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Item 1  
A. L. PAYNE

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REPORT ON THE MINING PROPERTY OF  
THE TALAPOOSA COMPANY, LYON COUNTY, NEVADA.

BY ROBERT PEELE, E.M.

NEW YORK CITY,  
AUGUST 6th, 1908.

New York, Aug. 6th, 1908.

Mr. George W. Phillips,  
34 Pine Street,  
City.

Dear Sir:-

In accordance with the arrangement made with you, I left New York on July 3rd, 1908, for Reno, Nevada, arriving July 7th. I reached Talapoosa in the afternoon of the same day and began the examination of your mining property on July 8th. My work was finished July 26th, and herewith I beg to hand you my report.

Yours very truly,

*Robert R. R.*

THE MINES OF THE TALAPOOSA COMPANY,  
LYON COUNTY, NEVADA.  
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L O C A T I O N.

This property is situated in the northwestern part of Lyon County, Nevada, about 28 miles in an air line South 80 degrees East from Reno, and 50 miles by wagon road. It lies nearly due south of Wadsworth, distant  $9\frac{1}{2}$  miles in an air line, or 16 miles by wagon road.

Reno, an important town of about 12000 inhabitants, and the business center of a large district, is on the main line of the Southern Pacific R.R., 244 miles from San Francisco and 542 miles from Ogden, Utah. It contains large business houses, which carry stocks of all ordinary mining supplies.

Wadsworth is a small town, formerly on the main line but by the relocation and straightening of a section of the railroad, is now left on an unimportant branch, about  $6\frac{1}{2}$  miles long, running one train per day each way from Derby, 27 miles northeast of Reno. Wadsworth serves at present, however, as the most convenient express and telegraph station for Talapoosa.

From Hazen,  $45\frac{\text{miles}}{\text{N.E.}}$  of Reno, the Nevada and California Railway branches off to the south, to the Tonopah, Goldfield and other mining districts, in southwestern Nevada. Apache Station, on this line, is 18.9 miles from Hazen and about 6 miles in a straight line from Talapoosa camp. The nearest point on this R.R. is about  $4\frac{1}{2}$  miles in an air line from the westerly end of the property, and a rail connection could be built with no great difficulty. Virginia City, containing the famous mines of the Comstock Lode, lies south

60 degrees west of Talapoosa, about 17 miles distant in a straight line.

A good wagon road, though of steep grade in the first half mile, leads from the camp, on the westerly end of the Indiana claim, to a point about midway on the Alpha claim (See accompanying map). A continuation of this road is partly cleared and is passable for wagons nearly to the mouth of the Dike Tunnel, on the westerly end of the Omega claim. This portion can be put in good order at small expense.

#### C L I M A T E .

The dry climate is perfectly healthy and most favorable for mining operations during the entire year. No severe cold is experienced in winter. The snowfall is light, usually lying on the ground but a short time and presenting no obstacle to work. In summer the temperature at the altitude of the claims (4925 to 5600 feet) often rises to 90 or 95 degrees in the shade but is usually lower, and in the absence of humidity is never oppressive. The nights are cool and comfortable. Throughout the year, as is common in Nevada, the precipitation, either in the form of rain or snow, is small.

#### W A T E R .

The Carson river flows through the valley to the south of the property, the nearest point being about 6 miles distant. In event of establishing milling operations, a low range of hills through which the river passes would furnish a good mill-site close to the northerly bank. The fall is slight, so that the water would have to be raised to the mill by pumping. Close to the present camp is a spring

excellent water for domestic purposes. The supply is not large, but might be increased considerably by damming the narrow ravine in which it occurs. A larger spring is situated about  $1\frac{1}{2}$  mile above the camp, in another gulch. The opinion is held that this could be developed to furnish enough water for a small mill. These springs are near the easterly end of the property. No water has been found in the westerly end, though some may hereafter be encountered in carrying mining operations to depth. A small quantity of water flows from a 70-foot tunnel in the bottom of Talapoosa Gulch, but it is negligible at the present time.

It should be stated that, about 9 miles from Talapoosa, there is a large water-power developed and ready for use at the spillway of the new Government irrigation canal, which takes water from the Truckee River, flowing from Lake Tahoe. The surplus water is discharged through this spillway into the Carson River, for distribution on a lower level. It passes through a steeply inclined, wooden flume, several hundred feet long, with a total fall of nearly 100 feet. The flume is 14 feet wide, and when I saw it (July 24, 1908) the water was discharging, at a high velocity, in a solid stream about  $1\frac{3}{4}$  feet deep. Lacking data as to the velocity of flow, the volume cannot be computed; but it is unquestionably sufficient to develop a large power, and the site is well adapted for the installation of a hydro-electric plant, at a moderate outlay.

#### M I N I N G   S U P P L I E S .

All ordinary supplies and mining appliances, including those for machine, blacksmith and carpenter work, are obtainable at Reno. The larger machine shop tools, and mining machinery, would come from San Francisco or Salt

The following costs will serve to indicate the range of prices delivered at the R.R. Station.

Drill steel - - - - -	-11¢ per lb.
Dynamite, 40% ngl. 500 lb. lots, - - -	13¢ " "
" " ton lots, - - -	12¢ " "
Blasting caps, quintuple, - - -	95¢ " 100
Miners' shovels, - - - - -	\$9.00 " doz.
Blacksmiths' coal, - - - - -	\$25.00 " ton.
Saved Timber, - - - - -	\$22.00 per 1000 bd. ft.
Boards, - - - - -	\$25.00 " " " "
Wagon freight from Hawes Station (on the Nev. & Cal. R.R. 14 miles from Hazen, on the main line):	
On timber, - - - - -	\$5.00 per 1000 bd. ft.
" other supplies - - - - -	\$4.00 per ton.

Food Supplies:

Meat, - - - - -	-6½ to 8½¢ per lb.
Bacon, - - - - -	15½¢ " "
Ham, - - - - -	13¢ " "
Flour, - - - - -	\$3.25 per 100 lbs.
Sugar, - - - - -	6¢ per lb.
Eggs, - - - - -	20¢ to 50¢ per doz.
Cheese - - - - -	20¢ per lb.

L A B O R .

A sufficient supply of skilled miners should be obtainable without difficulty at Talapoosa, taking into consideration the usual disadvantages attending the prosecution of work in a "one mine" camp. The nearest neighboring mine now in operation is the Ramsey-Comstock, at Ramsey, 4½ miles southwest of the western end of the property. The labor cost in Nevada is somewhat higher than in most the other mining states, except Montana, as shown by t

following list of wages:

	<u>per 8 hour shift.</u>
Miners of all classes - - - - -	\$4.00.
Blacksmith - - - - -	\$4.00 to \$5.00.
Machinist, - - - - -	do.
Carpenter, - - - - -	do.
Foreman, - - - - -	\$200. per month.

