
REPORTS
RECORD

Private.

Mining Note Book.

Sylvester L. Connor.

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Reporting on Mines.

~Considerations.~

Location:

Geographical; Altitude, Distance from Railroad, etc.

Extent of Property:

Number and Names of Claims.— Whether Patented or not,— Whether Assessment Work has been done (if unpatented),— Make Map of property, showing outcrop of ore bodies, Sections, etc.

Formation:

Country Rock,— (Geological),— Occurrence of ore deposits.— (For private information make geological map).

Vein, Lode, or Ore Bodies:

Strike, Dip, Width, of Ore Bodies— Form and Kind of minerals,— Outcrop,—

– Shape of Ore Bodies, etc.

Development:

Extent, Kind, and length of workings, — Location, and Direction.

Ore in Sight or Blocked Out:

Quantity and Values in the various parts of the mine (determined by assay and tests) (Sampling), — Calculate by measurements and assays the actual amount of ore blocked out. — General average value.

Best Method of Treatment:

Determined by careful mineralogical examination, Laboratory tests, and, if possible, by mill tests.

Cost of Mining, Transportation, Treatment, etc.

Wages of miners, – cost of supplies, – freight charges, – treatment charges.

Appraisement & Rate of Taxation:

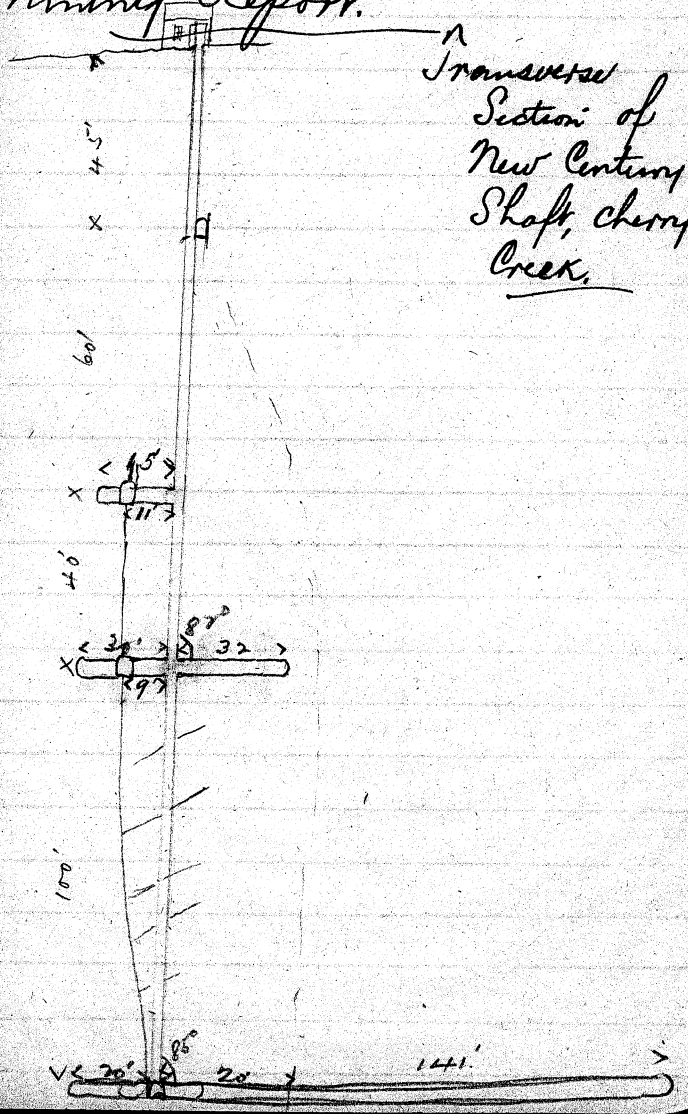
Supply of Water, Fuel, Timber:

Is Title to Property clear?

(Determined by attorney) Has assessment work been done?

