The former while no doubt playing their part in the general mineralization of the property are outclassed in importance by the deposits of class two.

HISTORY:

Prior to the present time the fissures have received the greatest attention by their former owners. Being worked principally for their gold contents with more or less success. The ores, in the main, however, being "coppery" were difficult of satisfactory treatment by the free milling plants installed for their reduction. In other words, the previous owners, like many others, essayed to make gold mines out of copper mines. With the result that when the Big Ledge people came along, recognizing the true conditions, they successfully assimilated the properties, some of which having been in the hands of their previous owners for many years.

FISSURES:

As stated the fissures have played their part; and in several places on the Big Ledge property, where these fissures intersect the shattered zones in the schists, considerable high grade copper is found carrying

gold and silver. The surface over large areas in the vicinity of such intersections is in some localities greatly leached, in others highly silicified, but everywhere shows more or less of carbonates of copper, clearly substantiating the belief that development in the standing water levels should prove up large deposits of disseminated copper ores.

**STANDING
WATER:**

In the zone above standing water, judging by the evidences offered in numerous shafts and shallow holes, much profitable ore will be mined. It is difficult to say just where standing water may be found, but it is my judgment that it will occur in the Copper Blossom claim vicinity at around 200 feet.

In the neighborhood of the Copper Springs claim there is a considerable area where disseminated copper is already in evidence at shallow depth; giving reason for the belief that mining operations beginning near the surface may be carried on. Many holes in this area from 10 to 50 feet deep over an extent of 60 acres present a favorable appearance for an underlying disseminated copper ore body.

**DISSEMINATED
COPPER:**

In the vicinity of the Copper Blossom claim a larger area of underlying copper is probable, involving 100 acres or more. Other parts of the property are also mineralized and may respond favorably to development, but on the two areas in question active work is being pressed.

The outlines of these probable ore bodies show roughly on the surface in the way of rusty, porous schists, carrying copper in the form of carbonates in the crevices, with here and there as depth is gained, films and dewy

crystals of native copper; as water seepage in certain localities begins at a few feet in depth.

Underground these ore bodies should take an irregular and indefinite outline as found in the Inspiration and other copper mines where similar conditions exist. It is a matter of common knowledge that the Inspiration disseminated ores came in at about 100 feet in places, and it is reported that they have not been bottomed at 900 feet. As stated, the conditions on the Big Ledge and the Inspiration are similar.

DEVELOPMENT: The property is now being developed by four principal workings, namely:

(A) A double compartment shaft on the Copper Kettle claim now down 60 feet (the assay sheets show that the last 12 feet of this shaft averaged 3.44 percent copper) designed to go 300 feet deep where crosscutting will be taken up. It is proposed to continue this crosscutting for a thousand feet southwesterly, where connections will be made with another shaft which has been started on the Copper Springs claim. In the near future drilling will begin at 200 foot intervals in this vicinity.

(B) Drilling is just beginning on the Pick and Shovel claim in a large zone of highly leached, copper-stained schist.

(C) A shaft is going down, now 50 feet, on the Bee claim to a proposed depth of 300 feet where crosscutting westerly will begin. The mineralized zone is here at least 500 feet across, giving evidences of important underlying copper ore bodies.

(D) On the Mountain View claim, a tunnel now

180 feet long is being run on a cross fissure to cut at the depth of 250 feet or so an intersecting vein. The latter, in several shallow cuts and tunnels shows high grade copper for several hundred feet on the strike of the vein. A couple of hundred feet of additional driving here should prove this latter vein which will undoubtedly go down. And there is no reason why the ore should not go down with it.

There are many other parts of the property which show copper on the surface where more or less work has been done, but the four places above enumerated should respond to development more satisfactorily and results be obtained more quickly than in these other points.

EQUIPMENT: The property is well equipped with all sorts of tools, supplies, engines, hoists, drills, compressors, etc. etc. And the work is going ahead under the supervision of capable drillmen and experienced miners, with a competent engineering-metallurgical staff on the ground.

The plan of development to be followed in "A", "B" and "C" is that employed so successfully by many of the big porphyry coppers of the United States and is the best that can be pursued in order to block out and prove the existence of ore bodies of disseminated copper in the shortest space of time.

CONCLUSIONS: In closing will say that the work outlined under plans "A", "B", "C", and "D" has my approval. As to making estimates of proven tonnages, or the grade thereof with certainty at this time, the development

is not far enough advanced to definitely determine same. But to give you an idea of the probabilities of this property, there are, as above stated, two areas, favorable for underlying copper deposits; area "B" - "C" being the better defined at this writing. Taking an area in the Bee claim vicinity, 500 feet by 2,000 feet, (about 30 acres), as underlaid by disseminated copper, and that such an ore body should be at least 200 feet in thickness, we have the following results.