### GEOLOGY OF THE DISTRICT.

It is unnecessary here to enter into a detailed description of the geology of the district, but the mention of a few points will be useful. The property lies on a range of hills, reaching a maximum elevation of from 6000 to 7500 feet, and trending about South 45 degrees west along the northwesterly side of the Carson valley. This range is chiefly igneous in its origin, showing evidences of intense activity in several parts. In the immediate vicinity of Virginia City and the Comstock Lode, lying in the range about 17 miles south-west of Talapoosa, the rocks most closely associated with the mineral-bearing ground are: a granular diorite foot-wall throughout most of the productive length of the lode and a decomposed diabase hanging-wall. Quartz porphyry, with hornblende and augite andesites, also occur in the Comstock district, with other rocks of the igneous series. Almost the entire mineralized portion of the lode is inclosed by an area of extreme decomposition, specially on the hanging-wall side. But, the causes which produced the Comstock lode were so localized that the main body of the lode is hardly more than 10,000 feet long - the extreme length, according to Church, being say 22,500 ft. And, as the ore-bearing zone dwindles at each end

into forked branches, which finally pinch out, north and south, no connection need be looked for, other than a general geological one, with the property forming the subject of this report.

In the same range, to the north-east of Virginia City, there are several other known areas of mineralization, though of minor importance. Some have been worked to a limited extent, but the only mine now in operation in this belt is the promising Ramsey-Comstock, already mentioned as being  $4\frac{1}{2}$  miles south-west of the westerly end of the Talapoosa property. The Ramsey vein has dioritic foot and hanging-walls, the former being coarser grained than the latter. The hanging-wall diorite, probably the older rock, is greatly decomposed in the vicinity of the vein. The Rattler No.2, Ramsey-Ophir and one or two other small mines, adjoining the Ramsey-Comstock are at present idle. Between  $1\frac{1}{2}$  and 2 miles nearer Talapoosa is the Bennett group of mines, now abandoned. These workings which, together with some of those at Ramsey, were visited by the writer of this report, show geological characteristics not unlike those of the westerly end of the Talapoosa, specially in the neighborhood of the Dike Tunnel, as will be noted later.

#### LOCAL GEOLOGY.

The hills on which the Talapoosa claims are situated rise to an elevation of 5600 to 5800 feet, and are rounded for the most part, their generally steep slopes being covered by decomposed matter and surface wash. Float quartz, carrying gold, is plentiful on a number of the hill-sides.



Evidences of extensive outflows of lava exist in masses of broken and partly rounded boulders of melaphyre, capping most of the hills throughout the entire length of the property and tailing off down the slopes. That there has been a large amount of erosion is indicated by the considerable depth of wash and re-deposited material revealed by some of the workings. Such redeposition of quartz and dioritic rock - in both angular and rounded fragments, partly cemented by clay and decomposed igneous rock- has been shown, in one place at least, to extend to a depth of about 100 feet.

Exposures of dioritic dike matter are quite common, the most notable of these is on the westerly end of the property, where a great mass of mixed brown and bluish, coarse-grained porphyritic diorite, rises precipitously on the hillside to a height of 30 or 40 feet; its area being 50 to 60 feet wide by about 400 feet long. This appears to be an extrusion through an older diorite of similar texture, having a bright blue-gray ground-mass, with large, well-marked feldspathic crystals. On the northerly side of the dike there is no sharp line of demarcation between the two diorites. The brown often penetrates into the blue diorite rock and one shades off into the other.

Resting on the southerly side of the younger dike is a heavy quartz vein, dipping quite flatly. Overlying the latter (on the south or hanging-wall side) is an area of highly decomposed eruptive matter, which in places has the consistency of an unctuous clay. The decomposition here exhibited extends to the full depth of the present workings on this vein and probably goes still deeper.

On the opposite( northerly) side of the extruded dike is a large, comparatively low-lying area of dioritic rock, seamed with veins in several directions and bounded on its upper or northerly side by another zone of decomposition. Taken as a whole, this eruptive area forms a prominent feature of the westerly end of the property.

About 1500 feet east of the large dike, and across a low "draw", two shafts, 30 and 96 feet deep, respectively, have been sunk mainly in wash and re-deposited material, consisting of clay and decomposed feldspathic matter, containing quartz pebbles and boulders; generally more or less rounded. Quartz veins appear in one or two of the drifts from these shafts, but no large or well defined vein. The surface here shows much float quartz, some of it carrying fair gold values.

Several less prominent igneous outcrops appear farther to the east. One of them; on the Equity claim, exhibits a more complex character, being composed of two members; that which is probably the younger being a hard, brittle quartz porphyry, while the other is a coarse-grained diorite resembling in physical and mineralogical character the large dike to the west, already referred to. Two low-grade quartz veins accompanying these rocks, their strikes being nearly at right angles. Still farther east, in the upper part of Talapoosa Gulch, a little over three-quarters of a mile from the Dike Tunnel, are several prominent outcrops of dioritic porphyry, for the most part highly decomposed. They are usually accompanied by brecciated masses of quartzose material, mixed with igneous rock in an advanced state of decomposition. Bordering these outcrops on the north and west are large areas of darker igneous rock, comparatively little decomposed, and evidently resulting a later outflow. The erosion in Talapoosa Gulch has

great, but has not revealed any quartz outcrops of importance.

C L A I M S .

The patented claims owned by the Talapoosa Company comprise the following, each claim measuring 600 feet wide by 1500 feet long, except when stated otherwise.

- |                        |   |
|------------------------|---|
| 1. Porto Rico,         | 10. Kansas,                                 |
| 2. Indiana,            | 11. Equity,                                 |
| 3. Talapoosa,          | 12. Alpha,                                  |
| 4. Texas,              | 13. Alpha Fraction, about 100'<br>(x 1500') |
| 5. Kentucky,           | 14. First Strike,                           |
| 6. Cuba,               | 15. Second Strike,                          |
| 7. Virginia,           | 16. Omega,                                  |
| 8. Virginia Extension, | 17. Justice,                                |
| 9. Georgia,            | 18. Justice Fraction, 100' x 1500'          |

All these have been duly surveyed, and the work thereon platted, as shown by the accompanying maps, numbers 1 and 2, to which reference is made. In addition to the patented claims the Justice Extension, and the Hill Top and millside claims, north of the First Strike and Second Strike, have been located to protect possible extensions of veins. The total length of the property, measured along the approximate axis of the claims, is about 11700 feet, with a width for the most part of 1200 feet. It must be said at the outset that at present some of these claims show nothing of value, so far as any discovery or development of mineral veins is concerned.

