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San Francisco, June 1897. 4

Homestake Claim
Duplex
Brooklyn
Antelope
Last Chance
Defiance.

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The mines and mining claims known as the property of the Silver Peak Gold Mining Company, in Esmeralda County, Nevada, were first opened or located more than thirty years ago and have since been worked with more or less activity from time to time and with some long intervals of suspended operation.

The first mill was built about 1868. At this time Mr. Ellsworth Daggett, who has assisted me in this recent examination, was in the Company's employ for a few months; and Mr. F. F. Thomas, now manager of the Gwin Mine in California, was assayer for the Company then and for two or three years thereafter.

According to information derived from these sources, the Company treated in their first mill about 2500 tons of ore; and in the remodelled mill, containing at first 20 stamps, for one year and later, 30 stamps for the following year, and running regularly for exactly two years (1870--1871), crushing about 1 1/2 tons of ore per stamp, per day, it is estimated that 25,000 tons of ore were treated, the average assay value of which, according to Mr. Thomas, was $20. to $21. and the realized yield a little over

$14. per ton.

Mr. Thomas writes that the realized yield of the ore was about 70 per cent of its assay value and that the assay value of the tailings was $6.66 per ton.

Some years later (1884—1889) Mr. John Chiatovich, of Silver Peak, worked the mines on lease or royalty. His ore tonnage, amounting, according to his statements of account, to 11,000 or 12,000 tons, is said to be closely estimated, as freight or hauling charges were based thereon. He shows Mint receipts or other sufficient vouchers for $205,843.09, as the realized value of bullion produced from the ore. He shows also Mint receipts for $23,110.56, as the realized value of bullion produced from tailings, derived in part from the same ore which yielded the above mentioned bullion. The tailing tonnage is not precisely shown; the average assay value is said to have been about $6.50 and the yield $4. to $5. per ton.

From these Chiatovich data it appears that 10,850 463/2000 tons yielded $197,596.63 or about $18.21 per ton of ore, not counting any additional yield obtained from working the tailings of the same.

In 1892 and 1893, Mr. S. R. Wasson, now the Company's resident agent at Silver Peak, worked some of the mines on royalty. He says he mined and worked about 3300 tons from various sources. He shows precise returns for a part of this, 1965 tons, which yielded $32,019.31, or $16.29 per ton.

In later years Mr. L. J. Hanchett has worked the property under lease. No information concerning his operations has been obtained from him; but sundry data from other trustworthy sources indicate that he has worked 7500 to 10000 tons and perhaps more, varying in yield from $8.50 to $15. and averaging probably $13. per ton; in addition to which he has treated something near 13,000 or 14,000 tons of tailings, partly from his own ore product, which yielded about $53,000 or about $4. per ton of tailings.

The foregoing data fully account for a production of 50,000 tons of ore, yielding, on first working, an average of about $15. per ton, not counting additional product from further treatment of the tailings.

The first yield of the ore being about 70 percent of its assay value, the gross value contained in the entire output would be not less than $1,000,000.

Hitherto these mines have been operated under very adverse conditions, having no supply of water or fuel for purposes of power. A spring of limited capacity, several miles distant, furnishes water sufficient only for subsistence at the mines. The nearest water supply for milling purposes, in a small way (30 stamps), is at the town of Silver Peak, nine miles distant, to which place all the ore product has been transported, partly by pack animals or tram road and all finally by wagon, at a high cost per ton. Under these circumstances it has been impracticable to deal profitably with ore yielding less than ten or twelve dollars

per ton. For those reasons the Company and its lessees have sought to mine only ores of the better class, extracting from the mines everything of a profitable quality and leaving everything else behind. It is obvious that by this method of operation a large amount of ore might remain available, of such quality that it could be worked with profit by providing cheap power at the mines and requisite facilities for mining and milling in a large way.

It has been proposed to effect these results by conveying water to the mines from the White Mountains, a high range 40 to 50 miles distant, and furnishing power by electrical transmission from the same source.

With these propositions in view it was the purpose of my recent examination to learn the present condition and resources of the mines, to estimate the quantity and quality of the now developed or available ore and to judge of the promise and prospects of the property for future production on further development; also to examine the sources of water, estimate its quantity and capacity for power and consider the feasibility and advisability of conveying it to the mines and of developing and transmitting power as proposed.

