REPORT ON THE PROPERTIES OF THE AUSTIN MINING COMPANY,
By James D. Hague, August 8th, 1898.

18 Wall St., New York
Aug. 8th, 1898.

J.G. Phelps Stokes Esq.
Pres. Austin Mining Co.

Dear Sir:-

At your request I have recently examined the properties of your company, situated in or near Austin, Nevada, and now beg leave to submit the following report of my observations and conclusions concerning conditions and prospective value.

The enterprise in which your company is and during the past six or seven years has been engaged, is essentially a project for the deepest and most extensive development of the best known and hitherto the most productive silver mines of Lander Hill and vicinity which, since their first discovery in 1862, have been widely celebrated as the source of a very large silver product, aggregating many millions of ounces, from veins which though small, have been famous for extraordinary richness of their ores, often yielding hundreds of ounces per ton and probably unsurpassed, if not unequalled, in average quality, by the ores of any other mining district.

Historical

During the first few years of its mining development, the district was crowded by prospectors and miners having little or no capital, who made hundreds, probably thousands, of mining locations on a vast number of closely related outcropping veins, seams, or stringers, of quartz and ore forming an intricate net work of so called lodes, covered by a multitude of conflicting claims, most of them good for nothing but litigation. The early prospectors honey-combed the surface with prospect holes, from which they took (many) a large amount of value, in the form of so called "chloride ores"very easily worked and very profitable to the finder. After little depth however, it became evident the veins were small, very broken by faults and dislocations, and very wet, requiring expensive machinery for pumping as well as hoisting; that the ore, though occuring in the form of very rich silver bearing mineral was scantily distributed in the veins, within which large ares were practically barren involving much work for little ore, and making the cost of mining extremely high; that the ore in depth was no longer easily worked, as the surface had been but could only be worked by costly methods of furnace roasting and barrel or pan amalgamation, in large establishments, all requiring much capital for equipment and operation.

A natural result of these conditions was the practical abandonment of the district by the prospecting miners, having no capital, who in time found other fields more inviting. In 1868, the most valuable and productive mines of the district, including the most important of those which now compose your consolidated property, were held by few owners, chiefly among whom was the Manhattan Silver Mining Company of Nevada, (Owned mainly in N.Y.) This company also owned and operated the principle mill, practically (excepting brief periods) the only mill actively engaged, through which passed nearly all the ores produced in the history of the mining industry of the place.

Record of Early Operations.

It appears from available data that in earlier years of its operation the outlays of the company for equipment and operations far exceeded the value of the product, so that in May 1866 the company owed a debt of $180,000. A profitable period followed a little later,

the net earnings from Sept. 30th, 1866, to January 1st, 1868 amounting according to the books of the company to $245,355. 64 discharging the debt and adding considerably to the equipment and improvements, on which accounts $44,000.00 were expended during that period. The following year, 1868, was also very profitable, and productive, although less so than the previous year.

The Manhattan Company produced from its North Star, 1,955 tons of ore yielding:.....$ 290,227.79
and in the companies mill, from 3,443 tons of custom ores..... 912,954.47
Making altogether from these sources.....$1,203,182.26

The net operating profit from all sources during the year amounted to.....$ 92,280.
Of which however, the sum of..... 74,099
was expended in further development, equipment and improvement accounts.

The operations in 1868 afforded the following general results, which I quote here as some indication of the value or yield of the ores, the cost of operation and resulting profit. The values of the product are reckoned at the old standard ($1.2929 per ounce) for silver which at the time referred to, was marketable at a premium.

During 1868, average yield per ton	
Manhattan Co.'s ores.....$	148.45
Average yeild per ton for custom ores.....	265.10
" " " " " all ores (5,398 tons).....	222.90
" mining expense companies ores per ton.....	75.84
" milling expense " " " "	39.86
" " " for custom ores " "	39.30
" " price for custom ores " "	45.30
Average profit on custom ores including yield obtained in excess of amount returned to custom.....	20.15
Average of general expense in addition to mining and milling, amounting to $80,889.30, reckoned on all ore milled, 5,398 tons per ton.....	15.00
From all of which it would appear that the costs of production per ton of ore, including current and ordinary mining, milling, and incidental expenses, the latter covering large amounts for transporting of bullion, amounted to.....$	130.00 per ton

1868 to 1875

In 1875 some changes in corporate management were made, with an increase in capital stock from $387,500.00 to $1,000,000 after which business was continued for twelve years, under the same local management as before.

During this period of twelve years, 1875 to 1886, both inclusive, the bullion production at the standard value of $1.2929 per ounce, amounted to $11,660,865. 28 of which the market value would of course be much lessened by the discount on silver. Estimating this on an average at something near thirty percent, the money value of this product would have been say $8,000,000.

During the first three years 1875, '76, '77, of this twelve year period the dividends amounted to.....$ 566,320.39
Followed in 1879 by assessments amounting to..... 150,000.00
making total dividends for this twelve year period..... 603,820.39
Included in which is dividends for 1885-86 thereof..... 37,500.00
or deducting the above mentioned assessment a net dividend of..... 453,820.39
and adding to this the dividends prior to 1875..... 96,875.00
we have total net dividends..... 550,695.39

paid during a period of more than twenty years, and on a mill production of more than.....$ 18,000,000
reckoned at coinage value, or with due allowance for actual discounts in the price of silver, say a money value of..... 14,000,000
to $15,000,000 of which product the above mentioned dividends would be about four percent, without taking into account any profit realized by the mine produce of custon ores.