For convenience in describing them, the claims may be divided into two groups.

In the first or easterly group are those contiguous to Talapoosa Gulch, viz: Porto Rico, Indiana, (on the

end of which the camp is situated), Talapoosa, Texas, Kentucky Cuba and Virginia .

In this report these will be called the Talapoosa Gulch claims.

The second group, forming the westerly end of the property, comprises the following claims: Alpha, Alpha-Fraction, Omega, Justice, Justice Fraction, First Strike and Second Strike.

These will be called the Dike Vein group.

Between these two groups are the Georgia and Virginia Extension, which do not require further specific mention, for the reason above stated. The indications on the Equity claim will be noted briefly, after the Talapoosa group.

All the patented claims are well marked by wooden stakes, painted white and bearing the respective names and description as required by law.

#### DESCRIPTION OF THE WORKINGS.

##### TALAPOOSA GULCH GROUP.

This part of the property lies nearest the camp, as at present established. Passing nearly through the center of the area is the deeply eroded gulch, which exhibits evidences of strong igneous action on both slopes, though chiefly on the westerly. Reference to this has been made under the head of "Local Geology".

TALAPOOSA TUNNEL. This tunnel begins in the easterly end of the Kentucky claim and extends into the Texas. (See accompanying map). The main tunnel has a total length of 510 feet, with two branches as shown. Near the mouth the tunnel courses N. 60 deg. E., but varies in direction, thereafter, in following several small veins and stringers. Such dips as were observable vary from 30 to 40 de-

degrees to the south-east. At a point about 110 feet, in from the mouth of the tunnel is a stope, extending to a height of 12 feet above the floor, with a length of about 16 feet, and which is said to have contained a bunch of ore of fair grade. But this ore pinches out in both directions. The short branch to the right also shows a little ore, though of low grade. The branch to the left is in barren rock. A sample taken four times across a width of  $4\frac{1}{2}$  feet, near the inner end of the tunnel, assayed .04 oz. gold and .38 oz. silver per ton. (\$1.00). At 95 feet from face, another sample from a width of  $3\frac{1}{2}$  feet, gave .02 oz. gold and .43 oz. silver per ton. (68 cents). A third sample, from the wall close to the short branch to the right, gave .04 oz. gold and .40 oz. silver (\$1.03). Systematic sampling of this tunnel was unnecessary, as the owners had previously taken 105 samples, of an average value of .068 oz. gold and 1.33 ozs. silver (\$2.10). Another series of 109 samples gave an average value in gold of .02 oz. (40 cents): the silver contents not recorded.

The greater part of this tunnel is either in decomposed country rock, or has followed stringers and broken areas of quartzose material, carrying small amounts of gold and silver. No defined vein is shown, though quartzose matter- largely in boulders and pebbles, mixed with clay- appears in several places, with some appearance of vein formation. The origin of this redeposited gold-bearing material is yet to be discovered. No vein outcrops exist on the hillside above the tunnel, and two small pits near the summit show nothing of commercial value.

About 120 feet N. 30 deg. west from the mouth of the tunnel is a pit, 8 feet deep, with a 7 ft. drift. It shows what seems to be a gash vein, one foot wide near the surface, and pinching out in the bottom almost completely.

A general sample is stated to have given \$6.00 per

ton, but there is no quantity of ore.

PEPPER TUNNEL. This is driven into the north-westerly side of the gulch, close to the bottom, and is situated in the northwesterly corner of the Cuba claim, 375 feet nearly west of the mouth of Talapoosa Tunnel. Its length is 75 feet, course S. 55 degrees West.

The tunnel follows a narrow, imperfectly defined seam part of the way in, but most of its length is in re-deposited material and decomposed igneous rock, with iron-stained streaks and stringers. Rounded fragments, including some quartz, occur in places, with no regular vein formation. In the mouth of the tunnel is an 8 ft. pit, showing two small iron-stained stringers in soft, highly decomposed porphyritic material (probably diorite). A number of samples taken by the owners show assay results from traces to a few hundredths of an ounce of gold.

ALFONSO TUNNEL. 600 ft. south-west of the Pepper tunnel, and close to the westerly side line of the Cuba claim, is driven from the bottom of the gulch. It is 80 ft. long, course N. 78 degrees West, wholly in dioritic rock, with the bluish ground-mass characteristic of much of this district. No vein appears, though there are some indications of quartz just above on the hillside.

Four pits, sunk in the gulch bottom to find water, are distributed throughout a distance of 825 feet, in the vicinity of the Pepper and Alfonso tunnels. They are in the wash and soft, decomposed rock.

On the steep westerly side of the gulch near the center of the Virginia claim, 450 feet due west of the Alfonso tunnel, and about 200 feet higher, is an old prospect shaft, about 60 feet deep. It is sunk in material similar to that of the Pepper tunnel, and what is left of its dump indicates nothing of value, though some fragments of quartz taken from it appear below in the bottom of the gulch.

mediately below the shaft is a large mass of brecciated material, consisting of decomposed coarse porphyritic rock, with angular fragments of quartz. It shows no vein formation. Another similar mass occurs close to the discovery stake of this claim.

Throughout nearly the entire length of the Virginia claim, and running to the head of Talapoosa gulch, into the north-easterly end of the Georgia, are a series of bold outcrops of yellowish, and in places iron-stained, partly decomposed dioritic rock, carrying a number of small quartz stringers. Intruded in one of the outcrops near the head of the gulch is a quantity of quartz porphyry, like that occurring on the Equity claim. The general course of these outcrops is N.20 degrees East. Bounding them on the north-west, and running along the top of the ridge, is an area of dark gray porphyritic diorite, some of it having a horizontal lamination.

CONCLUSION RESPECTING THE TALAPOOSA GULCH GROUP OF CLAIMS. Though they comprise an area of strong igneous action, the conditions now existing indicate that the occurrence of float quartz, brecciated material and the rather numerous ill-defined veins, is to be ascribed to the breaking up of the original rocks, with the veins therein contained, by a later outflow. A careful reconnaissance of these claims resulted in the finding of no strong quartz outcrops, which might serve as a starting point for further exploration. In my opinion much more work has been done here than the results obtained would seem to warrant.

I therefore recommend that no further work on the Talapoosa Gulch group be done. This conclusion applies also to the Virginia Extension and Georgia claims.