**COST OF
COPPER:**

This area, (500 by 2,000 by 200), would contain 15,000,000 tons of ore. Should this ore body average 2-1/4 percent copper, which I do not consider improbable, it would contain 45 pounds of copper to the ton of ore, or 675,000,000 pounds of copper. Milling losses would be about 20%, and there is no reason why this copper should not be produced as cheaply as any of the other porphyry coppers. While this computation relates to 30 acres only, the possibilities of the property become apparent when one takes into consideration the large acreage which at this time gives evidence of being underlaid by copper. One hundred and fifty acres have already had a good deal of work done on them and this is but a small part of what may later be proven as pay ground.

Sixth months from now this development will have advanced to a stage where calculations may be more conservatively made and if the work in hand pans out as indications point that it will, many millions of tons will have been blocked out.

You must furthermore, in considering a valuation of this property, bear in mind that the present acreage beneath which it is probable replacement copper in commercial quantities will be found, is as large or larger as any of the other Arizona porphyry coppers. With the additional advantage in favor of the Big Ledge that its assay sheets show in nearly every instance very appreciable gold and silver contents along with the copper.

The Big Ledge ore deposits of a fissure vein nature, must also be reckoned with, as considerable importance must be attached to them.

RECOMMENDATIONS: Taking into consideration the solidarity of the probable zones of so called disseminated ores; the high grade in copper and gold and silver of the different ores from some 50 odd holes; their adaptability to water concentration, flotation or smelting; the fact that the formation is adaptable to the caving system; the nearness to railroad and smelters; the further fact that water is abundant in the Agua Fria River three and one-half miles away, constitute conditions to be considered promising and excellent.

In my opinion, the property of the Big Ledge Company contains copper ore bodies of first importance and I recommend its serious development. Furthermore, the development now going on meets with my unqualified approval.

Respectfully yours,

(Signed) J. H. SHOCKLEY.

C

BIG LEDGE MINING COMPANY

Henrietta Mine

October 10th., 1921.

Interviewed Mr Walter Lytzen, Superintendent, who stated that his company is waiting only for a stronger copper market before resuming operations. The Mill, which has been under construction for the past year, is almost completed and will have, he believes, a capacity of 100 tons per day. Experimental tests have shown that a concentration of approximately 3 into 1 should result and the grade of the concentrates will be approximately 9% Copper, 15% Insoluble with Sulphur and Iron at about 25 to 30% each.

No opportunity was advanced to examine the mine but Mr Lytzen asserted that though the mine has no large body of ore developed the shoot of approximately 600 feet on the adit level although fairly narrow would supply ample tonnage for some time to come. The adit is 2000' long and is driven on the vein but there is commercial ore exposed only over a length of 600'

The arrangement of the mill in reference to the mine should prove readily adaptable to the handling of the tonnage estimated in that it is a stoping proposition and a straight tram to the mill bin.

The flow sheet of the mill is as follows;- Conveyor from storage bin to 2½" Grizzly, undersize from grizzly and product from Crusher (8"x10" Blake) to storage bin. Two Challenge Ore feeders (remodelled from old stamp mill) feed ore from bin to 6' x 22" Hardinge Ball Mill in circuit with 12 mesh Callow Wet Screen. Undersize from screens to 3 Overstrom-Deister Tables and oversize back to Hardinge Mill. Table tailings to 6' Tube Mill in closed circuit with two - 12' Dorr Rake Classifiers. Product from Tube Mill to Callow Rough Cell. Concentrates from Rougher Cell to Cleaner Cell and thence to Thickener and 3'x6' Portland Filter. Mr Lytzen estimated that 75% of the concentrates will come from the tables.

It would appear that the equipment is in good condition and should be able to handle the estimated tonnage although some changes will undoubtedly have to be made when operations are commenced.

The estimated cost of Mining and Milling would permit of operating on a 14 cent copper market and Mr Lytzen believes that his principals will wish to start in when that point is reached, provided that there is a market for their product. In the event of this smelter starting up we may be reasonably assured of say 25 tons of concentrates per day from this source and of the nature mentioned above.

There is also a certain tonnage (approximately 400 tons) of a siliceous copper-gold ore which they would be willing to ship if suitable smelting charges could be obtained. By "suitable Charges" Mr Lytzen inferred that he would not ship under ordinary Silica penalty but suggested that there might be some use for this material should our charge become too basic at any time. Otherwise it would be his intention to work this material in with his mill heads trusting to obtain a sufficiently great extraction to offset the difference in freight and smelting charges.