Considering, first, the mines and their workings, it will be seen by reference to an accompanying map, showing the general relations of all the Company's mining properties, that its gold producing claims form a more or less compact group, aggregating generally a mile in length

[illegible] which, trending from the northwest to the southeast and extending from the Duplex and Brooklyn on the northerly to and including the Bangor, Defiance and Antelope at the southerly end; beyond which, the narrow claims of the Western Soldier and the Last Chance extend still further toward the southeast for a distance of nearly half a mile more.

The Homestake claim, shown on the map, lying parallel to the Western Soldier, is not a part of the Silver Peak Company's property.

The visible occurrences of ore, on which any work has been done, are indicated on the map here referred to by a pink tint; and it will be seen that nearly all the workings of much extent or importance are centred in the claims known as the Crowning Glory and the Drinkwater.

At the southeast end of the property the workings opened on the Western Soldier and extended thence into the Homestake, a neighboring property, have yielded several thousand tons of ore of very good quality. The Last Chance has also yielded a little ore, equally good. At the northwest end the New York workings are said to have produced from the outcropping quartz, between one and two hundred tons of high grade ore. Excepting these lots, the entire product of the mines may be said to have been derived from the central area, a few hundred feet in length and width, covered by the Crowning Glory and Drinkwater claims.

A second map, drawn to a scale of forty feet to one inch, shows in plan or horizontal projection all the workings from which the product of the mines, except as above stated, has thus far been derived.

The most extended and most productive of these openings and workings have been made in what is described as the Crowning Glory Claim. They consist largely of open cuts and excavations made on the hillside sloping generally to the northeast, where erosion has uncovered and disclosed a large body or several bodies of quartz, near or just beneath the surface. Many thousand tons have been quarried here from these open workings, which have been extended in several places into the hill, following the ledge along its course under cover or beneath the surface on its dip.

They show what is left of large bodies of quartz, ten to fifteen feet, or more, thick in some places and averaging six to eight feet for considerable areas These excavations and workings are included within an area of 400 to 500 feet long, from northwest to southeast, and 300 to 500 feet across, measured on the slope of the hill or on the northeasterly dip of the body or bodies, say at 30 to 35 degrees inclination.

The accompanying map shows the general relation of these workings to each other.

A deep open cut, commencing near the wagon road, at a point indicated on the map by Station 21, driven generally across the trend of the formation and cutting several smaller bodies of quartz, in which tunnels have

been opened near stations marked on the map 37, 38, 39 and 40 leads up to the largest of the workings on this claim, in which stations 42, 43, 44 and 45 may be noted. These workings lie within an area of about 150 by 175 feet, being partly under cover as shown on map. They show considerable remainders of quartz in croppings or exposed about the openings. Samples of quartz broken here show assay values in gold of five or six to ten dollars. The underground workings show little quartz along the edges, indicating the probability that the limit of the ore body in that part of the ground has been reached.

The tunnels opened at Stations 37 and 39 seem to be on separate and smaller bodies, as the excavation is mainly in poor ground, showing quartz of limited extent.

To the southeast of the larger cut just mentioned is a smaller open working with an underground stope which, together show a length of 250 feet by a width of 125 feet. Much quartz has been taken from these workings, which still show pillars and other remainders of a ledge 15 feet or more, thick in some places. Three or four samples of these exposures yielded assays of $6.20, $10.54 and $17.57; the remainder, an equal number, showed results of one or two dollars per ton.

Further to the southeast is a series of workings in what is known as the Bridge open cut, being mostly on the Defiance claim and partly on the Bangor and Blair, from which considerable amounts of ore have been taken.

Samples from these workings, with one or two exceptions, show generally low values, one or two dollars per ton, for the quartz in sight, with indications that the profitable ore of the main body does not extend into this ground.

Higher up on the hill, west of the last mentioned cut, and southwesterly from the main central openings, are other openings, distinguished on the map by stations 26, 27 and 28 and being on the Blair claim. The workings at 27 are said to have furnished a considerable amount of very good ore. Several samples taken from the faces of quartz in the stopes, gave high results, showing $14.47, $17.57 and $23.77, in gold, per ton. These were from ledges four to six feet thick. A sample of ore taken from a dump at station 28 yielded $13.43. These workings are in line with the main ore bodies lower down the hill, and are probably similar in character and quality. So far as opened and shown on the map, their extent is limited and they are close to the apex.

