

ROUND MOUNTAIN MINES AND HISTORY.

By J. P. LOFTUS.

*Round Mountain lies to the north of Goldfield 100 miles. It is an isolated hill on the east edge of Smoky valley, segregated geologically and geographically from the main range. The hill which rises 1500 ft. above the plain, is an early andesite, fissured around three-fourths of its entire base in concentric circles half way to its summit. This fissuring, due to later disturbance, follows unusually uniform lines, and represents points of original weaknesses in the mountain structure. As far as an agreement has been reached, the ore mass is an altered form of the original rock, enriched and silicified by a thermal flow from some deep seated point in the mountain. The veins dip into the hill at an angle of about 25° from the horizontal, and followed to the lowest depth yet reached, 800 ft., show no change in structure or ore character. The gold is free, unassociated with any base; the ore mass—which runs from 8 to 14 ft. thick—being highly oxidized. Sulphides appear nowhere, nor has a drop of water yet appeared in the deepest works.

Gold was first discovered at this point in February, 1906, on ground owned by Louis D. Gordon. So sensational was the find that Goldfield men trekked hurriedly across the unknown wastes and mountains, and a new camp was born. This was the beginning, and for a few months, Round Mountain showed greater promise of golden wealth than even Goldfield at its best. Slabs of virgin metal were almost daily found. Organizations by the dozen sprang into existence over night; for a time money poured in for development. The mine is now developed to a depth of 800 ft., equipped with a 100-ton mill, and has produced to date, in a period of two years, \$709,184 in gold bullion, and has paid \$192,184 in dividends.

On a bleak morning in February, 1906, sitting among the rocks, viewing a trench scarce a foot deep and ten in length, Louis Gordon agreed with J. R. Davis, for a consideration of \$87,000 to sell the control—and the hole not two feet deep! Inside of 11 months that ground was pouring out gold; in 18 months the first quarterly dividend was declared. Ore is now blocked out in the mine and cash in its treasury to a value approximating \$900,000.

The mill treats 100 tons of ore per day, yielding 93% of the ore value. It has never stopped a day nor an hour through any defect in construction. It was built at a total cost of \$40,000, and occupies an unusually small space.

The manager's report for the fiscal year closing July last, showed the average value of the ore treated to be \$13.40; the extraction, simple plate amalgamation, with no cyaniding or concentrating of any kind, to be 93%, leaving in tailing \$1.10. The cost of mining for that period was \$6 per ton, which, has by the introduction of electric power and machine-drills been lowered to \$4.17 per ton—demonstrating that \$5 ore can be mined at a profit.

*Abstract from address before American Mining Congress at Goldfield, Nevada.

Of the future of the mine no one can speak of a certainty. Adjoining ground has been acquired until now the total area of the Round Mountain Mining Co. covers 700 acres, nearly one-half of the entire mountain.

The total production of the camp may be estimated as below:

Round Mountain Mining Co.....	\$709,000
Placers	150,000
Sphinx	60,000
Daisy	60,000
Lessees (various)	30,000
Fairview	60,000
Total	\$1,069,000

ROUND MOUNTAIN, NEVADA.

By F. L. RANSOME.

*A few hours were spent at Round Mountain, Nevada, on June 29, 1908, and the following notes are based upon the necessarily hasty examination possible in so short a visit. The town of Round Mountain, which contains from 500 to 600 people, is in Nye county, 45 miles (about 70 miles by road), north of Tonopah and nearly the same distance south of Austin. It lies on the east side of Big Smoky valley, at the base of the Toquima range, being 12 miles north of Manhattan and three miles southwest of the abandoned mining camp of Jefferson. Further details regarding the surroundings of the district may be had from the Tonopah topographic sheet of the United States Geological Survey, and a good general description of the camp has been published by George A. Packard.† The town takes its name from a small oval hill of rhyolite which rises about 400 ft. above the alluvial slope of the valley's edge. There is abundant water for all ordinary purposes, a supply from Shoshone creek, east of town, having been made available by an outlay of \$65,000.