At the present time there are some five men employed at the property.

There would seem to be ample water for all purposes the main source of which is the Big Big Creek from where the water is pumped to storage tanks located above the level of the mill. The mine is making some water.

W. R. Burt

ADDITION TO REPORT ON

HENRIETTA MINE

Date:-

January 28th, 1920.

A. Lytzen, Superintendent. Controlling interest of this Company has passed into the hands of the Interstate Callahan Co. and Mr. Batre and associates now hold a minor interest in the stock of the former Big Ledge Co.

Conditional on relinquishing control Batre obtained contract for the Mayer Smelter Corporation for the treatment of all the ores from the Henrietta Mine, but since the Mayer Smelter Corporation was not ready to fulfill its contract, Mr. Lytzen arranged for the insertion of a clause in said contract permitting the Henrietta Mining Co. to ship ore to any purchaser.

Recent development on the property has consisted in sinking of the main winze from the tunnel level to a point 600 ft. below, and a drift started on this 600 level to the north. One small ore body has been cut. This ore body was examined only at one point in an upraise and was found to be from two to three ft. wide, apparently carrying low values in copper. It is the intention of the management to drive north on the 300 ft. level to cut an ore body 500 ft. ahead of their present face on this level. This ore body on the surface and to a depth of 100 ft. produced some high grade oxidized gold ore.

Tonnage:-

Positive - 36,000 tons. Values will be in gold-silver-copper. Gold \$3.20; Silver \$3.75; Copper 3.2%.

Probable - 41,000 tons. Same Values.

Mining Cost:-

From \$6.50 to \$7.00 per ton. This mining cost is high due to the fact that the vein in the Henrietta Mine consists of a quartz filled fissure in a fine grain phase of diorite. The walls of the fissure are irregular and there is in most cases a parallel fracture or plane of movement from one to four ft. outside of the mineral bearing area. This makes mining costs expensive and necessitates a cut and fill method.

The Company is very anxious to mill or ship ore but the margin of profit with the \$7.50 treatment charge and the high mining cost heretofore mentioned is only about \$1.00 per ton. They are, therefore, figuring with

Henrietta Mine #2.

the Gray Eagle Reduction Works at Mayer for the treatment of this ore in the flotation mill and expect to obtain an extraction of 88% of total values according to preliminary test runs made by Mr. Wagner with a ratio of concentration of four to one.

It is also the intention of the Company to continue development on the Butternut Mine, but the ore bodies so far encountered in this property are small lenticular bodies up to five ft. in width and with copper values up to 2%.

There is so much oxidized material in the Henrietta vein that I doubt the wisdom of flotation as a means of treatment and believe that eventually if we can obtain sufficient base and thereby lower our treatment costs to approximately \$5.50 p.t. we could induce the Henrietta people to mine their ore by cut and fill methods, sort on a sorting belt up to an ore carrying $3\frac{1}{2}\%$ copper and \$10 in gold and silver.

Material has been obtained for a mill test on the average mine run of Henrietta ore. The data on these tests will be appended to this report at a later date.

W.V.D.

Humboldt/
EH-2-3-20/

HENRIETTA MINE, near McCabe and Poland Junction, Yavapai County, Arizona. Operated by Big Ledge Company of Duluth, Minn. Visited October 7th, 1916. Saw Mr. Trebilcock, Supt. Tunnel being enlarged so that it is caved and inaccessible near mouth at present time.

According to Trebilcock, Main Tunnel is 2200 feet long, with a raise to the surface exposing ore all the way up. Preparations are being made to sink a winze at a point 2000 feet in the Tunnel, which level is said to be 160' above permanent water level.

There are a few hundred tons of ore showing chalcopryite and pyrite on the dump and a bin full of more oxidized ore. The better grade of sulphide ore is very friable and contains some chalcocite as well as chalcopryite.

Trebilcock says that ore is from one to four feet wide, country rock diorite. There are frequent changes in width, but the ore never pinches out entirely. The main ore shoot is 600 feet long and assays 8 - 10% copper with considerable gold. Lately he has obtained assays of $1\frac{1}{2}$ oz. in gold. The values in gold have increased to the North. Ore was found in the walls of the tunnel, and some of the best gold values have been found in ore of poor appearance which had been neglected by previous operators. He says that below the oxidized zone the iron and sulphur content in the sulphide ore has so largely increased that the ore is self-fluxing. (This is not borne out by the appearance of the ore on the dump, which is generally highly siliceous).

A Chicago Pneumatic Tool Co.'s Two-stage Compressor, with 165 HP Type I General Electric Motor have just been installed at the Mouth of the Tunnel.