It may be said in general of the workings on the Crowning Glory and neighboring claims just described, that the ore body or bodies have yielded probably 25,000 to 30,000 tons, perhaps more, of ore, which has yielded twelve to fifteen dollars per ton, with accumulated dumps, containing many thousand tons of lower grade, probably four to five dollars per ton.

These workings show much quartz still available, though no well defined, measurable or easily

estimated bodies are developed.

The average value of all samples taken, including the higher values from pillars, ore dumps and the better portions of the ground, would be about seven dollars per ton; while the average of the lower quality ore by itself would hardly be over two or three dollars per ton.

The average width sampled for thirty or more samples taken in those parts, would be about six feet.

The Drinkwater workings are wholly underground. The mine is opened on a body of quartz, which has a general course of northwest and southeast, dipping northeasterly at an angle of about 30 degrees. This body is, in a general way, parallel to the body in the Crowning Glory and overlies it in formation, probably at a distance of 50 to 100 feet. The main tunnel enters the hillside, near station 31 on the map, a short distance from the mouth of the long open cut, leading to the workings of the Crowning Glory. The Drinkwater tunnel follows the ledge from the entrance northwesterly a distance of about 300 feet; and extensive openings have been made above and below the tunnel level, as shown on the map. Stopes have been worked upward from 75 to 100 feet, from which a large amount of quartz has been mined. Wide stopes have also been worked to some little depth below the tunnel, near its inner end, below which also winzes have been sunk to a depth of 70 or 75 feet and one or two drifts or crosscuts have been made to prospect the ground.

The ore body has shown a variable thickness, reaching 15 feet in the wide places and showing 5 to 8 feet in other parts. The ore of this mine is said to have been of excellent quality and generally better than the ores of the Glory. Nearly all the ore worked by Mr. Chiatovich, over 10,000 tons probably, came from this mine, and appears to have yielded $15. to $20. per ton.

Excepting a few pillars, all the known ore of this quality has been worked out. The mine contains no developed reserves which can be counted on as a source of profitable ore. There is more or less quartz visible, but no reserves to be measured or estimated.

At the inner end of the mine workings is a winze, sunk below the bottom of the stopes, and in a short drift, driven northwesterly from the winze, there is an exposure of quartz 5 feet wide, but not of much extent, which gave two assays, one $8.27 and one $21.71 per ton (see samples 367 and 368); but with this exception there is no quartz of value to be seen in the bottom of these workings, either in the bottom drift or in the crosscuts; and the prospects for the continuance of this ore body in depth or in a northwesterly direction are not favorable.

Just outside the main tunnel, near the Blacksmith shop, a small shaft has been sunk on the dip of the ledge to a depth of about 70 feet, opening a body of ore, which has been stoped out to some extent, as shown on the map. A drift has been opened on this ore in both directions, the northwesterly face showing quartz 5 feet thick, low

in value, $1.03 per ton. Further back in the drift another sample gave $6.20 per ton. The southeasterly end of this drift is caved and inaccessible. It is said that a winze is sunk there in the footwall, at an angle of 45 degrees (southwesterly) to a depth of 87 feet on the incline, which at 40 to 45 feet cuts another ore body, 19 to 20 feet thick, showing ten to twelve dollars on assay and supposed to be the Crowning Glory ore. This development could not be inspected.

Still further to the southeast, across the road and canyon, a tunnel described as the Case Tunnel, is driven into the hill on what is the extension in that direction of the Drinkwater ledge.. The tunnel is about 60 feet long, shows the regular formation with more or less quartz, of which two samples showed $6.20 and $15.60 per ton in gold

The total length of the Drinkwater workings, measured from the inner or northwest end of the main tunnel to the inner and southeast end of the Case Tunnel, just described, on the southeast side of the canyon, is 400 feet. Measured on the dip of the ore body, from the upper workings to the bottom level, the longest distance may be 150 to 200 feet over all. Only a part of this area has been worked or found orebearing. The worked portion shows a ledge of quartz which, in places, is more than 15 feet thick and, for a large part of the workings averages 5 to 6 feet thick. At the inner, northwestern, end and bottom of the main workings, the quartz is small and scant. At the outer southeastern, end, in the Blacksmith shop workings and Case tunnel,

it shows more promise of continuity.