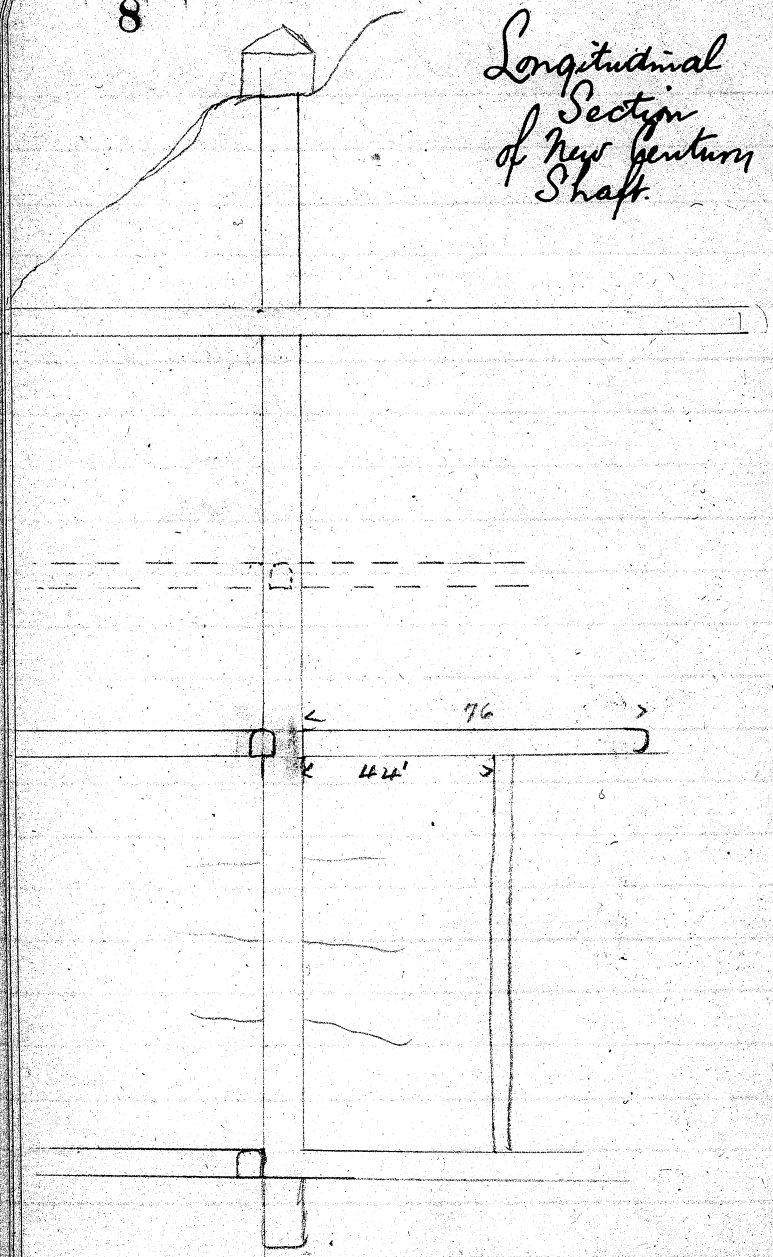
General Recommendations:

For Report on Property of P. A. Gannon at Cherry Creek, White Pine Co., Nev. see Personal Mining Report.



Transverse Section of New Century Shaft, Cherry Creek.

Longitudinal Section of New Century Shaft.



Property of Angus M. Cannon
at Dugway, Tooele Co., Utah.

Apl. 25, 1903.

Property includes 29 patented claims in groups as follows: 14 in one group, 8 in another, 2 in another, 5⅓ in another.

Considerable development has been made on the 1st group - Rattler.

Dugway Mt. is a more or less isolated ridge or range running N. & S. in the Great American Desert, some 60 miles from S.P.L.A. & S.L. Ry. at St. Johns Tooele Co. Water is scarce.

A narrow gulch running N. & S. through this short range, has limestone on the E. and quartzite on the W., the bottom of the ravine apparently being a large porphyry dike, separating the lime and quartzite. The porphyry appears to have intruded laterally into the quartzite & lime on either side, at various points.