Mr. Trebilcock says that only diamond drilling is being done on the Butternut, that the ore is chalcopryite in schist with gold values from \$2.00 to \$7.00 per ton and that it will make a good mixture with the Henrietta ore for the smelter. The sample he gave me was chalcopryite

in quartz and siliceous schist.

The Company also owns the Gopher property, being the northeasterly extension of the Henrietta vein.

Octo. 8, 1916; an inspection of the north side of the range indicates that the Henrietta is not even on the same vein as the McCabe and Gladstone as is suggested in C. A. Stoneham & Co.'s booklet "Junior Coppers." It is generally accepted that the McCabe-Gladstone system passes thru the Gladstone westerly extension, Little Kicker and Rebel properties. This is nearly at right angles to the Henrietta - Gopher North-South system. Developments in the Gladstone - McCabe Mines apparently form no basis for estimates of possible reserves in the Henrietta.

L. F. Holland

See also Big Ledge property.

Extract from report of Walter Harry Reed
in 1916

BIG LEDGE GROUP

I consider this group comprising 1160 acres of ground, situated about $4\frac{1}{2}$ miles east of Humboldt, entirely valueless for mining purposes. The nature of the veins, the character of the ore and the lack of rock alteration indicate to me that no commercial orebodies can reasonably be expected in this area, though of course fine specimen ore can be found in the narrow fissures on which work has been done. An inspection of all available workings and of the surface convinces me that the payment of taxes or the doing of further ~~representation~~ ^{work} on this group is entire waste of money.

SUMMARY

Henrietta
I find that the Henrietta mine is a good property, which when properly opened up can yield 50 to 75 tons a day of siliceous gold ore carrying 1 to 3% copper and possibly averaging \$30. per ton in value. As the ore shoots are narrow, and not of very great extent, mining costs will not be low. I consider it a good, little mine, worth at present about \$400,000, an estimate based upon the known ore exposures and their probable downward continuation. I am unable to calculate any proven ore owing to lack of data, but there is a small tonnage of probable ore estimated at 16,000 tons. What the net profit will be on this ore cannot be definitely figured, but if the past records of the mine may be taken as a standard, and this is supported by the values in my samples, it may be as much as \$20. per ton.

The Butternut Mine is a prospect, but a promising one, which

if offered for purchase would be worth \$200,000., but not over half that amount for cash. It can furnish 100 to 200 tons of low grade copper ore per day when stoping ground is properly opened up.

I consider the management both energetic and capable and your superintendent has done a great amount of work in a short time.

Answering your question as to whether in my opinion the company stock is worth \$7.50 or \$8. a share, I find that in view of all the facts observed, the Big Ledge properties, though fully worthy of mining development, do not warrant such a price for the stock. Eight dollars a share is equivalent to a valuation of about \$12,000,000. The valuation I have put on the property makes the stock intrinsically worth 40¢ a share and its speculative value may be considered as 75¢ or \$1.00 per share.

W.H.W.

ORE SUPPLY (Mill)

Notes by S. H. C.
in 1933.

Henrietta Dump west of Poland Junction

Re Henrietta mine
(long idle)

Upper Dump:

Oxidised and might not float well.

Lower Dump:

Special Dump:

About 1000 ton of \$6.00 ore, and a small tonnage of similar material on the upper tunnel.

Trucking to Humboldt about \$1.00 per ton.

Rail freight 25¢ and line is still down.

March 31 Chafey said there was 8000 ton of ore on dump from which he had shipped two cars that averaged Au--0.1, Ag--- 2.00 oz. and Cu.--1.5%

Henrietta mine up Poland Gulch, 12/9/33,--

Large dumps mostly very low grade but one special dump of about 1000 ton which has been thoroughly sampled and runs 0.3 oz in gold. Now being resampled by Morrow, an engineer from Kansas City. Ore is largely oxidized but gold should concentrate fairly well. The mine itself cannot be reopened on any large scale except at heavy expense as the main adit tunnel is blocked for a long distance.

(Grade of ore must be further investigated, also its response to treatment. If dump ore will pay to ship and mill, a large and steady tonnage is available for treatment with small margin of profit.)

Some little ore might be taken out of the upper workings but it is doubtful if this would pay. The special dump could easily be shipped at the rate of 10 tons per day for 100 days and best not to count on anything more.

Copy marked folder
Henrietta

POLAND DISTRICT

mine

Belcher or Great Belcher Mine (see desk book)

Some high grade ore in pockets carrying Au...1.0 oz and Ag...3 oz.

Some good ore might be sorted and shipped from this property.