The persistence of this body in depth is indicated, if not proven, by the developments made in the Brunton Shaft, a vertical sinking, about 250 feet Northeasterly and about 75 feet vertically lower down the hill, at which point this shaft is sunk, about 105 feet deep and has there cut a ledge of quartz which has the same course and dip as the body shown in the workings above. The ledge has been opened by short drifts each way from the bottom of the shaft, northwest and southeast, in all about 50 feet. It varies in thickness from 3 to 9 feet, somewhat divided into seams in the thicker portion. It is said that two lots of ore have been taken from these drifts, of which one lot of 250 tons is reported to have yielded twelve dollars per ton and one lot of 100 tons is said to have yielded nine dollars.

No other work has been done here and no crosscut has been driven into the footwall to determine the presence of the underlying Glory or other vein.

Four samples were taken from these drifts. One at the southeast end from seam four feet thick gave an assay of $25.84. Sample from a seam underlying the last named, one foot thick, gave $1.03. Sample at bottom of shaft on southeast side from six feet of ledge, gave $2.07. Sample from northwest end of drift, nine feet wide, gave $4.13.

The average thickness of the vein would probably be about six feet, while the average of all the assays of samples taken would be about $7.

It is said that this shaft was sunk some eight or nine years ago by Mr. Brunton, an engineer, for the purpose of prospecting and developing in depth the Drinkwater and Crowning Glory ore bodies, during the progress of some negotiations which were then pending for the purchase of the property by his clients.

Still further to the northeast, about 575 feet horizontally from the Brunton shaft, is the mouth of the Hickey Tunnel, driven into the hill towards the Brunton shaft and intended for the deep development of the ground underlying the ore bodies of the Drinkwater and Crowning Glory claims.

This tunnel is now about 338 feet long and its face is 235 feet from the Brunton shaft. It is very nearly on the level with the bottom of that shaft, which is a few feet to the northeast of the projected line of the tunnel.

This tunnel, if continued as projected, will underrun the Drinkwater, Crowning Glory and Blair claims, at a depth of 200 to 400 feet below the croppings of the ore bodies already known and worked. It affords a most excellent method of prospecting the ground in question and determining the continuity, character and value of the quartz bodies in depth.

This work was begun two or three years ago by Mr. Hanchett, whose active operations at the mine ceased some time since and it is now idle. It is a

project of much importance and should be continued as the most efficient method of determining the future value of the property.

From the foregoing it appears that the main bodies of quartz, which have yielded a large amount of good ore, have been worked out, so far as the visible ore of profitable quality is concerned, leaving only a remainder which is too poor for profit under conditions hitherto existing and much of it too poor to be mined profitably under any obtainable conditions.

It also appears that the profitable operation of the property in future depends not only upon the successful provision of needed facilities for mining and milling in a large way, but also upon the development of resources not yet disclosed or in any way assured. The continuity of the ore bodies in depth and their extension to the northwest and southeast, along the course of the formation remain to be shown by further and deeper development.

It may be said here that the ore bodies do not appear to be formed in fissure veins, which might be presumed to have great length and depth. They seem rather to be lens-shaped bodies of variable dimensions, some large and some small, thinning out to an edge in all directions, all conformable to the bedding of the enclosing formation, which consists largely of irregularly stratified limestones, schists, shales, quartzites et cetera and segregated

bodies of quartz therewith associated. The sedimentary or bedded formations are traversed and penetrated by dykes or intrusions of porphyry or other rocks of eruptive origin, which probably have had to do with the mineralization of the ore bodies.

In this mode of occurrence there may be and need be nothing inconsistent with a very great extent of ore bearing formation, both in length and depth; and the beds or zone in which the ore bearing quartz bodies occur, or are to be looked for, may be as unlimited in extent as any fissure vein.

It seems, in fact, probable that such a belt or zone does extend in a northwesterly and southeasterly direction along the line on which the outcrops of quartz appear and on which the mining locations of the Company have been made, from the Chieftain and New York to the Western Soldier and Last Chance.