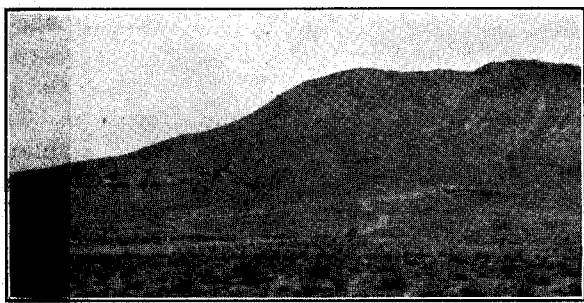
The rhyolite of Round Mountain is generally fresh, with abundant phenocrysts of quartz and feldspar, up to about 5 millimeters in diameter, in a light-gray lithoidal matrix, which, as a rule, shows some flow structure. No microscopical study has been made of this rock, but it appears to be a normal rhyolite with orthoclase (sanidine), as the principal feldspar. According to Mr. Packard, granite has been found underlying the rhyolite near the saddle connecting Round Mountain with the main range east of it, and some shafts east and northeast of the hill are said to show slate and quartzite. The only mine examined during my visit was the Sunnyside, on the south slope of Round Mountain. This, the principal mine of the district, is worked through a 35° shaft to a depth of 550 ft., measured on the incline. The levels are 50 ft. apart and explore the vein for a length of about 300 ft. The general strike of the vein is nearly east and west. The orebody is fully 300 ft. long and from 6 to 20 ft. in width as measured in horizontal planes and extends from the surface to an unknown distance below the bottom level. The dip varies

*Abstract from Contributions to Economic Geology, 1908. Bulletin 380, U. S. Geological Survey.

†Round Mountain, Nevada: MINING AND SCIENTIFIC PRESS. June 13, 1908, pp. 807-809.

from 35°N. at the surface to 20°N. on the 550-ft. level.

The ore is all oxidized and carries, on an average, from \$10 to \$15 in gold to the ton. Ore worth \$25 a ton is exceptionally good. Although the deposit has been referred to as a vein, it is not really of that class. It is a mass of jointed and irregularly cracked rhyolite, somewhat stained with iron oxide, but showing no conspicuous alteration and no evidence of extensive movement. In most places the ore is separated from the country rock of the hanging wall by a close fissure or joint, the difference between ore and waste being not, as a rule, evident to the eye. Such a joint, when followed along the strike, is found to pass at some point into the ore or into the country rock, and another one of slightly different strike takes its place as a working boundary to the ore. The hanging wall is thus defined by a series of joints that intersect or meet at large angles. The distinction between ore and country rock is less definite on the foot-wall side of the deposit. On the



Round Mountain, Nevada.

whole, the limits of the orebody must be determined by panning or assaying and are not certainly recognizable from structure or appearance.

The value of the ore is practically all in gold, which is readily amalgamated. The mill, equipped with 2 Nissen stamps, 2 Huntington mills, and a tubemill, treats about 100 tons per day and extracts 92% of the gold. Some coarse gold is found, associated with limonite in crevices in the rhyolite, but in most of the ore none of the metal is visible. No pyrite was seen in any of the ore, although a little was noted disseminated in the rhyolite at one place on one of the lower levels. In 1908 the mine, according to J. P. Loftus, president of the company, was producing from \$35,000 to \$42,000 a month. Steam power is used. The fuel is wood from the Toquima National Forest, purchased at \$1.25 a cord, and cut and delivered at a total cost of \$8 to \$10 a cord.

A few hundred yards west of the Sunnyside mine some lessees have a shaft 200 ft. deep on what is probably a continuation of the same deposit. At the time of visit they were hoisting \$15 ore, which was hauled to a mill near town and there treated at a total cost of \$7 per ton. West of this lease, near the west end of the hill, is the Sphinx mine, 200 ft. deep, and probably also on the same zone of mineralization. The ore at the time of visit was similar to that of the Sunnyside mine but of lower grade, the average value being a little less than \$10 per ton. About 25 tons per day are treated in a Huntington milling plant

with no stamps. The Fairview and Daisy mines, east of Round Mountain, were producing in 1908, but were not visited. Their ore is said to lie in rhyolite and to be similar in general character to that of the Sunnyside. The Fairview has a 20-ton mill on Shoshone creek, a mile northeast of town.