HENRIETTA MINE

Aside from the dumps there were some pockets or bunches of high grade ore in the mine and small shipments of gold-silver ore with value of \$20.00 or better might be made if any of this material has been left.

BLUE ROCK MINE

About one half mile from Poland. Contained ore with some good values in silver, lead and zinc. Worked for a time, see Fred Gibbs,

Henrietta Mine

Spillsbury estimates grade of ore in mine at Au--0.15 oz. Ag--2.0, Cu, 3%. and a small quantity of higher grade ore might be mined and shipped. Mill recovery. Au--92%, Ag--84%, Cu--95%. The quantity of ore available is uncertain.

Fortune Mine

Near Providence. Considerable development and some ore which might pay to mine and ship with careful sorting. A considerable tonnage of low grade material is exposed.

(SEE GIBBS)

Humboldt

BIGLEDGE PROPERTY

Walter Harvey Weed examined this property November 10-14-1916.

Referring to his examination of the old Big Ledge properties five miles East of Humboldt in which several million tons of porphyry copper were said to have been developed, he remarked that he saw no ore bodies at all and would not even pay taxes on such property.

At the BUTTERNUT he took samples from the dump that was said to contain better than 3% copper; the result of one sample assayed at Humboldt was 1.4% copper. The average sample cut from the working face at the bottom of the Butternut shaft, showing 10' width of material, said to contain better than 3% copper, same as at the dump, gave the following result:

Copper 1.2% Silver .2 oz. per ton.

It may be assumed that the above represents fairly the average grade of ore now being mined at the Butternut, or possibly a little better grade of material may be sorted out by hand.

At the HENRIETTA, Weed stated that there was a 4' vein showing along the drift for a length of approximately 100'. The average value of this ore body was not determined, but if the ore was continuous from one end to the other and extended upwards as far as possibly could be estimated, i. e., to the old stopes, there would be a possibility of approximately 6000 tons of ore. There is no evidence, however, to show that this ore would, on the average, be of commercial value.

In places there was considerable zinc blende showing in the mine together with a little copper mineral and a sample of the ore containing most of the zinc showed:

copper 2.4% silver 2 oz. per ton.

In a few places there are small narrow streaks of high-grade ore. One streak at the bottom of the shaft said by the management to be very rich was only 4" wide. Weed's sample of this showed gold \$5.78; silver 1 ounce. At another point there is a streak of ore 8" in width which, for a short distance, is high-grade, assays showing a gross value of \$67.00 per ton, and \$53.00 per ton in gold and silver.

From Weed's statements I would conclude that there are a few little pockets and stringers in the Henrietta Mine which might be worked with profit by lessors as was done ^{before} by the Big Ledge Company took over the property. So far as the mine is developed there is absolutely no reason to expect that it could maintain any large or continuous production. The veins are so narrow that maximum production would be 50-tons per day and it is doubtful if 50 tons of commercial ore could be produced from the ore bodies so far developed. There is absolutely no basis for the present market value of the stock which gives the property a value of 12,500,000.00.- In my own opinion the stock is not worth 10¢ per share whereas now it is selling over \$7.00.

All the ore in both Butternut and Henrietta is very siliceous in character (except some of the zinc ore) and it would not be possible to smelt this ore with any profit. Mr. Weed thinks that the Great Western Smelting Co. which has been organized by the Big Ledge to re-build and operate the old Treadwell Smelter are planning to endeavor to secure some of the excess tonnage from the Little Daisy Mine which other smelters cannot handle at the present time.

*Mr. Weed
Should be revised*

Big Ledge

Henrietta

P. G. Spilsbury
Phoenix, Arizona.

Phoenix, Arizona.
February 21, 1923.

Mr. Philip L. Foster,
The Exploration Company, Ltd.,
350 Madison Avenue, New York City.

Dear Mr. Foster:

Following instructions received from you, I visited the Henrietta Mine of the Big Ledge Copper Company. After a hurried inspection, I wired you my conclusions as shown in the accompanying report.

Your desire for quick action did not allow sufficient time to make a very thorough examination. The mine is so closely timbered and the works in such condition that very little inspection was possible underground, and no faces were open for sampling.

The conclusions which I have reached are based entirely on the information presented to me by Mr. Iyzen, the manager, and a study of the surface. You will understand, of course, that I cannot be responsible for the accuracy of this data, and any action which is taken by the stockholders must be based on their faith in the accuracy of their manager's reports.

The other holdings of the Big Ledge Copper Company would only be accessory in case the Henrietta proved successful, and would probably add very little, if anything to the value of the Henrietta.