It also appears from official records that the mill ore produced for fourteen years, 1868 to 1881, both inclusive, amounted to 70,227 tons, with average assay value of $223.56 of which value 90% was obtained in the mill.

The total product of the companies mines and mill, including the periods of active cooperation prior to 1868, and subsequent to 1881, say to the end of the companies operations in 1886, would doubtless be little more than 100,000 tons, with an assay value of $20,000,000 to $22,500,000.

The Manhattan Company ceased operations in 1886. The price of silver had then fallen so low, that under the average conditions then existing, it could not possibly be produced at a profit from mines which, under most favorable circumstances, even with silver marketable at a premium, on standard value, had seldom if ever realized a profit of ten percent of the product. Moreover the mines were not only getting deeper increasing accordingly the outlook for the cost of operations, but the veins without exception, were in depth, that the outlook for the future might well have discouraged further operations even if the price of silver had never declined.

The original Manhattan Silver Mining Co. of Nevada, was incorporated with a capital stock of $387,500. At the end of 1868, the companies books showed outlays as follows:

Cost of mining property.....	$ 184,239.08
Mill improvements.....	140,571.79
Mine improvements.....	96,060.10
	$ 420,870.97

On January 1st, 1875, the credit balance in profit and loss account amounted to $1,026,025.67 and in the reorganization which followed, the capital stock was increased $1,000,000.

At the close of its business or at the time of the transfer of the property to the new management, in 1886, a balance sheet, dated Dec. 31st, 1886, set forth the condition of the Manhattan Silver Mining Co. affairs in effect as follows.

Debits

Capital stock.....	$ 1,000,000.00
Assessments.....	150,000.00
Due sundry creditors.....	7,662.10
(Discrepancy not shown in original).....	567,675.96)
	$ 1,725,338.06

Credits

Properties.....	$ 274,081.25
Real Estate.....	166,765.26
Improvements.....	586,474.25
	$ 1,028,320.76
Dividends.....	$ 603,820.39
Cash.....$ 13,124.77	
Supplies on hand... 80,079.14.....	93,196.91
	$ 1,725,338.06

1886 to 1887.

The further operation of the property was undertaken in 1886, and continued, in 1887 by Messrs. Whipple and Hanchett, perhaps under bond and lease, who appeared to have formed a new or re-organized and capitalized the old company increasing the capital stock from one million to five million dollars, and raising accordingly the value of real estate, properties and improvements.

Their balance sheet at opening of business, dated January 1st, 1887, is in effect as follows:

Debits

Capital stock.....	$ 5,000,000.00	
Due sundry creditors...	7,662.10	
		$ 5,007,662.10

Credits

Properties.....		$ 2,920,225.63	
Real estate.....		867,765.26	
Improvements.....		1,126,474.25	
			$ 4,914,465.19
Cash on hand	$13,124.77		
Supplies	80,072.14		93,196.91
			$ 5,007,662.10

The new parties appeared to have taken over the management in 1886 without any complete suspension of operations or closing of the mines. Their books of accounts in the office at Austin, show that they worked more or less actively in eleven mines, a single one of which the Paxton shows a credit balance in its account, amounting to $8,137.79, while all the other ten show losses or excess of expenditures over receipts, varying from a few hundred dollars to over $22,000 in coinage value, and aggregating about $80,000.

Their bullion product is reckoned at about $365,000 in coinage value., or allowing for discount on silver about $260,000 in money value. Assessment account in the ledger shows a credit account in the ledger of $112,520,68 though other entries indicate that this sum was not wholly in cash.

In October and November of 1887, a considerable indebtedness had been incurred, to the workmen, who attached the property and closed the mines.

1888----1891.

Work was resumed in the following year 1888, by other parties who I believe, organized for their purposes a new company, called the Man-Hattan Mining and Reduction Company whose business seems to have been managed by a trustee. I am informed that this company released the property from the attachments laid upon it, but made no attempt to reopen any of the older mines in debt; and excepting a little mining done in the Union Mine above the 200' level, the actual operation consisted mainly, if not wholly in sorting over the deumps, selecting from them the most available ore, which was crushed in Huntington Mills without amalgamation and then concentrated. From available records it appears that the selected ores contained about twenty ounces in silver, per ton, yielding concentrates which assayed about 300 to 400 ounces per ton, with mill tailings carrying from three to four ounces per ton.

These operations appear to have continued from October 1888, to the latter part of 1890, about two years. The value of their product seems to have amounted to about $245,000 with outlays exceeding that sum by $35,000 to $40,000 derived from loans and discounts.

AUSTIN TUNNEL PROJECT.

It was this juncture or shortly after that in 1891, your attention was attracted to the property, especially with the proposal to drive a long and deep tunnel into and under Lander Hill, for the purpose of cutting in depth the veins which had been the source of so much value, opening the way for their cheaper drainage and more economical operation, and thus greatly reducing the cost of silver production.

Lander Hill has always been the most improtant and productive part of the whole district, a very large portion of all the bullion produced by the Austin Mines has come from beneath a small area on the south western slope of that hill. The outcropping veins on the hill side are very numerous and they are covered by many closely adjoining claims.

The patented properties of your company, are between forty and fifty in number, covering about 300 to 400 acres, mostly on Lander Hill or in its neighborhood. Many of the outcropping veins are small and of doubtful permanence, in any direction; many of the others are well defined and persistent fissure veins, which have now been worked for many hundreds of feet in length and depth.

The veins are all in granite. They are generally more or less parallel both in course and dip; trending generally from the northwest to the southeast, and dipping north easterly at various angles, from 25 to 40 degrees.