EQUITY CLAIM. Because of the rather peculiar conditions existing on the summit of the hill near the cen

ter of this claim, it deserves some consideration. A quartz vein, (strike, E. 75 deg. West, dip, about 60 degrees Westerly), outcrops prominently for a distance of a couple of hundred feet. Its foot-wall is a fine-grained, pinkish quartz-porphry, or rhyolite. The hanging-wall is dioritic in character, with a bluish ground-mass, like portions of the large dike on the Justice claim, noted under "Local Geology". On the hanging-wall side, near the outcrop, is a pit 5 to 6 feet deep, showing several quartz stringers, parallel to the main vein. Part of the bottom of the pit is in a red iron-stained vein matter, disintegrating in air. An assay of the latter gave .06 oz. gold and .58 oz. silver per ton (\$1.52 ).

The main outcrop indicates a vein of 8 or 9 feet in thickness, but this could not be definitely determined. A sample taken from six different parts of the outcrop assayed .04 oz. gold and .24 oz. silver (94 cents). Former assays from this vein have also given low results.

At the point marked by the discovery stake, on the top of the hill, this vein disappears and no trace of it is to be found in the mass of rhyolite and diorite standing on the summit and northerly slope. At the same point a second vein appears (strike, S. 15 degrees West, dip, 75 degrees or 80 degrees Northerly). At first glance it might seem that those two veins are one and the same, a sharp bend to the south having taken place. But this is improbable, as the change in course, as near as could be determined by a compass, is 90 degrees, and the dips would be in opposite directions if the two were rotated into a common strike. The hanging-wall of the northerly dipping vein, moreover, is rhyolite, and not dioritic, as is the case with the other. On the north side of the hill, beyond the rhyolite,



the dioritic rock reappears, the indications thus being that the rhyolite is the younger rock. As to which of the two veins is the older- if they were not formed at the same time- is an open question in the absence of any exploratory work at their junction.

CONCLUSIONS AS TO THE EQUITY CLAIM. Although the quartz outcropping on this hill is of too low a grade to be worked, better values may be found in depth and I would suggest that an inclined prospect shaft be sunk on the junction of the veins, following the ore to a depth of, say, 20 to 30 feet. This might be done at any convenient time, in connection with the new work to be begun on the Dike vein, referred to hereafter. Incidentally it should be noted that the strike of the Equity vein first mentioned (N.75 deg.W.) varies only 15 degrees from that of the Dike vein, and may possibly be its extension.

#### DIKE VEIN GROUP.

ALPHA CLAIM. In the north-easterly corner, near the trail, is a pit, showing nothing of importance. Outcrops of porphyritic rock appear in several places throughout the length of this claim, together with considerable quartz float, specially in the westerly two-thirds. Near the north-westerly corner of the claim, an outcrop of baked, feldspathic material occurs at two points, probably marking the line of contact of igneous outflows of different periods, and caused by alteration of the older.

A little to the east of the middle of the claim is the "Talc Tunnel", some 65 ft. long, and driven nearly north in highly decomposed material of igneous origin. It shows no vein formation, though some fragments of quartz are mixed with the "talc."

ROUND SHAFT. Close to the common-end-line between the Alpha and Omega claims, in a large area of abundant quartz float on the hillside, a round prospect shaft, 96 feet deep, has been sunk. A detailed examination, foot by foot, of the entire shaft revealed no regular vein formation, though the bottom appears to have reached more solid ground. The walls throughout are composed of partly rounded fragments of quartz and country rock, in a clayey matrix. A little disseminated pyrite occurs in some of the quartz. Much of this mass of re-deposited material underlying the surface wash evidently comes from a vein or veins which have been disintegrated by eruptive action, weathering and erosion.

Thirty-five samples, taken by the owners from the shaft walls, assayed from a trace to .10 oz. gold and .79 oz. silver per ton (\$2.45.), the general average being: .029 oz. gold and .45 oz. silver (83 cents). An assay as high as .5 oz. gold is said to have been obtained from quartz in the bottom of the shaft. A 5 pound sample of quartz taken from several places around the sides of the shaft just above the bottom gave .01 oz. gold and .70 oz. silver (69 cents). Another, from three small areas of the best-looking quartz in the same place, assayed .03 oz. gold and 2.0 ozs. silver (\$1.70).

From the bottom of the shaft there are two drifts: the South drift (actual bearing about S.30 deg. W.), 18 ft. long, and the North drift, nearly N.30 deg. E., 35 ft. long.

South Drift. Close to the shaft this drift cuts a mass of hard, blocky quartz, 5 to 6 ft. wide, with what seems to be a hanging-wall of porphyritic rock, striking N. 55 deg. E. No foot-wall is traceable. This quartzose formation extends into the foot of the shaft itself. Several stringers of quartz, striking E-W near the face of the drift, assayed .06 oz. gold and .10 oz. silver (\$1.26). The face is in dioritic country rock, showing some alteration. Elsewhere

in the drift are boulders of hard, bluish quartz, embedded in clay. Thirty-two samples, previously taken by the owners, gave an average of .043 oz. gold and .30 oz. silver (\$1.02).

North Drift. Some blocky quartz also occurs in this drift, but no defined vein. Much of the 35 ft. is driven in decomposed country rock and soft, talcy material, but hard, rhyolitic rock appears in the face. A series of 22 samples, taken by the owners, gave an average of .084 oz. gold and 1.70 oz. silver (\$2.61). Another set of 10 samples assayed .091 oz. gold and .64 oz. silver (\$2.17.). West south-west of the above shaft, and about 125 feet distant, is a shallow trench, 120 feet long, showing much float quartz, some of it said to have run as high as half an ounce in gold. Six samples by the owners averaged .23 oz. gold. Many others have been taken, however, which show much lower values.

SECOND STRIKE SHAFT. This is 215 feet, N. 18 deg. E., from the Round Shaft, in the north-westerly corner of the Alpha claim. About 60 feet south of it is a prominent outcrop of dioritic rock, showing some alteration and containing several quartz veins of small thickness.

The shaft is 29 feet deep, sunk mainly in wash consisting of broken quartz and other redeposited material, similar to that in the Round shaft. From the bottom there are three drifts, roughly north, south and west.

North Drift. Length, 57 ft. from center of shaft; compass bearing N. 35 deg. W. It shows no regular vein formation; being chiefly in white and yellowish talcy material, resulting from alteration of the country rock, but containing a little quartz in the form of round<sup>ed</sup> pebbles. The drift face is in partly decomposed bluish diorite, with brown clay streaks, above which lies a few feet of brecciated quartz and country rock. Six samples, taken by the owners, assayed

a trace of gold and .80 oz. silver, to .02 oz. gold and .48 oz. silver; average value, .012 oz. gold and .61 oz. silver (58 cents).