Yours very truly,

Snd. P. G. Spilsbury

PGS:G

THE HENRIETTA MINE

o f t h e

BIG LEDGE COPPER COMPANY

R E P O R T

BY

P. G. SPIESBURY - E. M.

February 21, 1923.

CONCLUSION: Basing all deductions on records presented to me I find probable operating profit of eighty-two cents per ton on fifteen cent copper market. It will require about twelve thousand dollars to put property and mill in condition to operate and thirty-five thousand in working capital before operations become self supporting. Total cash requirements forty-seven thousand. At milling rate of thirty-six thousand tons yearly will require about two years and all blocked and probable ore claimed by manager to return money with interest. There is a second ore-shoot to the north which might produce fifty thousand tons additional and due to persistence of vein some ore might be obtained below present workings. This would apply to paying note indebtedness of about one hundred sixty thousand dollars taking about two hundred thousand tons of ore and a period of five and one-half years additional before any return would be made to stockholders. I believe an assumption of two hundred seventy-one thousand tons of a grade of three percent copper ore is not warranted. From strictly engineering standpoint I can only recommend property be returned to creditors. Should stockholders obtain two year postponement on notes, increase mill capacity to one hundred fifty tons daily, and wish to gamble with forty-seven thousand dollar advance on increased copper price with hope of finding recurrence of high gold zones indicated in old workings, there might be a chance to pay out.

LOCATION: The Henrietta Mine is located in Yavapai County, Arizona, three miles south of Humboldt. It is served by the Poland branch of the Atchison, Topeka and Santa Fe Railroad with spurs to both mine and mill.

PROPERTY: The group consists of six patented claims, one patented mill site and twelve claims held by location, as follows:-

<u>PATENTED</u>	<u>LOCATIONS.</u>	
Silverton	Big Ledge 1	Triangle
Gopher	Big Ledge 2	Gilt Edge Fraction
Yankee Girl	Big Ledge 3	Gilt Edge
American Flag	Big Ledge 4	Big Bug
Invincible	Treasure	Gem
Trinity	Laurene	Bugget
Mill Site		

GEOLOGY: The Henrietta is a fissure vein with diorite walls.

Some schists appear on the east wall but not well defined. The vein strikes north and south and dips 76° to the west. It is continuous and traceable for the full length of the property showing a width from six inches to five feet.

The vein appears as a banded zone (indicating several small movements) in which are clay seams with quartz stringers and silicified wall rock.

The outcrop where accessible showed calcinization leaving quartz stringers of one to three inches wide. Pyrite was observed in the quartz at the surface.

The invincible Vein with a strike of N-45°-E and dipping about 76° west intersects the Henrietta just south of the main shaft. This is a tight fault with quartz filling of four to ten inches width. Apparently it ends at the junction and does not cross the Henrietta. The quartz filling is of good grade, and this may have been the feeder causing the enrichment of the first ore-shoot in the Henrietta.

The old workings indicate two definite ore-shoots in the Henrietta vein.

MINERALIZATION: The original mineralization consisted of pyrite, chalcopyrite and intermixture of lead and zinc sulphides with gold and silver values. The major portion of mineralization appears in the quartz stringers but also occurs in the silicified wall rock to some extent.

Decomposition of clay seams on the outcrop has allowed some surface enrichment of gold. The oxidation is incomplete and although copper movement has taken place to a small degree, as indicated by deposition of chalcocite coating on pyrite, there is no chance of a secondary enrichment.

The ores of the upper workings were complex and contained sulphides in the unaltered quartz, as indicated by the treatment necessary. The vein gives the appearance of being oxidized in places where only the clay seams containing little mineral have actually been altered.

ORE RESERVES: There were no records presented to show the old workings or the tonnage or grade of ore extracted. No samples were taken and only cursory inspection was possible of underground work. For purpose of this report it is necessary to take the figures suggested by the manager, Mr. Lytzen. He places the "blocked and probable ore" at 71,000 tons in the south ore-shoot. What may be expected from the north shoot is entirely a guess, as no figures or measurements are available.

GRADE OF ORE: An average of all ore shipments made from March, 1917, to January, 1919 gave the following results:

10,838 tons - 3.4% Cu. - 2.78 oz. Silver - 0.27 oz. Gold

An average sample of some 2000 pounds was taken from stopes and workings in the mine. The average of this general sample was reported by Mr. Lytzen was:

3.13% Cu. - 2.65 oz. Silver - 0.205 oz. Gold

A close study of assay maps available showed a very great variation in widths, much of which was far below ordinary stopping possibilities. I believe that values as indicated by the above averages could not be maintained on an extraction basis of 100 tons daily. I do feel safe in assuming that a grade of 3% copper, 2 oz. silver and 0.15 oz. gold could be expected from the block of ground now open.