They are however not so regular as this general statement would imply being more or less changeable in course and variable in width, from a mere seam to three and four feet.

The whole hill is traversed by faults, cross fissures, joints and seams, which break, dislocate and confuse the ore bearing veins. Some of these faults are deep seated and far reaching fissures and fracture planes, along which very considerable breaks have occurred, faulting and dislocating the whole system of veins. Two, or perhaps more extensive faulting planes, more or less parallel to each other on a north-easterly course and about one third to one half mile apart, seem to traverse the entire field, causing along each line of fracture movement of all the veins, in broken and dislocated parts, to the extent of two or three hundred feet.

It is in the neighborhood of perhaps between two of these main or principal faulting planes, that the veins intersected by them have been most abundantly and richly mineralized. The ground in the near vicinity of or between the so called breaks, appears to be a zone, within which the veins have been found more productive than elsewhere, and beyond which in either direction, they are poorer, their silver bearing are not less abundant, but different in character, carrying more zinc, lead and baser metals.

It is from the vein areas from this so called zone, that the greater part of the valuable product of the Austin Mines has been derived; and while a large number of veins have been worked to a greater or less extent, more than half of the values have come from few.

The following record, in the Austin office of the company shows the tonnage and assay values of the product of the five principal veins, during the years 1868, to 1882 inclusive.

Lode	Tons	Assay Value.
Farrell	4,778	$ 1,147,337.00
Oregon	7,072	1,644,422.78
North Star	8,744	1,734,400.06
Independence	9,410	1,804,350.65
Paniment	19,520	3,729,032.12
	49,924	$10,074,582.62

Average per ton...$ 203.22

These veins as developed in the body of the hill, are found to be more or less parallel in course and dip, as already indicated. They alloccur within a distance of half a mile or more, measured across their trend and they lie, one over the other, in the order named above, the Farrell being the most northerly, and overlying all the others; the Paniment being the most southerly, and underlying all the others. They have been opened and operated for many years by means of shafts both inclined and vertical. Of chief importance among the latter, are the North Star, Frost and Lander. The last named is the highest in position on the hill and is 1022 feet deep. The deepest workings of the Farrell and the Oregon have been carried on through the crosscuts from at the 600 foot level of this shaft. The frost is about 800' deep and was long used as the main pumping shaft. It was chiefly for the purpose of prospecting and economical working in depth of the above mentioned veins, together with the hope of finding others, equally or more valuable, that the proposed tunnel was begun. The project had long been favorably considered by your predecessors, some one of whom had at the time of your purchase of the property, already located and driven for the distance of four hundred feet the tunnel which your company has since extended, for more than a mile in the same easterly direction, with a north easterly branch, driven more than one half mile from its starting point, on the main line, nearly three quarters of a mile from the starting point.

The Tunnel

The entrance of the tunnel is located at Clifton, a suburb of Austin, and lower down in the canyon in which the town is built. The main tunnel is driven into the hill on a course a little south of east about 5,930' where it reaches the Frost shaft, the bottom of which is 80' above the tunnel grade but connected with it by a raise from the tunnel. If continued in that direction the tunnel would connect with the Lander shaft at 935' below the top of the shaft. From a point in the main tunnel, at a distance of 3,855' from the portal, the so-called north east crosscut is driven 2,660' on a course of N. 40 E. magnetic.

An accompanying map shows the relation of this main tunnel and of the N.E. crosscut, in their present condition of advancement, to the above mentioned principal lodes or veins of Lander Hill. It will be seen that the face of the main tunnel, now at the bottom of the Frost shaft, has reaches a more or less central point in the ore producing area, lying between the two main breaks, or faulting planes, before referred to. At this point the tunnel has passed through the Paniment vein, on which the lowest workings in the near neighborhood of the tunnel face, are 58' vertically below the tunnel, while other workings on the same vein, through the Brodie incline, further to the N.E. and E. of the easterly break have already reached a vertical depth of more than 250' below the tunnel level.

The end of the main tunnel is directly under the central portion of the main workings of the Independence and 285 vertically below what is known as the 370 level, opening on that vein from the Frost shaft.

The tunnel or a crosscut from it, if continued or dirven in a northerly direction from the present main tunnel face would cut the Independence vein on tunnel level at a distance of about 320 feet; but it would find that vein already explored, by the older workings from the Frost shaft, the lowest level on the Independence vein being 27 feet vertically below the tunnel.

The North Star vein lies 400 feet vertically over the present end of the main tunnel, at the Frost shaft. The deepest workings on that vein are 700' to 800' to the N.E. of the tunnel face, and about 120 feet higher than the tunnel level. The main tunnel if extended in a N.E. direction should cut the North Star vein in about 1000'. Such tunnel extension should cut the Oregon vein in about a distance of 1500' from the Frost shaft. The intersection would be about 120' vertically below the present bottom level on the Oregon vein. The

Farrell vein might be found 500' to 600' still further to the N.E. or about 2200' from the present tunnel end at the Frost shaft. The tunell would intersect that vein about 800' vertically, below the level to which it is at present worked.

The main tunnel level if thus extended would therefore add to present knowledge of these veins for a comparatively small depth.

Paniment Vein in Main Tunnel.

The main tunnel cuts the Paniment vein at about 5500' from the tunnel mouth, where connection was made between the tunnel and the old workings on the vein, which seems to be well defined but not rich. A considerable amount of exploration and prospecting was done on the vein, working along its apparent course, in both directions, and sinking one or more inclines on its dip, on both sides of and at various distances from the tunnel. The ground seems to be somewhat broken, and uncertain and the vein is seen in apparently several distince branches, or dislocated parts, but the identity of the vein as the Paniment known in the old workings, is regarded as beyond a doubt. It shows some streaks and seams of rich ore here and there, but the general character of the vein is poor and unpromising.