South Drift. Length, 20 ft; compass bearing, S. 10 deg. W. At 10 feet from the center of shaft is a 2" to 3" streak of hard quartz, striking nearly east and west. The rest of the drift and face is in altered country rock, with iron-stained stringers.

West Drift. Length, 37½ feet, compass bearing N. 85 deg. W. A bunch of quartz, 18" to 20" thick, partly brecciated, but possibly in place, appears in the face. It has a regular hanging-wall of clay and talc, with an irregular foot-wall of country rock, and dips 20 deg. E. It is nearly parallel to the thin vein in the South Drift. A sample taken across this 20" of quartz assayed: .04 oz. gold and a trace of silver (80 cents). Another sample, of the best looking 4 inches, gave .05 oz. gold and .25 oz. silver (\$1.14). This bunch of quartz pinches out in the roof of drift and extends back only a few feet toward the shaft. From there out to the shaft, the drift follows a clayey streak, accompanied by broken fragments of quartz. Small quantities of sulphides are occasionally visible.

Thirty-six samples, taken by the owners, assayed from a trace to .22 oz. gold; average, .034 oz. gold and .20 oz. silver (80 cents).

Shaft. The streak followed by the West Drift appears in the shaft walls nearly to the surface. Though the shaft is sunk chiefly in re-deposited material, there is considerable mineralized quartz in large and small fragments. Twenty-three samples, taken by the owners, assayed from a trace to .76 oz. gold and .80 oz. silver; average .12 oz. gold and 1.3 oz. silver (\$3.14). Another sample, from a

piece of good quartz, gave 1.18 oz. gold and 4.3 oz. silver.

CONCLUSIONS. The samples from the One Hundred foot and Second Strike Shaft and drifts cannot be taken as representing a regularly defined vein. Most of the quartz present is in fragments mixed with wash and decomposed material, and has come from the breaking down of previously formed veins. Some of it, including that apparently in place in the face of the West Drift, resembles the vein matter found 800 feet farther west, in a hole near the bottom of the draw. The results obtained in this area are disappointing, and I recommend that no more work be done here for the present.

DIKE TUNNEL. This, the most extensive work on the property, is shown, with its neighboring workings, on map number 3. Its primary object was the exploration of the heavy quartz vein, accompanying a large and boldly outcropping dioritic dike, crossing the common end-line of the Omega and Justice claims, as stated under the head of "Local Geology". The vein strikes east and west, dipping from 55 to 65 degrees south.

The tunnel mouth is 200 feet east of the west end line of the Omega claim, and 120 feet vertically above the gulch bottom to the east. The irregular course and branches of the tunnel are shown on the map. For the first 65 feet it is driven on the foot-wall side of the vein, through surface wash, followed by dike rock. After a sharp turn to the south-west, the tunnel first crosses the vein, and then skirts its hanging-wall for a distance of 60 feet. Thence it leaves the vein, making a wide bow to the south, in the Justice claim, for a further distance of 357 feet (its greatest departure from the hanging-wall being 60 to 65 feet). Returning nearly to its original course, the tunnel again cuts the vein at 525 feet from the mouth.

Throughout much of this distance the tunnel is in clayey and talcy material resulting from the decomposition of the older, bluish dioritic country rock, enclosing the vein on its southerly or hanging-wall side. In a number of places however, quartz appears in pebbles, boulders and angular fragments; first, beginning at a point about 60 feet from the departure of the tunnel from the main vein, and for a further distance of some 200 feet, pebbles and fragments of quartz are frequently mixed with <sup>the</sup> soft altered dike matter. Second, at a point about 425 feet from the tunnel mouth, a small quantity of sulphide, with copper stain, appears on the southerly wall of the tunnel; after which, for a little over 60 feet, there is a large amount of quartzose vein-matter, much disturbed and containing several well-marked, dry water-courses, with many vugs lined with gypsum crystals.

This occurrence of quartz appears to be the remains of a vein, originally formed in the bluish or hanging-wall diorite, but subsequently altered and broken by the decomposition of this igneous mass, following upon the extrusion of the younger brown diorite. The walls of this old vein are not traceable and its thickness and true course cannot be determined from the present development, as it evidently crosses the line of the tunnel at an acute angle (say 15 deg. to 20 deg.) By further development it may be found to meet the Dike vein farther to the west. In the South (West) drift, 45 feet from the main tunnel, there is some broken quartz, lying against the hanging-wall of the Dike Vein, about in the course of the older veins.

Seventy-nine samples, taken by the owners from this altered vein, gave an average of .04 oz. gold, with a negligible amount of silver (ranging from a trace to a maximum in one case of 2.0 Ozs. ) The last 21 of these samples taken about 1 foot apart, averaged .062 oz. gold and

.65 oz. silver (\$1.60) Averages of another set of samples taken by the owners from the same ground showed:

First 21 feet,	.24 oz. gold	1.48 oz. silver	(\$5.62)
Second " "	.04 " "	1.44 " "	(\$1.06)
Third " "	.08 " "	1.24 " "	(\$2.28)

A general sample, taken under the direction of the writer, of the first 21 feet, gave .07 oz. gold and .55 oz. silver (\$1.70 )

During the driving of the main tunnel, and subsequently, a large number of samples have been taken by the owners, some from the face as it was advanced, others systematically at intervals of a foot or more. In the first 525 feet ( omitting the 63 feet of broken vein above described), 149 samples gave a general average of : .073 oz. gold and 1.27 oz. silver (\$2.15). This result it must be remembered, comes largely from decomposed dike matter, carrying more or less quartz in pebbles and fragments; except at the point ( about 100 feet from the mouth of the tunnel) where the main vein was first cut, none of these 149 samples was taken from solid vein matter in place.

At 40 feet beyond the broken vein, above described, and 525 feet from the mouth, the tunnel, by a curve to the north-west (See map No.3), cuts the main Dike vein, at an angle of about 65 degrees to its strike. The vein here has a thickness of 11 to 12 feet, with dip and strike the same as shown at the outcrop. This point is approximately 190 feet, measured vertically, below the surface.

From this intersection a drift follows westerly along the hanging-wall of the vein for 220 feet. The hanging wall is barely touched throughout this distance, and in one or two places the drift leaves the vein completely; either through deviation in driving, or, as at a point about feet in, because of the local change in the strike of

vein. On the other easterly side of the main tunnel a similar drift has been run 13 feet. From the point of intersection with the vein, the tunnel has been driven into the dike a distance of 93 feet, and is still in progress (July 25/08). Several unimportant quartz stringers have been cut beyond the main vein. These together with the dike matter itself, carry some values, a series of 50 samples (by the owners) averaging .026 oz. gold and .25 oz. silver (66 cents).