It is interesting to note the occurrence of bands or zones of high gold values, one as indicated by the raise south of the LaDuc shaft and the short 73 ft. level, and

the other at the north end of the Main Level or Adit. It is possible that in mining the recurrence of such zones would add some value to the ore but this cannot be figured definitely.

PHYSICAL CONDITION OF MINE: All drifts inspected were closely timbered and lagged; caves had occurred in the 450 and 600 ft. levels. It is apparent that considerable work will be necessary in retimbering drifts, chutes and raises, and putting pockets, etc. in order before mining can be started on a 100-ton basis.

After going over figures presented by Mr. Lytzen with slight additions, I estimate an expenditure of \$6,500.00 necessary to prepare the mine for steady operation and provide surface improvements necessary to care for the men.

SURFACE IMPROVEMENTS: The equipment on surface is adequate to all needs. Compressor and drill equipment appears in good condition. Blacksmith shop, drill sharpener, timber shed, etc. are ready for use. There are a few supplies on hand as shown in the inventory.

Electric wiring and mine cables are in good condition.

Pumps were not inspected but were working and the 600 level was drained, indicating no trouble there.

The electric hoist at the LaDuc shaft is of sufficient capacity for all needs of development and ore extraction.

The living quarters require repairs and additions before a full crew can be cared for.

MILL: The mill being housed in the old building could not be expected to be ideal. Under the circumstances it has been erected creditably as to foundations and mechanical equipment. Before it can be operated successfully there are several changes which will be necessary:

1st - The proposed plan of dumping mine run ore into a small 70-ton bin over an inclined grizzly mill not be successful and will require excess labor to clear the grizzly and break oversize by hand. The clay seams in the ore with the water in stopes and workings will be sufficient to ball up and give trouble.

A gyratory crusher should be placed at the bin location and all ore dumped into the mouth of the crusher and fed to the belt going to the mill ore bin.

2nd - The ore fed on the belt is raised to the head of the mill and dumped on a grizzly with upright rails set at 1 inch spacing. The clay content of the ore will give trouble here and require excessive hand work. The rails should be reversed and spaced at 1-1/2 inches at least. The boxed feed to the jaw crusher at the foot of the grizzly should be opened and rails or bars set in to allow punching.

Under the grizzly is a V-shaped spreader to throw ore out into the bin below. Only three inches head room is allowed between this spreader and frame timbers of the mill. This would cause blocks and framing should be altered to give free space.

The 7 x 10 jaw crusher is well set and adequate for the purpose.

Ore is fed from the bin by Challenge feeders to a cross belt and into a 6 x 22 Hardinge mill, discharging into the concrete boot of a steel chain elevator with 20 foot lift. The elevator housing is of single ply redwood.

3rd - This housing will probably leak badly and certain portions should be lined inside. The elevator dis

charge will probably need changing to prevent slopping.

The elevator discharges to a double Callow screen 1/4 inch openings, the undersize being fed to 3 Overstrom sand tables and the oversize back to the Hardinge mill.

- 4th - The three Overstrom tables are set so close that proper adjustment will be difficult. This should be changed if possible, particularly as these tables will handle an unclassified feed.

Table tails are fed to a Derr classifier in closed circuit from a 4 x 10 Morse tube mill. The overflow from the Derr goes to Callow flotation cells.

Concentrates are fed to a large Akins dewaterer, the coarse product being delivered on a belt going direct to railroad car. The fines are pumped to a 6-foot Allen Cone in combination with a 14-ft. storage tank feeding a 6 x 4 Portland filter. The filter discharges on the same belt going to railroad car.

- 5th - The overflow of the Akins de-waterer must be changed to provide a sump, as any stoppage of the mill would cause overflow of concentrates.

From the short inspection given, it seems that the mill will handle 100 tons daily, and with certain changes could be increased to 150 tons capacity.

The suggestions above are given in some detail to show that before successful operation can be expected, an expenditure of an estimated \$ 5,500.00 will be required.

CONSTRUCTION FUND: I estimate that before any operations can be started the surface plant, mine and mill, will require an outlay of about \$12,000.00

MILL RECOVERY: Tests made by the General Engineering Company of Denver show a recovery of 95% of the copper, 92% of the gold and 84% of the silver. This could not be expected in actual practice, but a fair recovery by concentration is indicated. I consider the estimated recovery presented by Charles E. Lees and Louis Ware in their letter of November 14, 1922 to be as nearly correct as can be estimated. I have taken for basis of my estimates a concentration of 3 to 1 with a net value of \$28.75 per ton of concentrates on a 15 cent copper and one dollar silver market. This figures \$9.58 per ton of ore milled, assuming the mill heads to be 3 % copper, 2 oz. silver and 0.15 oz. gold.