In the Rattler group a fissure

vein in quartzite, about 3 ft. wide, with a strike of about N 45° E & a dip of about 50°-60° S. E. runs northerly from Cannon's Canyon. A shaft (incline) has been sunk 220 ft. deep & some drifting has been done on the Rattler claim in Cannon's Canyon. The gangue shows a great deal of lead and green fluorspar in seams 4" thick. Considerable galena and copper pyrites and carbonates have been taken out, probably from a pipe or small shoot of ore. No special showing at present. Lower in the Canyon a tunnel has been driven, cutting the vein, near the mouth, but no valuable results were obtained. On the outcrop of the vein over the hill northward an incline 100 ft. deep was sunk, and some ore taken out. Lower down the mountain, not far from the bottom of the gulch there is a porphyry

contact with the quartzite. Partly at my suggestion Angus M. Cannon started men to work making an open cut along the mountain at this point. The vein was cut between the porphyry and quartzite and showed 45 o/o $Pb.Co_3$ and over. Further N. on the End line claim is another vein with a strike about N. 70° W. and a dip of probably 60° N. E. A short tunnel on the mountain side cuts it, and lower down in the gulch a shaft has been sunk 60 ft. deep, cutting the vein. The ore body is about 4 ft. thick, showing heavy copper stains and fine pyrite crystals in a soft, black, talcy mass.

Another group — the Black Horse of 8 claims, is situated about ½ mile eastward on the mountain ridge. Surface indications very good. Pure galena in a vein probably a foot thick occurs on

the Gonyon claim, and copper carbonates and sulphides and oxide of iron occur in a vein 2-3 ft. wide on the Black Maria and other claims.

Mining Property near Santaquin
Promoted by L. G. Hardy.

The geology of the country is as follows:
The claims lie on the west slope of the Wasatch range. Near the base of the foothills a thin bed of quartzite tilted about 40° downward into the range, is exposed. Above this a bed of blue lime, and also a bed of white lime. In the blue lime the iron ore body occurs. Slight outcrop of the ore on top of the hill, in connection with crystallized calcite. There is also an intrusion of porphyritic granite southward on the S. slope of the hill. The ore body occurs irregularly in the lime. A tunnel has been run northward from the S. side of the hill, cutting the ore body, which shows the ore generally fine. It is

limonite, containing a small amount of galena. Assay of a sample about 4 ft. wide showed 51.8% Fe, and 7.6% Insol., thus only 44% excess Fe.

The quartzite rock is apparently underlaid by hornblende schist and granite.

Property of Joseph Stowell et al (Blue Bell), Coyote Mt. Cache Co. July 6, 1903.

This property lies on the N. slope of Coyote Mt., which stands somewhat isolated. It is 25 miles S. from Logan, and about 17 miles from Ogden. Altitude probably about 6000 ft. Water and timber are quite plentiful.

The formation of the country is quartzite, in very thick beds. One variety is somewhat red in color and coarse in texture; another is pink and fine. The quartzite is tilted to the west at an angle of about 80° with the horizontal.

It is cut by a dike of diabase which is porphyritic in places and fine grained in others. This dike is 200' to 300' wide and appears to break through the quartzite at a slight angle with the bedding

planes. The dike runs N. & S. for some distance, and apparently has a lateral at right angles, or turns itself, to the W. breaking across the formation. The ground at the turn, however, is covered with loose shidy rock.

The Blue Bell property is on that part of the dike running N. & S. In many places the outcrop of the dike is heavily stained with malachite, and some of the fine grained rock contains apparently magnetite and chalcocite, with possibly oxides of copper in fine grains. These minerals appear to be disseminated through the rock, occurring chiefly in slightly altered porphyry.

A tunnel about 40 ft. long has been run in at the point where the mineral outcrop is strongest. At its end an incline has been sunk about 25 ft.

In various places in these workings ore in fairly large quantities has been taken out, which runs probably 11 % Cu and as high as $4 gold.

A lower tunnel was driven about 500 ft. to intercept the ore body at greater depth. But it was irregularly drawn, and failed to strike any indications.

The formation is peculiar, in that the ore occurs in the dike itself and apparently without any well-defined walls. At the contact of the dike and quartzite on the W. side or footwall, there appears a sort of conglomerate of quartzite, porphyry etc. pebbles, cemented by eruptive rock.

Mr. Stylberg, of our party, is interested in some property along the dike where it runs E. & W. The rock appears there to be more decomposed, and reveals its feld-

spathic nature by its white color, and talcy texture. A shaft 25 ft. deep has been sunk in this porphyry. The porphyry is considerably stained with malachite, and, in some places, oxides of iron, and apparently melaconite or chalcocite pocket.

The formation in this locality being of such a nature, and the ore occurrence so peculiar, makes this a rather uncertain proposition. Further careful development and careful examination of the mineral-bearing rock should be made, in order to determine more certainly its continuity and form of occurrence. I am inclined to believe that with careful, systematic development, this ore will be found in paying quantity, and even very extensive bodies of low grade ore may be dis-

covered.