Other Vein Development in the Main Tunnel.

It is little more than 400' where the Paniment vein is cut to the end of the tunnel, at or just below the Frost Shaft.

Here another vein has been found, on which drifts have been driven easterly for more than 300' and westerly for 100'. The east drift was caved and was inaccessible at the time of my visit. It is said that the vein in the drift shows little or no value. The westerly drift shows a well defined vein with seams of ore or mineral and some favorable indications but nothing available for production.

North East Cross Cut.

The N.E. crosscut starting from the tunnel, at a point 3855' from the portal, cuts the Paniment vein at about 700' from the above mentioned point of beginning. At this point the vein is well defined and regular in appearance. It is about two feet wide at the tunnel, and shows a large amount of heavy mineral, consisting of zinc, lead and other sulphides, usually described as base ore. It is not valuable. Drifts known as #2, were driven in both directions, following generally a well defined vein, carrying little ore of very low grade. A considerable amount of the ore was stoped, above this level, stopes about 150' long and 40' high, and worked in the mill during the latter part of 1897, results of which are given below.

At a point 275' beyond the Paniment vein, a drift known as #4 was driven eastward several hundred feet, on a vein not yet clearly defined, but possibly a brach seam or dislocated portion of the Paniment. Two stopes of considerable size have been made on this level, one nearest the tunnel, 130'long and 30' high, the other further east 150' long and 40' high.

The vein appears to be about 2.5' wide, well defined though somewhat broken, and carrying some low grade ore. The ore from these stopes was also milled, formeing part of the supply sent to the mill, for its run during the latter part of 1897, results of which are shown in the following statement.

This drift is continued northward and connected with it at 810', that is the Plymouth shaft, cutting the same at 30' above its bottom.

The N.E. crosscut is extended beyond its intersection with the above described vein, known as #4, a further distance of 1600' to 1800' in the course of which indications of vein have been found, at several points, atsome of which indicated on the map, drifts have been begun and driven for various distances for the purpose of exploration,

but without any very encouraging results; small veins more or less well defined showing in places considerable continuity and carrying some visible mineral or small ore seams of little value, have been found affording favorable indications but nothing of productive capacity.

Nothing has been found in this tunnel which can be clearly identified with the North Star Vein, although if continuous in a westerly direction on its average course, that vein should have been seen in the N.E. crosscut long ago.

The same may be true of the Oregon Vein, which if it continues in a westerly direction, and dislocated as might be expected by the westerly break, should have been found somewhere near the present crosscut face.

A small vein was cut there late in June, which may be the Oregon. It is small and unpromising. A sample #84 taken from it, June 23, yielded five ounces silver and .40 ounces in gold.

The Farrel vein should still be 600 or more feet still to the N.E. of the face of the N.E. crosscut. If found there, the point of intersection will be 100 feet vertically below the present bottom of the crosscut level.

On the Farrell Lode, opened from the Paxton incline, and about 250' deeper measured on the slope, that than the present bottom workings on that vein.

From available records it appears that prior to January 5, 1898 the quantities of ore stated above, have been mined from various veins opened along the Austin Tunnel, mainly from the N.E. crosscut, and mostly from the stopes already mentioned, as having been made from the #2 and #4 drifts from that crosscut.

Sent to the old mill in Austin prior to completion of new mill during five months of 1896, May to Sept. inclusive.....	549.5	tons.
Sent to new mill from 1897 to Jan. 1, 1898, milling ore.....	2025.4	"
Shipped ore sacked at mill.....	45.5	"
	2620.4	"

The assay value of the ore was not separately determined which was sent to the mill. It may be estimated by the averages of other lots.

The assay value of the milling ore, sent to the new mill was not separately determined, except at time when no other was being delivered This was the case from Oct. 18, to the 30th, and from Nov. 19th to 28th when an average of 18 samples was 9.29 ozs per ton, which is the best available indication of the value of the milling ores separately from other ores obtainable.

The average assay value of shipping ore was 206 ounces, of silver with very little gold--about fifty cents per ton.

As the milling ore was not treated by itself, but worked together with 1130 tons from the Union Mine, it is impossible to know exactely either assay value or yield of the tunnel ore, separately.

During the mill run of the new mill from Aug. 1st, to Jan. 5, 1897 and 1898 the total tonnage milled was 3155.9 tons, having an average value of 14.29 ozs silver. Assuming 9.29 ozs. the assay value of a portion to be assay value of the tunnel ore, the 1130 tons of Union ore would have had an assay value of 23.3 ozs. of silver per ton.

In the new mill this ore was crushed under stamps, and concentrated on Frue Vanners, the product of which amounting to 154.93 tons having an assay value of 156 ounces per ton, and containing 23,479.7 ozs. of silver were shipped to the smelters, producing in realized returns, after deducting freight and treatment, the sum of $9,605.41 equal to a realized value of $3.05 per ton for all ore milled.

Reckoning the silver in 3155.9 tons at an assay value of 14.29 ozs
The silver therefore would be.....45,098 "
of which there were obtained.....23,479 "
and of which there were lost.....21,618 "
showing an extraction of..... 52%
and a loss of..... 48%
of the metal originally contained in the ore.