The main ore bodies described or referred to in the foregoing pages, occur within an aggregate length of about 500 feet along the formation. The Company's locations or mining claims extend for some thousands of feet in both directions from this central portion. In the northwesterly direction, the surface shows many quartz outcrops here and there with strong indications of large bodies. Samples of these croppings, taken at or near the northwest end line of the Blair and Sentinel claims and near the Valiant ground, show very little value, one or two dollars per ton.

The New York claim shows large croppings of quartz, on which some work has been done. Mr. Wasson says that while working the property as lessee, he took 140 tons of quartz from these croppings, which yielded from $35 to $40 per ton. Little work has been done here beyond breaking the ore from surface outcrops of the ledge. No sinking or other underground development has been made, except by one prospecting tunnel, driven in towards the place of the vein, but not reaching it or disclosing any quartz of value.

Samples broken here from the ledge formerly worked by Mr. Wasson gave high results, one showing $80.62 and another $9.30 per ton. A sample from a remaining ore dump gave $16.54.

The Chieftain claim shows large exposures of quartz opened by surface stripping and a single short tunnel. Two samples broken here gave $1.03 and $2.07; a sample from a dump of ore selected for shipment gave an assay of $9.30.

In a southeasterly direction from the central main workings, and 200 to 400 feet southeasterly from what is known as the Bridge open cut, is a series of openings on the Defiance and Bangor claims and an included claim known as the Glory, on which a good deal of prospecting work has been done with some more or less extensive mining. Some of these operations are said to have produced ore of

high grade, $50. to $60. per ton; but this seems to have been from ore streaks or occurrences of very limited extent. With two or three exceptions the samplings there indicate very low values for the quartz in sight; and much of the work is quite unpromising for quartz of any value whatever.

Still further to the southeast, and about half a mile from the main workings of the Crowning Glory and Drinkwater, is the mine opened on a small claim known as the Western Soldier, which is 1800 feet in length by 106 feet in width. It shows the outcrop of a ledge or an ore body, crossing the claim diagonally, from side to side, and showing about 180 feet of apex between the sidelines. The ledge has a course of about north and south and dips to the east flatly. The ledge is irregular in width, varying from two to ten feet. The ore of this mine is of very good quality and it has been worked considerably. The incline shaft is 320 feet deep and the ground on both sides has been stoped as shown on map, to a depth of about 200 feet, below which point the vein or ore body seems irregular and uncertain. The incline, below the 200, shows mostly country rock with little quartz. In the bottom level on the south side, there was but little quartz visible at time of my visit. On the north side a short drift showed a body of quartz, five feet thick of good quality, as shown by samples assaying from $13. to $26. per ton.

This mine has been a good small producer and is likely to yield a considerable quantity of ore

in future, but it is not at present visible in blocks that can be measured or estimated in tons.

It will also be noted that the ledge crosses the claim from side to side and dips at such an angle that nearly all the workings are beyond the sidelines of the claim and in the neighboring property, the Homestake.

The Soldier claim would seem to be entitled to a very small part of the ore body so far developed and worked out.

At the distance of about a quarter o of a mile from the Soldier claim, and located on a claim called the Mary, east of the Homestake claim, a tunnel, known as the Chiatovich Tunnel, is now being driven westward, as shown on the map of locations, to cut the Soldier-Homestake ledge or any other ledge or ledges which may be encountered.

The relation of this tunnel to the Soldier and Homestake claims and ledge is indicated by a sectional view on an accompanying map.

This tunnel has been driven about one thousand feet. For the greater part of this distance it traverses the formation without much show of quartz. At about 440 feet from the mouth, some work has lately been done on a vein or body of quartz, which was crossed by the tunnel some time since without attracting much attention or showing signs of much value. At a little distance upward, the vein has increased in size and, although not very well defined or regular in appearance, it shows a considerable width of quartz of excellent quality, which may open, on further

development, into an important body of ore. Two samples were taken here from a ledge showing a width of about two feet, one of which yielded about $40. and the other $64. per ton.

Beyond the Soldier is a small claim, known as the Last Chance, also about 100 feet wide, on which some small openings have been made, on an ore body of apparently limited extent but good quality. Some samples were taken here showing good values. Leasers have worked several lots of ore, of 60 to 80 tons each, which have yielded from $20. to $30. per ton. The developments here are, so far, too limited to indicate more than the occurrence of very good ore without showing it in quantity.