A notable feature of the south slope of Round Mountain is the wide distribution of the gold. Along the whole south base of the hill the superficial detritus or wash carries gold. This material, which consists of angular fragments of rhyolite of all sizes up to a few feet in diameter, with more or less earth and sand, has a maximum thickness of about 10 ft. It shows only traces of rough stratification and has accumulated by general creep down the slope accelerated by occasional heavy rains. At the base of the hill the deposit thickens and merges with the general wash of Great Smoky valley. Hydraulic operations are confined to the hill, where the bed-rock is within reach and where there is sufficient fall for sluicing. The gold is distributed through the deposit from top to bottom. When the rhyolitic bed-rock is exposed it is found to be covered in many places with a firm crust of buff-colored carbonate up to an inch in thickness. This adheres strongly to the fresh surface of the rhyolite as a rough, travertine-like crust and in places carries enough gold to make its removal by blasting profitable, especially as considerable gold is carried also in the superficial cracks of the rhyolite. Two monitors were playing in June, 1908, and the washing, according to Mr. Loftus, was yielding about \$20,000 a month. The water, however, was getting rather low and it was not possible to keep both streams in continuous operation. Prior to the use of water, gold to the value of \$39,128 was obtained with two dry-washing machines. The ground worked by this method is said to have averaged over \$5 per yard.† The gold is generally rather fine, but some nuggets of fair size have been found. A large part of the rhyolite on the south side of Round Mountain, both under the wash and higher up the slope, contains considerable gold, partly in visible joints or small fissures, and partly in rock which is not noticeably fractured. Where the joints are close together and the rhyolite between them rather soft and decomposed, assays as high as \$250 per ton are said to have been obtained from samples taken near the surface; and from solid blocks of unfissured rhyolite assays up to \$4 per ton are reported. How far this gold represents mere superficial enrichment is still an unsolved problem. In 1908 prospecting was in progress to determine whether or not extensive masses of rhyolite on the south side of the hill can be worked by an open-cut method for the gold scattered through the rock.

Aluminum is used in constantly increasing quantities in the motor-car industry, combining both lightness and stiffness. It is used in making crank-cases, gear-boxes, carburettors, radiators, dash-boards, and in smaller ways. In castings it has been found advantageous to alloy the metal with copper, zinc, or nickel, which increases its strength and makes it easier to work.

†Packard, G. A., op. cit., p. 809.

Concentrates.

Most of these are in reply to questions received by mail. Our readers are invited to ask questions and give information dealing with the practice of mining, milling, and smelting.

Mining locations may legally overlap previously acquired territory held by others, whether patented or unpatented or whether held under agricultural or mineral laws or whether the inclusion is due to accident or design or with the consent of the owner, or without, if peaceably done.

Charcoal from nut-pine (piñón) which grows abundantly over the mountains of the semi-arid Southwest, is of excellent quality if well burned. For lead-smelting it would make a satisfactory fuel, but it would be advisable to burn it for that purpose in kilns rather than in open heaps.

Four-stamp batteries are so rare that no recognized practice can be stated concerning the order of drop, but as the order is intended to maintain as uniform a distribution of rock and pulp in the mortar as possible it is manifest that such a result should be obtained by dropping in the order 3-1-4-2.

The mere doing of assessment work upon a claim held without 'discovery' will not prevent adverse relocation. Marking the boundaries, coupled with actual possession and the continuous exploitation or prospecting of the ground, in good faith, will generally hold a claim against all the world without discovery.

Limit of accuracy in gold assaying is probably reached by the work done at the Philadelphia and the Utrecht mints a couple of years ago on proof-gold. Samples were exchanged for comparison by the two mints, and the Utrecht 'proof' was found to be slightly purer, the difference between the two being 0.00002 in fineness.

Iron in lead smelting performs three functions. It supplies a base for the silica present; it is reduced from the oxide in the flux by carbon, or carbon monoxide, and the metallic iron so produced directly replaces the lead in PbS, the result of the re-action being metallic lead, ferrous sulphide (FeS) and CO₂. Finally it substitutes itself in the place of lead oxide in the lead silicate formed in the blast-furnace, after which the PbO is reduced by carbon.

Bullion sample-bars are not as accurate as discs. The molten metal may be poured into a shallow circular iron mold. With a power-cutter, or even with a chisel, a sector may be taken from this disc, like a piece of pie. The tendency to segregation of gold and silver on cooling is well known. This method of sampling overcomes the irregularity which would result therefrom, and which interferes with accuracy in testing a rectangular bar. This method is also more accurate than granulating by pouring in water.

Sand for concrete should contain not over 0.1% organic matter. If it exceed that figure the tensile strength of the concrete will be lessened. The safest rule is probably that of the American Society of

Civil Engineers' Committee on Concrete and Reinforced Concrete, as follows: "Mortars composed of 1 part portland cement and 3 parts fine aggregate by weight, when made into briquettes should show a tensile strength of at least 70% of the strength of 1 to 3 mortar of the same consistence made with the same cement and standard Ottawa sand."