An ore therefore containing 9.29 Ozs, of silver and yielding 52% thereof in the concentrating product, would make concentrates carrying 4.83 ounces of silver per ton, of ore milled which subject to the further losses of the treatment of the concentrators, the cost of charges for freight and treatment etc, yields in the present instance $1.98 per ton of ore.

Reckoning the product of the 2025.4 tons of ore milled in the new mill at.....$ 4,010.00
and the realized value of 45.5 tons shipped ore at..... 4,066.17
we have for the 2,070.9 tons a realized value of..... 8,076.17
or an average of.....$ 3.90

In round figures 2,000 of milling ore yielded $2.00 per ton
in the mill, with shipping ore sufficient to procue$2.00 per ton
on the total tonnage, or together.....$4.00 per ton.

It has been obvious that ore of this value could not be mined profitably, or without loss under existing conditions; the operation of the new mill was therefore suspended, partly for that reason and partly it is said because the capacity of the mill engine would be insufficient to operate the mill and at the same time furnish power to operate the compressor and dyanamos used in the tunnel work.

The mill has therefore remained idle from early in January, until late in June, when another trial was run and undertaken for the purpose of further testing the ores from the tunnel.

Further development on the Paniment ledge. Meanwhile in the tunnel the workhas been confined chiefly to the exploration of the Paniment Lode, on which long drifts were driven more than a thousand feet in the aggregage have been made along the lode, and on some of its branches, between in the main tunnel and the N.E. crosscut, an incline known as #2, between the two tunnel lines has been sunk to the depth of about 150 feet, and another small incline has been sunk in the workings known as #3, on the east side of the main tunnel line.

I have carefully examined all these workings; the drifts show a vein generally very well defined and continuous, except for the occasional break and dislocation, and averaging about one foot or a little less in width.

The vein is mostly quartz, charged more or less scatteringly with mineral mainly with pyrites, zinc lead, and other sulphides, making an ore base in character and poor in quality. Occasionally bunches or seams of very good ore have been found, in each of the two inclines above mentioned. No. 2 incline is 150 feet deep. The vein shows in the incline to the depth of about 75 feet, where it is apparently displaced by a fault, the incline continues for about 75' more, without having the vein in sight, which is to be sought for by a corsscut deeper down. At 75 feet down, a drift has been run both ways, westward it encounters a break close to the incline; Eastward the drift 125' follows a vein of promising appearance. Then at the end a sample was taken across a seam seven inches wide, which gave an assay of 87 ounces, in silver and 40 cts in gold per ton. No. 3 incline at time of examination, showed an occurance of very good ore, 8 to 10'' wide, which was however soon taken out, not being continuous.

A considerable number of samples were taken with much care, for the purpose of obtaining some indication of the average of the vein. Crosses and figures on the map in red show the localities from which these samples

were taken. The assay results are given in detail in a separate statement submitted herewith. An average of 23 samples taken in the drift of the Paniment ledge combined with due reference to the widths taken gives 11.7 ounces silver per ton for an average of 10.5". Omitting one sample assaying 123.5 ounces, the average width of 10.5" the average would be 7.7 ozs.

Nine samples taken from the drifts and inclines known as #2, similiarly combined, show an average of 10.75 ounces silver, for an average of 9.6 inches.

Reckoning the available value in such ore from results obtained in the mill, 21.3 cts per ounce of silver in assay, value of these ores would appear to be good for a yield of about two dollars per ton and presuming that shipping ore might be selected, about as before, the whole yield might reach about four dollars per ton, as shown in the results quoted above for 2070 tons.

GENERAL RESULTS.

The general result of my inspection of these workings is that nothing now available justifies the expectation of finding ore in quantity, and quality sufficient for profitable mining.

The proposal to continue exploration by further extending the N.E. crosscut, or by driving a new northerly or northeasterly crosscut, from near the present end of the main tunnel, at the bottom of the Frost Shaft, raises the question whether it would be advisable to expend any more money in this enterprise, considering the very discouraging results of all deep exploration made so far, not only in the tunnel but in the lower workings, of the old mines, and having further in view the very low price to which silver has declined.

BOTTOM LEVELS OF THE OLD MINES.

With this question under consideration it is a matter of very great interest to know in what condition the lower levels of the old mines were left in by the former owners. It would be safe to conclude without any further evidence, that, when so abandoned they were centainly not in a profitable and probably a productive condition. Fortunately it is not wholly a matter of surmise. The annual and current reports of the manager of the Manhattan Company, are still on file in the Austin office, and reference to his letters during the last five or six years they operated, 1880 to 1886, shows what results were obtained by that company, in the exploration of the bottom levels, of the mines, the deepest of which, the Paniment, was then more than 250' deeper than the present tunnel level, and none on any of the veins here considered more than 100 or 120 feet higher than that level.

The old mine workings were also carefully surveyed, while in progress and it is easy to see by inspecting the maps, how far the various levels were opened, and to what extent the ground was stoped above them or left unworked, presumedly in such cases because too poor for mining.

The lowest levels of the Paniment were opened in 1881, they are below tunnel level. The map shows long drifts east and west with little or no stoping, above them or other signs of ore extraction.

Manager Curtis' Report.

Of the Independence Manager Curtis writes in Jan. 1881, that failing to find anything in the lower levels, the work has been abandoned and left to fill up.

Of the North Star the Manager wrote in 1880, that the prospecting below the ~~#~~ 600 foot level from the Lander shaft had been discontinued in previous December; the ore being of too low grade to justify continuance of work, and in January 1885 that from the 800' level of the Lander shaft, a drift had been run east on the North star, 331 feet but failing to find any ore bodies it was discontinued, and in Jan. 1887, that on the 800'

level Lander Shaft a raise was made on the North Star without encountering any large ore bodies.