It is unfortunate that the Dike tunnel has not been driven on the vein throughout its entire length, including the South (or more accurately West) drift, which is really a part of the main tunnel. While it is true that the vein matter is much harder, and work would therefore have been slower and more expensive; still, in so doing, the main vein would have been explored for a total length of about 600 feet, much of this distance being from 100 to 200 feet below the outcrop. As it is, the vein is cut, and its full cross-section revealed, in but two places, viz: about 100 feet from the tunnel mouth, where it is only 35 feet below the outcrop; and again at the intersection, 525 feet in. The South (or West) drift merely skirts the hanging wall, never cutting into it more than a few inches.

Character of Dike Vein. For the reasons stated above, comparatively little is known of this vein below the outcrop. The outcrop itself is composed of hard, tough quartz, often dark colored; brown, gray or bluish. In some places it stands at considerable height above the wash and the brown dike on the foot wall. on the hanging-wall side/ Sulphides are rarely visible and the quartz is generally poor, assaying for the most part a few hundredths of an ounce of gold per ton. A sample of a number of chippings from the easterly end of the outcrop



including only the hardest portion of the vein, gave .02 oz. gold and .20 oz. silver (52 cents).

This vein consists of two layers: on the hanging-wall side, from 6 to 7 feet in thickness of brecciated and cemented material, carrying some sulphides, and on the foot-wall side from  $4\frac{1}{2}$  to 5 and even 6 feet of extremely tough, dark-colored quartz, with scanty mineralization, so far as the vein has been developed. The sulphide ore of the brecciated part sometimes assays well in silver. A sample taken from a good-looking bunch in the South (West) drift gave .32 oz. gold and 25.15 ozs. silver (\$20.22). Two other samples from near this point, penetrating but a few inches into the hanging-wall, gave .08 oz. gold and 1.6 oz. silver (\$2.48), and .56 oz. gold, 2.0 ozs. silver (\$12.30). An average sample of the brecciated ore as cut in the main tunnel- the only complete section available anywhere in the workings, this sample covering a width of  $6\frac{1}{2}$  feet, assayed .12 oz. gold and .32 oz. silver (\$2.91). A sample of  $4\frac{1}{2}$  feet of the hard, foot-wall quartz, at the same place, gave .02 oz. gold and .40 oz. silver (62 cents). An average sample, taken from the entire width of 11 feet of vein at this point, gave .08 oz. gold and 2.72 ozs. silver (\$3.10). In taking this it was noticed that one of the sample cuts passed through a bunch of sulphide in the brecciated ore, that was missed in the \$2.91 sample above-mentioned. A set of 25 samples, taken by the owners, across the entire vein at the intersection in main tunnel, gave an average of .083 oz. gold and 1.08 oz. silver (\$2.30). Notwithstanding that only a part of the hanging wall of the vein is exposed along the South (West) drift, the owners have taken a large number of samples in this drift. An average of these (67 in number, and many of them undoubtedly including portions

of the hanging-wall gouge) gave: .27 oz. gold and 1.91 oz. silver (\$6.45). Four samples taken similarly from the 13 ft. drift east of the tunnel gave an average of .37-oz. gold and 5.13 oz. silver (\$10.15). It must be understood that though the samples composing this average furnish some idea of the quality of the vein, they cannot be taken as fairly representing its value, because in no case do they cover even approximately a cross-section.

*in mine*

It may be noted here that, on the hill side, 135 feet a little south of west of the main tunnel mouth, and 22 feet south of the line of the tunnel, a 40-foot shaft has been sunk through wash. From the bottom of the shaft there is a cross-cut, 75 feet south and 45 feet north. This cross-cut is 12 feet above the tunnel, with which it is connected by a raise. South of the tunnel the cross-cut is all in wash. On the north side there is some brecciated quartz and 4 feet of solid quartz, which represents the vein at this point. The north face of the cross-cut is in dike matter.

SOUTH TUNNEL. The mouth of this tunnel in the Justice claim, is 565 feet nearly due west, from the mouth of the Dike Tunnel, and 170 feet higher. It is 90 feet long and courses E. 31 deg. W., passing through wash for the first 48 feet. From here to about 60 feet from the mouth is a mass of broken quartz, appearing chiefly in the easterly wall and roof, with but little on the westerly side. This is followed by decomposed dike matter and fragments of quartz, the face of the tunnel being in wash. The tunnel is throughout only a small depth below the surface. Sixty-nine samples (by the owners), throughout the entire tunnel, gave an average of .056 oz. gold and .45 oz. silver (\$1.36). Seventeen of these samples, from the broken vein quartz only, averaged: .123 oz. gold and .70 oz. silver (\$2.85).

CONCLUSIONS AS TO THE DIKE VEIN. The amount of exploratory work already done in the ore itself is small, as already stated. As the main tunnel has unfortunately been driven off the vein, throughout nearly its entire length (the full section of the vein appearing in but two places), no ore ready for extraction has been developed, and little is known of the character and value of the vein below the surface.

It is not uncommon, in deposits of this kind, that the outcrop itself is of low grade; but the surface indications are of a wide, strong vein, with well-defined walls, which will probably persist to a considerable depth. Judging from the assays, it seems probable that the tunnel has cut the vein in a relatively poor place, and that further development will show an increase in average values.

With this in view I recommend that an inclined shaft be sunk on the foot-wall of the vein to a depth of 100 feet below the tunnel level. It should be started from a short cross-cut into the vein from the South (West) drift, 8 or 10 feet west of the intersection by the main tunnel. At the bottom of the shaft a drift should be driven on the vein, 40 or 50 feet in each direction. At every 12 to 15 feet a 4 x 4 foot opening should be made from the upper side of the shaft, through the brecciated hanging-wall layer of the vein, to determine the quality of the latter.

The information obtained from this moderate amount of work will go far towards ascertaining the average quality of ore to be expected from this vein.

"FIRST AND THIRD STRIKE" WORKINGS. These consist of a pit 13 feet deep, and a 9 ft. drift to north, together with a long open cut or trench, running under cover and becoming a drift in the last 30 feet to the north-east. The pit is 112 feet N. 35 deg. E. from the mouth of So

Tunnel. Its bottom is in unaltered brown dike rock, like that of the main dike lying to east of it.