La Plata Property.

(Spudown & La Plata) Cache Co.

July 8, '03.

Location: S. E. part of Cache Co. Probably 35 miles from Logan, and 35 miles from Ogden. About 7000 ft. altitude.

Extent of Property: 4 patented claims, in two groups of two each, running.

Formation:

Gray limestone and blue limestone are overlaid by quartzite, through this country, but at La Plata, the latter appears at the surface. At various points the strata are seen to be tilted at an angle of about 30° with the horizontal, to the W. The ore occurs as pockets of galena in the gray limestone; very irregularly.

A small vein of quartz in limestone runs N. & S. along the Spudown claim. It shows altered iron pyrites (limonite) & copper carbonate stains; some peacock copper. At some points this vein matter appears quite promising.

Further N. near the N. end line of the Spudown is a large hole from which at one time a large mass of galena, sufficient to form two carloads, was taken. A small, poorly defined vein appears at this point. In the workings of the La Plata Congol. Co. near by some galena is found in the mine, though it is very pockety, and meager. On the hillside little pebbles of galena covered with lead carbonate can be picked up. It would appear that the limestone decomposed and left these pebbles there.

Holland Gold Mining Co. Property.

Aug. 18, 1904.

Property situated at Gold Mountain, Piute Co. Utah, about 8000 ft. altitude, 16 miles from the R. G. W. Ry at Sevier.

Three claims – Holland, Gold City, Placer Gulch, and Dandy Mill, patented, and Hard Luck, unpatented. For map of property see that plotted by me, in the Company's Office.

The country rock is porphyry, Kind –

This district is the scene of extensive volcanic activity in past times. Lower down there are flows of trachyte and rhyolite, while along the mountain ridge there is a series of old volcanic craters, covered with volcanic ash.

There is a vein on the property

with a strike nearly due N. & S.

As a result of the great volcanic action there has been much shaking up, and on this property, the vein which outcrops, does not continue to the deep, as the surface has slid down from a point higher up on the ridge of the old crater. This was first discovered through the running of a tunnel some distance below the outcrop, which, when it reached a point nearly below the vein, was found to be in pink rhyolite whereas the vein itself is in a pistachio-green birdseye porphyry.

Mills.

Adelaide Star Mill (Glasgow & Western Exploration Co.), Cherry Creek, Nev.
Mar. 23, '03.

Capacity - 75 tons per day.
Water Supply - 450 gals. per min.
Engine - about 75 H.P.
Concentrating Mill:
Ore is hoisted from the ground by Sellers automatic hoist, and dumped into a circular ore bin. Fed thence into Blake crusher 1½ in. By elevator to ½" screen (1) (trommel). Oversize down chute to roughing rolls. Thro. spout to 3/16" screen (2). Oversize down to finishing rolls. By elevator up to screens. Thro. 3/16" going to jigs. Sized then down to 16 mesh, oversize going to jigs. 20 mesh and thro. going to hydraulic classifiers, and heads from these to fine jigs. Tailings by elevators to settling tanks, thence to Wilfley tables. Tails from

Coarse pulp by elevator wheel to Huntington mills, thence to Wilfley tables. Tails over blanket sluices.

Gold Mills at Angels Camp, Calaveras Co. Cal.

Visited Apl. 15, 1906.

Visited 3 Mills — Utica Co. 100 stamp.
— Lightner 40 "
— Angels Mng Co. 40 "

The total working costs on the ore of these Companies, average from $1.50 to $2. per ton. The ore is mined in quantity and in such a way as to make it as automatic and with as low cost as possible. The ore being run through is a quartz ore mixed with chloritic schist, and containing iron pyrites. The ore is crushed to about 2½" size before being placed in the mill bins.

Stamps — about 850 lbs. 7" drop. 110 per min.
Water — about 1 miners inch per stamp.
Crushing power on this ore — about 5-6 tons per 24 hrs.
Ore crushed thro 20-30 mesh sieve.
Run over 12' battery plates, 2 to each battery.
Carried thence to Four Vanners — 3 to each battery in the Utica & Lightner

Mills, 2ˣ 16' vanners in the Angels Mill. The tailings are run off, and the heads — iron pyrite containing gold — are taken out, dried, and shipped. In the Utica Mill the tailings are run over canvas tables. Battery plates are cleaned every morning.