Referring to the Oregon the manager writes in January 1885, that it has not shown as large an ore body as expected from first developments of the Lander 600 foot level, and it would be followed on the 700' level lander, and in January 1886, that the 700 west drift had been extended 715 feet, but not encountering any new ore bodies it had been discontinued.

Referring to the Farrell the manager writes in January 1885, that the sixth or bottom level was run a short distance west, but nothing being developed and the ground being very wet, work was discontinued; further that but little ground now remains on this ledge to warrant working from this shaft; and further that considerable ore has been taken from these lower levels, but being found only in spots and bunches, it is more economical to leave the ground to tributaries further than the 1300 foot level..the bottom, a drift was run 337 east, but the ground being very soft, and carrying a large amount of water, it was discontinued; a crosscut was also run to prospect the ground north of the Farrell ledge but not finding anything it was stopped, and the water allowed to rise; and in same letter still referring to Frarrell, bottom level, that the ground west of the Paxton incline which we are now prospecting, has thus far failed to show continuous ore bodies, and unless some new chimney should be discovered, it cannot be counted on to produce much in the future; and in Jan 1886, referring to the same bottom level, 214 feet of drifts were run on the Farrell, but showing very little ore, work at this point has ceased; and further, in the same letter, that owing to the depreciation of silver, but little systematic prospecting has been done on Lander Hill during the last year, the management not feeling justified in spending large sums of money for that purpose; and further the ground is to a large extent exhausted, and further work to any extent in these mines can only be pursued by opening new ground at very great expense; and further for these reasons our operations must contract as the present tribute ground is worked out, and unless new ground is opened, the time is not far distant when our operations must cease. In view of the heavy expense of opening new ground, in the old mines, I must advise the exploration of other portions of the district."

It thus appears that the lower levels of the old mines, were long since abandoned by the former owners, who with money in hand available for exploration preferred to spend it on more inviting prospects.

SUBSEQUENT OPERATIONS.

The old workings thus abandoned remain to-day in practically the same condition as they were then. I am informed that the Manhattan Co.'s successors, did little or nothing in the bottom of the mines; their operations being confined mainly to some portions of the upper levels, or later, to working over old dumps. The only mine which in their accounts shows any profit whatever, is the Paxton presumedly the Paxton on the Farrell, which they worked for a very short time in 1886, on the 1440 level, 1800 being the deepest, and of this work the then manager writes in his letter of Dec. 29th, 1886,"the 1440 west stope has produced some very high grade ore, but the ledge is now cut out."

All this offers no encouragement whatsoever for the continuance of the tunnel of which the main branch extended by a N.E. crosscut as proposed could add little or nothing to present knowledge of the veins under consideration since it would cut them where they were practically explored long ago, while the N.E. crosscut seems to have advanced already beyond the proper place on its course, of all the ledges in question, excepting the Farrel without finding anything valuable.

If the former owners abandoned these mines in 1886, because they found it impossible to produce silver profitably, under then existing circumstances, it seemed a reasonable conclusion that any attempt to do so now, under conditions far less favorable, can only result in failure, and in loss of money so invested.

THE NEW MILL

The new mill of the Austin Mining Co. is situated at the mouth of the the Austin Tunnel. It seems a well contrived and well constructed establishment. It contains thirty stamps and eighteen Frue Vanners, by which the ores are crushed and concentrated without amalgamation. It is furnished with steam power by which the dynamos are also driven, for lighting the mill and the tunnel.

The cost of this improvement was about $94,000.00.

THE UNION MINE

The Union Mine forms another portion of your properties acquired by your company in 1891; The vein on which this mine is opened is very similiar and closely related to the mines on Lander Hill, although its outcrop is half a mile or more to the southwest, on another hill which is separated from Lander Hill by the upper portion of the canyon, in which the town of Austin is built, a little lower down. The vertical shaft by which the mine is opened, and worked is half a mile distant in a southwesterly direction, from the Frost Shaft, which defines the position of the present end of the man branch of the Austin tunnel. The Union Shaft is also about a quarter of a mile southwest from a shaft on Lander Hill, known as the Great Eastem, with which it is connected with a crosscut, 1600' long, driven N.E. from the Union Shaft, on the 350' level, by which means the Union also makes connection with the workings of the old Lander Hill Mines, and so with the Austin tunnel, thus affording partial drainage and ventilation.

The vertical shaft of the Union Mine is 625' deep and its present bottom is 114 feet below the end of the tunnel now at or beneath the Frost Shaft. In course and dip the Union Vein closely resembles Lander Hill Veins, trending about N.W. and S.E. and dipping about 30 to 40 degrees to the N.E. It lies far to the S.W. of the region traversed by the tunnel, though if continuous its N.W. trend would take it somewhere near the tunnel mouth.

The Union vein also resembles the Lander Hill Veins in general character, consisting of quartz varying in width from three or four inches to three or four feet, often carrying seams of rich sulphides, making high class ore, and generally charged with more widely distributed mineral, fairly well adapted to milling and concentrating. The average quality of this ore is indicated by the record of your operations, during a part of which five years 1518 tons of first class ore selected for shipment, gave a realized value of $141.00 per ton, while 20,134 tons were milled yielding concentrates which returned, after paying freight and metallurgical treatment, an average realized value of $6.42 per ton, the combined realized yield of both grades of ore 21,652 tons in all averaging $15.86. This includes the Ores from the Wild Jim vein, worked as a part of the Union Mine, this being money value, after losses in milling and concentration processes, losses in metallurgical treatment, paying of ore freight and cost of treatment, and finally after marketing the silver product at extremely low prices of late years, implies a high assay value in the original ore, probably not less on the general average, of fifty and perhaps sixty ounces per ton.