In the North wall of the shaft, and lying on the dike, is a heavy mass of ore, resembling a vein, in having a quite clearly defined foot-wall with clay gänge, (striking N. 15 deg. E. and dipping 55 degrees N.W.) This mass of ore, 12 to 14 feet in thickness, extends up into the adjoining 9 ft. drift, where it is bounded by an apparent hanging-wall. But the strike of this "hanging wall" is N. 65 deg. E., with a 40 degree dip to the east of north. The dips and strikes of these walls are so different that it is impossible to call the ore between them a vein. Moreover, the mass of ore is not homogenous, but exhibits several distinct characters, the different parts being separated by slips and more or less regular planes of division. Nearly all of it is much shattered and highly oxidized, though particles of sulphides sometimes occur.

Similar variations exist in character and in the direction of the bounding planes or "walls" of the ore opened up in the neighboring trench or open-cut, throughout a distance of some 70 feet, north-east and south-west. Also, in a 14-foot prospect pit (15 feet north-west of the pit mentioned above), there is a vein-like body of ore, at least 4½ feet thick, dipping 30 deg. E. and striking east and west. No foot-wall is revealed and the ore consists mainly of partly rounded fragments of hard quartz in a clayey matrix, overlaid by 10 feet of wash material. These characteristics are quite different again from those of the bodies of ore first described-though there are some points of similarity; and the same may be said of the ore cut in the South Tunnel.

Part of the ore standing close to the mouth of the 13-foot pit agrees fairly well in strike and dip with a section of the outcrop of the adjacent main vein; but its

pearance and assay value are quite different.

There are several other pits and trenches in the neighborhood of the above workings. Their walls show wash, with boulders and fragments of quartz and decomposed dike matter but no vein formation or ore in place.

With but little additional work a considerable quantity of fair grade, free-milling ore can be made available, in the immediate vicinity of these workings.

PROSPECT PITS AND CROPPINGS, NORTH SIDE DIKE. On the north side of the big dike, and several hundred feet below the first and third strike workings, is what appears to be a group of strong quartz outcroppings. Immediately below them on the slope are two prospect pits: one almost entirely in the characteristic dioritic rock with blue ground mass, that occurs plentifully on this side of the dike, the other being in wash and clay, with small quartz boulders and breccia on the upper side. Some of the latter is possibly in place.

Some portions of the quartz showing here- especially those farthest north- resemble in appearance the ore of the "1st and 3rd strike" workings; but nowhere in these workings are to be found single blocks of quartz as large as several of the croppings in question. Also, the "1st and 3rd strike" ore exhibits generally a greater degree of oxidation.

Furthermore, the cellular formation (rounded cells or vugs, lined with small quartz crystals), of some of the latter, occurs almost everywhere throughout the outcrop of the dike vein; masses of brecciated and re-cemented quartz are common to both (such breccia being found on the hanging wall side of the dike vein, and a comparison of samples from both show a parallelism in texture, color and general appearance, which indicates a close relationship.

On the other hand is the question whether these masses of ore are really outcrops of a vein in place, or merely huge fragments of float. On account of their size this point is still in doubt, notwithstanding the excavations around them, recently made in the attempt to obtain proof. Taken as a whole, they lie in so disorderly and unrelated a manner, with no clearly defined dip or strike, that it is difficult to believe them to be in place. Fragments resembling the solid quartz of the dike vein lie side by side with others, partly oxidized, similar to the "1st and 3rd strike" ore. A number of the most easterly fragments exhibit something like a north and south strike. At least one of the largest lies S.W. - N.E., that is, in line with the ore of the "1st and 3rd strikes".

The last-named fact suggests that there may be an approximately south-west and north-east vein, crossing or joining the main vein above (west of) the brown dike, and running down the slope north of the dike, with an opposite or northerly dip. This may be true - and a continuation of the Dike Tunnel from its present face, say for another 100 or 125 feet, should decide the question. But, no ore in place has yet been revealed by surface work in the area between these "north croppings" and the "1st and 3rd strikes"; though it must be stated that the trenches and prospect pits in this area are too shallow to be conclusive. No outcrop of such a S.W.-N.E. vein appear elsewhere in the large area of blue diorite north of the brown dike, nor does float in any considerable quantity exist on the southerly slope beyond. Float practically ceases north of an east and west line, 250 or 300 feet from the north side of the dike.

With these considerations in mind, there are two possible interpretations of the contradictory evidence set forth: First, a careful examination showed some of the masses of ore in question to be undoubtedly float. If further exploration should prove them all to be such, it is probable that the larger fragments, at least, have come from the outcrop of the dike vein, when it stood higher than at present, and others from the "1st and 3rd strike" ore. These pieces may have been stopped on the hill-side by a sudden rise in the contour of the blue diorite, as is shown in Winn's prospect pit, just below them. Second, if these masses of quartz are found to be in place, they indicate the existence of a vein having a strike, at present indeterminate but probably somewhere between North-South and N. 40 deg. E. As there are no indications of such a vein immediately opposite this point, on the north side of the brown dike, and but a small quantity of float quartz either to the north of the mass of croppings, or below them on the slope, no positive conclusion can be reached without farther exploratory work in this area.

ORIGIN OF THE "FIRST AND THIRD SERIES" ORE. Reference has already been made to some of the considerations pertaining to this question. The general trend of the ore is approximately N. 55 deg. E. Apparent foot and hanging walls are shown at several points by the exploratory work, but the positions and courses of no two are in clear agreement. That the ore is shattered throughout is natural, as it lies at, or close to, the surface, so far as opened up; but the existence of frequent planes of division between seemingly unrelated ore-masses, together with other secondary planes or slips at different angles, is difficult to reconcile with the theory that there is here an original vein.

place. The brown dike approaches nearly to the surface in the southerly side of the 13-foot pit, and then falls away to the north-west at an angle of 55 degrees. This forms a foot-wall for the ore lying above it, and in the 9-foot drift to the north; but, as previously pointed out, the hanging-wall is far from being in a parallel, or even approximately parallel, plane, and the ore itself is non-homogeneous in appearance, character and value. The same is true of the ore occurring in the adjoining N.E.-S.W. trench and the drift forming a continuation of the latter to the north-east. The ore, moreover, resembles only distantly the ore cut in the South Tunnel, and which lies in the same general course.

My opinion is that there are here the remains of one (possibly two) veins, originally formed in connection with the older or bluish dioritic rock, which were broken, distorted and greatly oxidized, by the subsequent eruption of the brown dike. They may possibly have experienced local enrichment by the infiltration of new mineral matter originating from the same causes. On no other hypothesis can I explain the marked differences between the values and physical character of this mass of ore, dipping apparently north-easterly on one side of the brown dike, and those of the main vein, which dips nearly due south.