OPERATING COSTS: Figures presented by Mr. Lytzen and also by the report of Messrs. Lees and Ware were closely considered and some deductions and additions considered advisable.

The mining Cost as given below is the figures of Lees and Ware except for power which I have reduced from \$0.70 to \$0.45 a ton.

ESTIMATED MINING COST

	Per ton
Overhead	\$0.95
Labor	1.50
Explosives & Timber	0.45
General supplies	0.25
Development labor & supplies	0.60
Maintenance	0.25
Power	<u>0.45</u>
TOTAL	\$4.45

ESTIMATED MILLING COST

	Per ton
Labor	\$0.39
Power	0.59
Supplies	0.56
Water	0.15
Repairs	0.15
General - officem assaying, royalties, etc.	<u>0.37</u>
TOTAL	\$2.00

SMELTING CHARGES

	Per ton ore
Smelting Charge \$5.00 ton concentrate	\$1.67
Freight \$1.00 ton concentrate	<u>.53</u>
Smelting & Freight	\$2.00

COST SUMMARY

	Per ton
Mining	\$4.45
Milling	2.00
Smelting	2.00
Insurance	0.11
Local taxes & office supplies	0.10
General hauling, truck, car, etc.	<u>0.10</u>
TOTAL OPERATING	\$8.76

The apparently high mining cost is due to narrow vein, necessity of close timbering and large development footage per ton of ore blocked.

OPERATING PROFIT: It has been shown that for an assumed ore supply of 3 % copper, 2 oz. silver and 0.15 oz. gold, concentrates can be produced of a net value of \$28.73 a ton, or at a ratio of concentration of 3 to 1 a value of \$9.58 per ton of ore milled.

	Per ton milled
Recoverable value	\$9.58
Cost	<u>8.76</u>
OPERATING PROFIT	\$0.82

These figures are based on a 15 cent copper and one dollar silver market.

On this basis the total "blocked and probable ore" claimed by Mr. Iytzen of 71,000 tons would return an operating profit of \$58,220.00 over a period of two years.

CAPITAL REQUIREMENTS: It has already been shown that \$12,000 will be required for construction charges.

Before the property can become self-supporting, sixty days' work will be necessary to get under way and tune up the mill.

The operating charges will be at a maximum during this period and no substantial returns can be expected. I estimate that a reserve of \$35,000.00 is necessary as working capital.

The total cash requirements to get on a self-supporting basis I estimate at \$47,000.00

It will be noted that total earnings of two years' operations will just about return this amount with interest.

INDEBTEDNESS: Mr. Iytzen advises the total present indebtedness with interest to be about \$160,000.00. If this is added to cash requirements, the total before earnings are available will be \$207,000.00

ORE NEEDED TO PAY OUT: At \$0.82 a ton profit it would require 252,400 tons of ore and an operating period of about 7 years, or, say about 271,000 tons to pay notes with interest and return cash advance before any return could be expected by the stockholders.

ORE POSSIBILITIES: While it is probable that the 71,000 tons of ore can be extracted from the first ore-shoot now developed, it would be a wild guess to assume that 200,000 tons additional of a 3% grade could be taken from the second shoot and below the open levels of the first shoot.

ENGINEERING CONCLUSIONS: As an engineer, I consider the possibility of total profit too remote to recommend additional investment in the Henrietta mine. I do not consider the paying of \$160,000.00 notes and \$47,000.00 cash capital warranted from present showings.

AN ALTERNATIVE: The mill can be arranged to treat 150 tons of ore daily. There is a gambling chance that gold values may add something to the total value of the ore. An increase in price for copper would increase earnings. As against this, silver may drop to 60 cents within the next eight months, as the total United States guarantee will then be taken up.

Should the stockholders desire for any reason to keep the company alive and be willing to gamble with the \$47,000.00 cash, and obtain a postponement of two years on the notes, there is a remote chance that the property could pay out, and at any event, they would not be much worse off at the end of two years than at present.

Respectfully submitted,

Sd. P. G. Spilsbury

Consulting Engineer.

READY REFERENCE REPORT

While we believe the information herein
to be correct: it is not guaranteed.

READY REFERENCE REPORT

IRVING K. FARRINGTON & CO.
NEW YORK CITY

30 BROAD STREET

TELEPHONE 4420 BROAD

IRVING K. FARRINGTON & CO.
30 BROAD STREET NEW YORK CITY