Operations of 1891 - 1898.

When you acquired the property in 189?, the Union Mine had already been previously worked bye your several predecessors to the depth of 200' level, of the vertical shaft, and it appears from the fofficial data that the yielf of the mine to July 22, 1891, had been $293,887.24

During your operations now covering a period of seven years, you have sunk the shaft from the 200' level to the 625' level and from that level you have followed the vein downward on its dip by an incline, 75' further, opening there the present bottom level, known as the 700' level.

The several levels of the mine below the 200 level, respectively, known as the 350, 450, 550, 625, and 700 have been opened for various lengths, the longest apparently being the 350 which is shown on the map as 1000 to 1200 feet long. The others are 500 to 600' feet long, except the 700 level which is about 350 feet long; Much of the groundbetween the levels appears as worked out, and much seems to have been unproductive. These workings above the 625' level are now generally inaccessible. It is said the known or visible resources of the mine down to the 625 have been exhausted; and very little appears to be available above the 700 level except by further development. This mine can not be counted on for further production except by further development, on that level the vein now remaining unstoped seems to be small and unpromising. The mine can not be counted on for further production except by developing new resources. This can only be done by further extension of the drifts, sinking deeper and opening new levels.

The necessity of doing this if the operation is to continue raises the question whether the existing conditions in the mine warrant the investment of the money required, for such further development, keeping in view the low price of silver and the very slight probability if not impossibility of producing it profitably.

WHITELATCH, SNOWFLAKE, AND WILD JIM

MEANTIME during the past operations of the mine, on each level, excepting the 450' level, long corsscuts have been driven south, primarily or mainly for the purpose of seeking the long lost Whitlatch Union vein, and further of developing and working the Snowflake vein, and Wild Jim. These are all veins occurring in the ground south of the Union, and supposed to be more or less parallel both in course and deip. These crosscuts have varied in length from 600 to 700 on the lower levels, to something much more than that on the 200 feet level. The search for the Whitlatch has not yet been successful. The Snowflake is said to have been cut on the 550 level, 700' south of the shaft, and probably on the 625' level, 600' south of the shaft but without encouraging results.

The Wild Jim was first found in the crosscut on the 550' level, and afterwards on the 625' level, about 160' south of the shaft. It has been opened on both levels by drifts from 450 to 600 feet long, and stoped somewhat extensively between. It is small vein of good ore and has contributed somewhat extensively to the production of the Union Mine, not being separately dealt with. The exact tonnage of ore produced its assay and yield are not precisely known. It may be regarded as part of the Union Mine. It is not opened below the 625' level, otherwise its present situation is similar to the Union, that is its own known resources are practically exhausted, to the present bottom or 625' level, and any further production will first require further development, the cost of which will be considerable sum, invested in a very questionable venture, under the existing circumstances.

RESULTS OF OPERATIONS:

The records of your operations covers a period of about seven years, 1891 to 1898; during the first four years to the end of 1894 these operations were profitable, the realized value of the product...$333,903.85
exceeding the cost of production.....$285,097.47
by the sum of:..... 51,803.38
for the period stated and for an ore tonnage not precisely known, for the first two years. During the subesquent three years, and six months, to June 30th, 1898, excepting a surplus of $5,910.96 shown in the year 1897 the cost of production for the whole period.....$162,461.64
exceeding the realized value of the product..... 148,173.72
by the sum of..... 14,287.92
the defecit of the last six months Jan. 1st,
to June 30, 1898 being..... 9,772.18

The total realized value of the product from the beginning of operations in 1891 to June 30th 1898, is.....$ 482,077.57
The total operating expenses for the same period..$ 444,559.11
Leaving a net surplus of.....$ 37,518.46

The companies books however, show general expense account nor forming a part of the above operating costs of the Union Mine, in which account the debits for the whole period amounting to nearly $56,000. This appears to be largely for interest, not chargeable to current accounts, of operation, of mine or mill; it seems probably however, that the operating expense account of the Union Mine would be chargeable with some protion of the general expenses, which if so charged might leave little if any balance of profit in the whole operation.

The following statements made from official data show in detail for each year, so far as known, the tonnage of shipping and smelting ore, the average yield of each, and the average cost of production, per ton for all ore produced.

YEAR	Tons of shipping Ore.	Tons of concentrating Ore	Total tons of ore.	Val. rec. shipping ores.	Val. Rec. concentrates.	Total Val. Received.
1891	----------			$ 29,135.14	$ 1,052.57	$ 30,187.71
1892	----------			83,268.33	18,708.27	101,976.62
1893	507	11,600	12,107	64,246.28	86,840.80¾	151,087.08
1894	213	2,167	2,380	45,859.63	4,792.81+	50,652.44
1895	247	3,303	3,050	32,945.18	22,658.007 +	55,603.18
1896	299	2,012	2,311	33,074.59	9,103.214½+	42,177.67
1897	252	1,052	1,304	37,924.59	5,925.245 +	43,849.83
1898	64	90	154	6,153.04	390.003⅗+	6,543.04
2	1585	20,224	21,806	$332,606.66	$149,760.91	$ 482,077.57

STATEMENT SHOWING COST OF OPERATING:

Year	Mining	Milling.	Total Costs.	Average per ton.	Average Value Per ton.
1891	$ 18,746.46	$ 468.80	$ 19,215.26	$ -- --	-- --
1892	78,009.46	19,051.53	97,060.91	-- --	-- --
1893	85,557.39	38,057.33330	123,714.62	10.229	$ 12.48
1894	34,586.53	7,520.07350	42,106.60	18.00145	21.28
1895	39,106.22	16,515.00	55,621.22	15.6712	15.66
1896	44,699.29	7,887.04	52,586.33	22.7518	18.25
1897	34,938.87	3,000.00	37,938.67	29.00	33.63
1898	15,993.22	322.00	1 6,315.22		
	$351,637.44	$92,921.67	$ 444,559.11		

The above data are not complete for every detail for the whole period. The general averages are best shown for the period for five years, 1893--97 from the operations of which the following results are obtained.