During the operation of these mines and the production of 50,000 tons, or more, of ore containing fifteen to twenty dollars per ton, there has been a large accumulation of lower grade ore, necessarily broken in the process of mining the better quality, but left at the mines, being too poor for costly transportation and milling. These dumps are mainly at the open workings of the Crowning Glory and at the mouth of the Drinkwater tunnel. I have not attempted an estimate of their quantity by any careful measurements, but think the estimates heretofore made by others, of 10,000 to 12,000 tons, likely to be confirmed by survey. They are likely also to contain from three to five dollars in gold per ton, judging from general probabilities and from available information concerning the results of tests made by others, to determine their value.

Much money has been expended in wagon roads and in connecting them with the mines by tramways and other means of communication. There are no other improvements, worthy of mention, at the mines.

The milling facilities of the property have hitherto been wholly at the little town of Silver Peak, about nine miles distant and 2400 feet lower in altitude. The ores have all been carried there at a cost of several dollars per ton, according to circumstances. At the present time the cost of hauling ore, not including packing from points remote from the wagon road, is about $1.75 to $3.00 per ton.

The Company's mill at Silver Peak, contains 30 stamps. It was rebuilt, with repairs and improvements about two years or more ago, by the lessee, Mr. Hanchett, who has since kept it partially employed, from time to time. Its full capacity would be 50 to 60 tons of ore per day. It is in fair running order. It has also a cyanide plant for working tailings.

There is sufficient water obtainable at Silver Peak for this mill, but the supply is limited and the water is not very good.

For the larger operation of these mines it is now proposed to bring to them a sufficient water supply for mining and milling purposes from the White Mountains, a high range, 40 to 50 miles west of the Silver Peak Hills, and to furnish by electrical transmission from the

same source all power desired for the operation of mining and milling machinery.

This scheme involves (1) the conveyance of a water supply from its source, about 35 miles distant, in a pipe line, which must first cross an intervening valley, 25 miles wide, under a depression, at the lowest point below the head of the pipe line of 2500 to 3000, or possibly 3500, feet, as may be determined; then pass over the Silver Peak Hills, at an elevation of 2000 to 2500 feet above the valley bottom, more or less, according to the point chosen for passage, and thendescend 500 to 1000 feet below the summit, to the mines on the eastern slope; (2) the construction of a pipe line of large capacity to convey water from the chosen source to the site of the proposed power plant, about six miles distant and about 1500 feet lower down the provision of an electric plant for the development of power and of a transmission line to convey it, 25 miles or more across the valley and mountain summit, from the Power House to the mines on the eastern slope of the Silver Peak range.

The proposed source of water is Indian Creek, in which two streams, issuing from neighboring canyons of the White Mountains, are joined and flow as one from the foot of the range, down the broad slopes of the valley to the lands below.

The junction of the streams is about 1500 feet or more, in elevation above the bottom of the slope and a pipe line taking water from the stream, near and below

the junction of the two branches, could deliver it, within a distance of five or six miles, at the site of a power plant in the valley, under a pressure due to about 1500 feet of elevation.

In round figures, water delivered at the proposed Power Plant under this head, would be effective for the development of about three horse power per miners' inch (as measured under a six inch pressure and equal to about 1 1/2 cubic feet per minute).

The quantity of water carried by the stream just below the junction, at the time of my visit (end of May), I estimated at 460 miner's inches.

Above the junction the two branches are known as Indian Creek (the south branch) and Middle Creek (the north branch). The latter seems to be the larger, my estimate of the south branch being 172 inches and the north branch 288 inches. Following the north branch up above the junction for several miles to a point known as the "Ice House said to be six miles from the junction and twelve miles from Mr. Chiatovich's ranch in the valley, the altitudes indicated by aneroid barometer, were

Above sea level----------about 8800 feet
Above junction of streams----------about 1650 "
Above bottom of valley----------about 3500 "
Above summit of Silver Peak Hills at the
pass of the wagon road----------about 750 "
Above other eligible passes said to be much lower 1000 "
to perhaps---------- 1500 "
Above the mines----------1500 to---------- 1700 "

To supply the water required for mining and milling operations, at the mines and mills, it is proposed to convey a sufficient quantity by pipe line, taking water from the Middle Creek branch at a point high enough above the summit of the Silver Peak Hills to afford the requisite head to carry the water by gravity over the range.