Closely associated with and overlying these broken masses of ore are large quantities of decomposed matter, clearly resulting from alteration of the older or blue dioritic rock, occurring both north and south of the brown dike. It will be remembered that similar decomposition of this diorite on a large scale has taken place on the south or hanging wall side of the main dike vein.



doubt exists as to the presence of the blue diorite on the south side of the brown dike, and that the latter is the younger, I removed it by finding it in a cutting penetrating through the surface wash on the slope, at a considerable distance to the south of the vein.

GRADE OF "1ST AND 3RD STRIKE" CRE. This is higher than that of the main vein. Immediately around the 13-foot pit, and close to the surface, many good assays have been obtained, some from ore in place, others from boulders and fragments of vein matter. The following samples have been taken by the owners: Nine samples, where the ore here was first uncovered, ranged from .12 oz. gold and 2.40 ozs. silver (\$3.72), to 3.24 ozs. gold and 4.0 ozs silver (\$67.02); averaging .95 oz. gold and 3.57 ozs. silver (\$20.96). Three samples from boulders gave an average of 4.64 ozs. gold and 3.6 ozs. silver (\$94.78). Twenty-seven miscellaneous samples gave .63 oz. gold (\$12.60). Another series of 17 samples averaged .21 oz. gold (\$4.20), silver not recorded.

Seven samples, taken by the writer, from different faces of ore close to the 13-foot shaft, ranged from .15 oz. gold and .50 oz. silver, to 1.07 oz. gold and 1.40 oz. silver; average, .47 oz. gold and .80 oz. silver (\$9.64). These seven samples covered widths of ore from 3 to 5 feet-

CONCLUSIONS, "FIRST AND THIRD STRIKE". The individual assays from this area show that some portions are quite spotty and irregular in value; but this is to be expected in samples taken from altered vein matter, close to the surface.

Owing to the shape and want of depth of the prospecting workings, no estimate of "ore in sight" can be made but the probabilities are that a considerable quantity of ore, of fair milling, and possibly some shipping, or

can be developed in this section of the property.

If it be desired at the present time to prove this ore farther, I would recommend (as the most convenient and cheapest plan) that the 13-foot shaft (at the "1st strike") be sunk to say 50 feet. It should be made an inclined shaft, following the ore on the brown dike foot-wall.

AREA NORTH EAST OF BROWN DIKE. This ground, in the easterly end of the Second Strike claim, and lying north of a line from the Second Strike shaft to the Dike Tunnel, was examined with some care.

Immediately to the north and north-east of the dike, brown and bluish dioritic rock appears wide-spread. In some parts the blue dioritic occurs alone, but the two are generally intermixed, the brown appearing to have made its way up through fractures in the older rock.

About 750 feet north-east of the Dike Tunnel mouth, the dioritic flow is laid bare over a considerable area. A number of quartz veins and veinlets occur here; most of them only from one to three inches wide, but several of some significance. The largest of these, accompanying a brown diorite intruded through the blue, is shown at this point on map number one; its strike being N.W.- S.E., dip 65 degrees N.E.- Its character, as indicated by the outcrop, is almost identical with that of the main dike vein, - comprising both brecciated and solid quartz, the latter containing many rounded vugs lined with small white crystals. The outcrop is traceable for about 200 feet, ranging in thickness from  $3\frac{1}{2}$  feet, at the upper or north-westerly end, down to a pinch towards the south-east. Another outcrop, of similar character, but of a thinner vein, first appears close to upper end of the preceding, and runs to the east, with E. and W. strike; dip 70 deg. N.E. Still another vein

farther north-east, varying in thickness from a pinch to 8 inches, and traceable for nearly 250 feet, strikes N. 35 deg. E., with a dip of 80 deg. N.W. A sample, composed of chippings from a number of points on these outcrops, assayed, .09 oz. gold and .15 oz. silver (\$1.88).

Taking a broad view of this rather complex vein formation, it may be said to have a general E. and W. trend, though with many variations; and possibly continues farther west, under the wash covering that part of the dioritic outflow. Float quartz ceases to occur a little farther up the slope above these veins. To the west, and almost due north from the lower end of the big dike, there is a mass of hard quartz, apparently embedded in white decomposed igneous rock: assay .02 oz. gold; with a trace of silver.

I can see nothing in the character or mode of occurrence of these veins to connect them with the "1st and 3rd strike" ore. Those first described above are probably of the same age as the dike vein, and though much thinner, so far as may be judged by surface indications, are worthy of being explored, provided the new work now in progress on the dike vein should result favorably. In this event, I recommend sinking a pit as nearly as possible at the point of intersection of the two veins first mentioned above, viz; those striking N.W.-S.E. and E. - W.

It may be added that some float quartz of good grade has been found in the bottom of the draw, east of the Dike Tunnel and in the middle of the Omega claim; and also in the vicinity of a cutting in the westerly end of the first Strike claim.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS.

I. TAIAPAOSA GULCH GROUP.

A considerable amount of prospecting and exploratory work has been done on these claims. A little good grade ore has been found, but the quantity is too small to make a mine. In view of the absence of strong outcrops and of any important amount of ore in place in the several tunnels, I recommend that no further work be done on these claims.

2. DIKE VEIN. There is no ore standing developed and ready for extraction in the tunnel or its connections, and the values at the points intersected by the tunnel are relatively low. But, the vein is unusually strong, wide and well-defined, and many good assays have been obtained from the hanging-wall side.

These facts, together with the general existing conditions, lead me to the opinion that further work on the vein will show favorable results. For this reason, I have recommended the sinking of a 100-foot inclined shaft on the foot-wall of the vein, beginning close to the point of intersection by the tunnel, at the South (West) drift.

Future procedure will be determined by the results obtained from this work, additional details of which have been given previously.

3. "FIRST AND SECOND STRIKE " AREA. It is my opinion that the "1st and 2nd strike " ore, as it exists, has come from a vein or veins, formed originally in connection with the older dioritic rock, and subsequently broken, disturbed and in part metamorphosed, by the later intrusion of the brown dike.

But, the indications are that a considerable tonnage of good mill ore may here be developed by a moderate amount of work.

4. ONE HUNDRED FOOT AND SECOND STRIKE SHAFTS.

Considered alone, the results obtained by these workings do not warrant further exploration at this point. There is a possibility that the easterly extensions of some of the veins lying north of the big dike may be found to pass through this area; but I am of opinion that there is no basis here for a successful enterprise, unless productive operations on the Dike Vein shall be established by the new work.

Development, therefore, should now be centered on the Dike Vein and neighboring area, which I consider the most promising part of the property, and from which a large amount of ore can be taken, if the values prove to be satisfactory.

Respectfully submitted,

*Robert Peck*

New York, Aug. 6, 1908.