GENERAL AVERAGES.

1,518	tons of shipping ore yield.....	$ 141.00
20,134	" " concentrating ore yield.....	6.42
21,652	" all ores yield.....	15.86
21,652	" cost for mining.....	11.03
20,134	" " " milling.....	3.63
	Average cost per ton for all tonnage mined & mill	14.41

This apparently does not cover certain General expenses before referred to.

The above stated mining costs include considerable outlays for prospecting and dead work, chiefly in driving the long crosscuts from the Union Shaft, south on several levels, and north on the 350' level, amounting in the aggregate to several thousand feet.

The development of the tunnel enterprise and the operation of the Union mine have been the chief concerns of the Austin Mining Co.

In addition to these matters the company has given some concern to the prospecting and development of several smaller mines in the near neighborhood, Chief among which are the Patriarch, Gleason, Great Eastern, Magnolia, Cox, and a coal property near Battle Mountain on all of which are, or has been expended, about $95,000 with receipts of about $47,000 leaving about $47,600 absorbed in these undertakings.

GENERAL FINANCIAL STATEMENT.

No books of accounts have been kept in the Company's office in Austin, which fully set forth the financial statement, or present condition of the company's business. The principal office of the corporation is at Salt Lake City, Utah, and the books there kept by the company's secretary or official accountant, record the current operations of the company's mining and milling business, the local receipts and disbursement of money, the production of ore, its yeild, and cost, and outlays made on the various parts for equipment and development, but not taking into account any e financial transactions made elsewhere

For this reason no complete financial statement of the company's affairs can be made from data available at the Austin or Sale Lake office.

The following statemont is based partly on books of account at Austin and partly on data afrom the New York office; the figures therefore, while substantially correct, may be found not to agree with those of the ledger either at Austin or New York.

Statement Showing Receipts and Disbursements of The Austin Mining Co. From Sept. 1891 to May 31, 1898.

RECEIPTS

1898			
May 31st,	Union Mine Ore Sales.....$		331,908.43
	not including June receipts $698.23		
	Mill Concentrates sales.....		163,438.84
	not including June receipts $390.00		
	Tunnel ore sales.....		6,516.18
	Not including June receipts 650.63		
	Patriarch Ore sales.....		39,641.86
	Gleason Ore sales.....		5,048.85
	Great Eastern Ore sales.....		1,674.05
	Magnolia Ore sales.....		589.18
	Cox Ore sales.....		252.33
	Capital Stock.....		80,000.00
	Loan account.....$ 542,427.00		
	Less paid..... 14,400.00		528,027.70
	M.M. and R. Co.....$11,482.95		
	Less..... 4,401.62.....		7,081.33
	Store Account....$ 53,000.00		
	Less..... 10,000.00.....		43,000.00
	Interest, $639.62 State Bank Utah, $27,444.21		$ 1,235,261.88

Disbursements

1898

May 31st,	Union Mine Expense.....		$ 351,779.83
	Not including June account..	$ 3,190.77	
	Mill Ext not inc. " "	322.00	
	General Exp.	55,976.10	
	Less material sold	8,427.02	47,549.08
	Patriarch		48,251.02
	Gleason		24,139.75
	Great Eastern		5,838.24
	Magnolia		6,837.10
	Cox		771.40
	Coal Mine		8,969.38
	New York Office		3,151.91
	Austin Tunnel		228,626.08
	Not inc. June acct. $5,020.35		
	Mill construction		94,059.97
	Residence		1,304.20
	Timber and supplies on hand		4,767.42
	Cash N.Y. Dec. 31st, /97		354.98
	Illinois Trust Co. Property purchase		$ 300,000.00
			$1,235,261.88

Examination of the foregoing account shows that the sum of outlays for the Union Mine

Mill & General expense was	$ 508,192.43	
And receipts from ore sales including tunnel ore sales	$ 501,863.45	
Leaving excess of outlays.....		6,328.98
Outlays on other mines &prop	$ 94,804.89	
Less receipts.....	$ 47,206.27	
Leaving excess of outlays		47,598.62
Austin tunnel, Mill, Residence, N.Y. office		$327,142.16
		$381.069.76

Examination of the foregoing, in excess of receipts from ore sales and paid out of original capital & borrowed money, adding to this for property purchase..$ 300,000.--

$681,069.76

The account shows receipts from Capital Stock, loans, and all sources, other than ore production amounting to..... $686,192.16

Expended in purchase and Development as shows above..... $681,069.76

Leaving a balance..... $ 5,122.40

Mostly in timber, mining supplies, etc. on hand, May 31st/98.

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IN conclusion, I recomend suspension of operations in which your company is engaged, both in the Austin Tunnel enterprise and in the Union Mine.

Very truly yours,

Signed James D. Hague.