As the "Ice House" is 750 (perhaps 800) feet higher than the summit of the hills at the wagon road pass and as the pipe line may cross the range at a point considerably lower than the summit of the wagon road, it will clearly be possible to take water from the Middle Creek branch at some point above the junction of the branches, high enough to give the desired head to cause the water to flow over the range.

Presuming that the quantity of water to be diverted from the Middle Creek branch for this purpose may amount to 100 inches, and assuming the average supply of both branches after joining, at 460 inches, there would remain in the stream below the junction, say 360 inches, available for the development of power, which at three horsepower per inch, would yield 1080 horsepower at the Power Plant, available for transmission to the mines, 25 miles distant.

Just what percentage of this would be rendered effective at the place of destination and application of the power is uncertain, but, allowing for the losses in transmission and in conversion through electric motors air compressors and other appliances, it would not be safe to rely on more than 60 per cent of actually effective power, or say, 650 horse power at the mines and mills.

This would be a small limit for the air-compressing, hoisting, milling and other machinery, likely to be needed for large operations.

I have not attempted any careful or detailed estimate of the cost of plant required for conveying water, as proposed, or for developing, transmitting and applying the power at the mines and mills but, including all, it would certainly amount to many hundreds of thousands of dollars, a very large investment to be based upon a water supply, likely if not sure to be found inadequate to the demands of the business, if enlarged as proposed.

The waters of Indian Creek are claimed by Mr. John Chiatovich for the irrigation of his ranch, which lies in the valley, covering about 2000 acres of land, watered by that stream. This ranch and water right once belonged to the Silver Peak Mining Company and Mr. Chiatovich acquired them many years ago by purchase at sheriff's sale or some similar legal process. He has had some litigation with another claimant concerning the water rights, which I am told, have been confirmed to him by decision of the Supreme Court. He claims and uses all the water in the creek for irrigation at the ranch. One or more parties (Hanchett or Roberts or both) have lately located claims for the water of the creek, several miles above the ranch, with the intention of taking it out for power and returning it again to the creek at a point above the ranch and still available for irrigation there, holding this to be no interference with the lawful rights of Chiatovich, who on his part, denies and resists their claims and has broken down their location dams,

holding that the water which he claims below cannot lawfully be so diverted and used above, even though returned to the creek above the ranch, where his use of it begins.

It is part of the projected scheme of the Silver Peak owners to buy Chiatovich's ranch with his water rights, intending as already shown, to divert and convey a portion to the mines, and to use the remainder for the development of power, returning the power-water, after such use, to the creek for irrigation of the ranch.

I understand that Mr. Chiatovich has never claimed the water for other uses than irrigation or for any use above his ranch, where the stream runs on public land. If it be lawful for others to enter upon this open land and take the water out of the creek, to use thereon for developing power, returning the water again to the creek for Chiatovich's use in the irrigation of his ranch, in accordance with his claim, then the recent locations or claims of Hanchett or Roberts might effectually prevent or interfere with the intended use of the water of the creek and its branches by the Silver Peak owners, relying only on Chiatovich's irrigation claim for their right to divert and appropriate it, as proposed.

I can hardly summarise the foregoing more briefly or more completely than I have already done in my telegraphic report under date of June 4th, in effect as follows:

The Silver Peak Mines have produced about 50,000 tons of ore, which contained an assay value of

twenty dollars and yielded about fifteen dollars per ton.

All ore of this quality hitherto developed has been worked out, leaving nothing but low grade ore in sight.

The outlook for future development of good and profitable ore is very uncertain.

The assayed samples indicate generally low values for the general mass of quartz now visible, much of which shows but little promise of profitable working under any probable conditions.

The proposed water supply is estimated at four hundred to five hundred miners' inches (six-inch pressure), thirty or more miles distant from the mines, with mountains probably 2000 (perhaps 2500) feet high to be crossed by pipe line.

Under present conditions of development I think the ore supply too small and too uncertain and fear the proposed water supply may be too limited, in any case, to justify such costly plant as would be required for conveying water or transmitting power as proposed.