Power is furnished from electric motors — that in the Angels Mill being 100 H.P. the power being furnished by the California Gas & Electric

SMELTERS.

Jan. 21, 1904.-

Yampa Smelter, Bingham Canyon, Salt Lake Co. Utah.

Adjacent to R. G. W. tracks.

Source of Supply: Great ore from Yampa Mine, brought down some 3 miles, via Copper Belt R. R., a steep grade railway, which also switches down coke and lime.

Description of Plant:

The ore is brought down via the Copper Belt R. R., which runs along the side of the mountains to the bins, which are at the highest point of the plant. The ore is iron and copper pyrites with siliceous gangue, containing a little lime.

Analysis: Cu - 2-2½ o/o, Fe - 24 o/o. S - 30 o/o, SiO_2 - 38 o/o, CaO - 6 o/o, Ag - 2oz. Au - 0.8 o/o

The coke for smelting and lime for fluxing are also switched on to this railway, and dumped into the proper bins.

Capacity of Bins: The upper and lower Talc ore bins, about 400 tons each. Roasted ore bins probably 6000 tons.

The ore is then put thro' a Blake Crusher of a capacity of tons per hr., run by an auxiliary engine of H.P. The ore is crushed to about 2" size, and raised by a bucket elevator to a revolving screen of $\frac{3}{4}$" size. Just before passing on to this screen, an automatic sampler takes out a sample of the ore. The oversize is shot down to the coarse ore bin while the undersize drops into another. This bin has hoppers beneath and gates so that the ore can be dumped into the cars of a tramway with overhead rail running past the gates, & thence to the sintering furnaces,

6 in number.

These are Neill patent roasting furnaces, double compartment, with air blast through 2' pipe from Root blower on Crusher floor, run by auxiliary engine.

Blast Pressure -

Capacity of Furnaces -

Ore is sintered for about

Pipes from each furnace run into a main flue which conducts off the fume and flue dust from the sintering furnace floor. this pipe (8' diam.) runs vertically downward, some 60 ft. to the main brick & concrete flue. At the point where this pipe leaves the furnace floor, there is a hopper to draw off the flue dust.

(Analysis of flue dust from sintering furnaces: Contains about 3% Cu, 3-4 oz. Ag. and .08 oz. Au ($1.60)

The sintered ore which clinkers

considerably, falls into the bins below.
Analysis of Sintered Ore: Cu—2-2½%, Fe—
S—18-19%, SiO2— , CaO— , Mg—2½%
Au—.075oz ($1.50)

Beneath the bins is a track running past the bin gates, with an electric locomotive run by a trolley wire. This motor pushes side-dumping cars holding probably 1½-2 tons of ore. The coke fines, raw & roasted ore are drawn from the bin gates into the cars, which are, after being properly weighed for the proper charge, run thence to the blast furnace charging floor, on either side of the furnace.
(The machine and blacksmith shop is located at this level.

Blast Furnace:
Allis-Chalmers make.
Size at tuyeres—42 x 160 inches
Height to charging floor—

Capacity—250 tons ore per day (24 hrs.)
It is supported by 4 cast iron columns, about 10" diam., set on concrete foundations which are set 10-12 ft. deep on bed rock.
Bustle pipe—1½" diam.
Tuyeres—18 in no., 9 on each side, 10" diam.
Blast pressure—1¼" mercury.
Cold blast is used.
Furnace is run with a hot top.
Matte and slag run continuously into a covered forehearth from which the slag overflows continuously and the matte is tapped at intervals of about 2 hrs.
Slag run off in slag pots to the dump.
Matte in pots ponred into moulds.
Shipped thence to the Valley Smelter.
Furnace charge: Raw ore—3 , sintered ore—1 , coke 11%.—15%.
Later charge (Feb. 27): Raw ore 2000 lbs.
Coke 350 lbs. (17.5%). (see p. 109).
(Analysis of Matte—Cu—about 10%. (Ground to 1.5%)

Fe - 57-60 %, S - 3 %, Ag - about 1 oz., Au - about .2 oz. (Mt. -1)
(Analysis of Slag: SiO_2 - 49-51 %, Fe - 2 %, CaO - 18-19 %, Cu - .2 %, Ag - .2 oz., Au - trace)
It is desired to have SiO_2 about 47 %.
Besides being poured over the dump the slag is first used to make a deep, solid furnace floor.
Flow of water for water jackets:

Temperature on entering - 35° F. (at present)
" " leaving - about 150-200° F., except from spouts where water is only lukewarm.

Water flows thence to a high board framework, through which it trickles to the bottom, thus being cooled.
Question: Why would it not be economical and beneficial to use part of this water, so much as is needed in the boilers, thus saving energy? Also, why not obtain hot blast by using this water for the purpose of heating the air? (Hot blast - 600°)

The charges are fed into the furnace from either side at the charging floor level. From this level there is a 6 foot pipe which conducts the fume and flue dust over and down to the brick and concrete flue, which runs horizontally a distance of some 200 ft. along the mountain side. This lowest part of the flue is of concrete, while the arching is of brick. It is about 10 ft. high. At the end, a steel chimney (smokestack), about 8 ft. diameter, runs up the mountain side along the surface, for about 200 ft, and then about 50 ft. vertically upward.
Considerable flue dust and fume come from the sintering furnaces and the blast furnace, though the proportion has not been determined.

The power for all the machinery, furnaces, etc. is furnished from three sets of steam boilers at a lower level, of 125 H.P. each. The boilers burn mine slack coal (about 10 tons per day). The feed water is pumped from a still lower level and heated prior to entering the boilers. In the engine room adjoining the boiler room is an engine (Corliss valves) of 125 H.P. running a Root blower (at 10 oz. pressure), which furnishes the air to the blast furnace through a 2 foot pipe. An engine of 14 H.P. runs a direct current multipolar (6 pole) dynamo of 42.5 K.W. at 250 volts and 170 amp., which is a 600 light machine. It furnishes power for the electric locomotive, for a hoist for raising flue dust to feed floor level, (for a centrifugal pump) and lights for the entire plant. The speed is 300 rev. The pump house is near the boiler house, slightly below it.

Furnace Charge.

Coke	350 lbs.
Iron ore	200 "
Lime	100 "
Ore { raw	1000 lbs.
Ore { roasted	1000 " (leftover)
Flue dust	300
Silica	8 (from mountainside)

Analysis of Coal. (used in Assay Furnace)

Cal. 16,014.

Moisture	2.8 o/o.
Volatile Matter	36.4
Fixed Carbon	43.8
Ash	16.96

Sulphur - not determined.

Analysis of Coke. (Blast furnace)

Mar. 7, 1904.

Moisture	1.8 o/o.
Volatile	3 (?)
Fixed	82.30
Ash	12.90

Analysis of Lime Rock.

Fe	1.55 o/o
SiO_2	1.43
CaO	52.19.

The plant has cost $150,000. About 60 men are employed.

~Miscellaneous.~

Waterwheel & Pumping plant: Cannon Farm.

Wheel 5' diameter, 6' long. 16 paddles of this shape ⊙—⊙. See drawings on tracing linen. Set in concrete base. Wheel placed in position Mar. 3, 1905. About 2" space between base of wheel and concrete spillway. With a head of (5" on approach) the wheel made about 5 rev. per min. With a head of (8" on approach) it revolved 35 times per minute. These revolutions were taken with the wheel free of any load.

Mar. 29, 05.- With the wheel free and 9" water on approach and 4" water on back of wheel it made 20 rev. per min.

With 10" water and no back water it made 35 rev. per min. With line shaft and gearing on and nearly full head the wheel made 41 rev. per min.

With pump attached, 3½' pulley on line shaft and 1' pulley on pump, connected by 10" rubber belt, with near-

ly full head and 10' of standpipe 6½" diam. the wheel made 13 rev. per min. - about 275 rev. of pump per min. (belt slipped badly) and obtained about 300 - 400 gals. per min. With about 6½' height of standpipe, the wheel made about 11 rev. per min. and pumped about 800 gals. per min. With a wooden pulley wheel 28" diam. on the line shaft the wheel made between 18 & 19 rev. p.m. and the pump approximately 252 rev. per min. and yielded about 1000 gals.

Mine & Store. & Calaveras Co. land
in ec. for 301 000 sh. stock from Lode
by 20th.

30,000 sh. asked by Mr. Henry in
consideration besides management.

50000. sh. in Salt Lake, etc.
250000.
301 000.
600 000. sh. out.