Pitch of a thread is the distance from centre to centre of two adjacent threads. It is the reciprocal of the number of threads per inch. For example, if the number of threads be 16 per inch, then the

$$\text{pitch} = \frac{1}{16} = 0.0625 \text{ inch.}$$

The 'lead' of a screw-thread is the distance the screw will travel forward when given one complete revolution. For a single-threaded screw the pitch and lead are equal, but if a screw be provided with a double thread then the lead is equal to two times the pitch.

Puddle is a mixture of gravel and clay, wetted, and rammed into place. The gravel is used to insure the crumbling of the sides and roof of any incipient hole which may occur in the puddle-wall, causing it to fill up. A good proportion for the ingredients of an impermeable puddle-wall, according to John T. Fanning, is: Coarse gravel, 1 cu. yd.; fine gravel, 0.35; sand, 0.15; and clay, 0.20. This, when mixed will make 1.3 cu. yd., and upon ramming reduces to 1.25 cu. yd. Another mixture, which will make 1.1 cu. yd., on ramming, is gravel 1 cu. yd., sand 0.35, and clay 0.25. Puddle may be used as the core of an earthen dam; also as an impervious lining for reservoirs.

Cones used for testing temperatures in clay burning vary as to fusing point with composition. The fusing points of the cones most used are given below:

Cone Number.	Fusing point.	
	Deg. C.	Deg. F.
0.022.....	590	1094
0.015.....	800	1472
0.010.....	950	1742
0.050.....	1050	1922
1.000.....	1150	2102
5.000.....	1230	2246
10.000.....	1330	2426
15.000.....	1430	2606
20.000.....	1530	2786
25.000.....	1630	2966
30.000.....	1730	3146
36.000.....	1850	3362

Natural asphalt imported from Trinidad and Bermudez supplies a large part of the paving material used in the United States. Oil asphalt, when properly made in the process of distillation of asphaltic oils, is free from earthy substances commonly carried by natural asphalt, and, though hampered by freight charges, is brought to the Eastern markets in large quantities. Bituminous rock is used chiefly for paving. The other important uses of asphalt products are in waterproofing metals, papers, and fabrics, in roofing, electric installations, wood preservation, brick and wood block filling, concrete construction, coal briquetting, adulterating hard rubber, and the like. Gilsonite and grahamite are also especially adaptable for use in the manufacture of japans, paints, and varnishes.

ROUND MOUNTAIN, NEVADA.

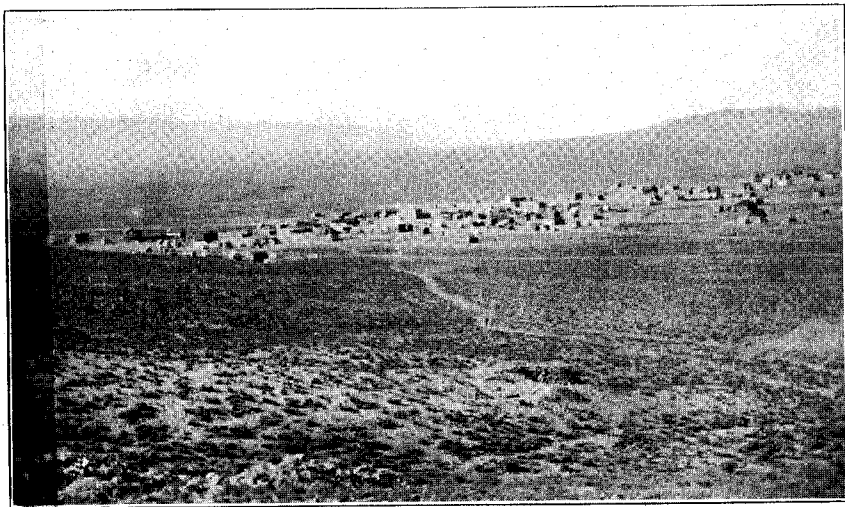
Written for the MINING AND SCIENTIFIC PRESS
By GEORGE A. PACKARD.

The camp of Round Mountain is situated on the east side of Big Smoky valley, two miles south of Jefferson canyon, and four miles from the site of the old camp of Jefferson, which was a prominent silver producer over thirty years ago.

The most convenient route to the camp is by auto-

the Fairview, is a contact with granite, and in the Fairview tunnel the granite has been encountered underlying the rhyolite, and dipping toward the valley.

Several dumps northwest from here, toward town, show granite, and the inference is that the ore-bearing area may not be found to extend farther in this direction. On the Daisy, in the hollow between the ridge and Round Mountain, and about 400 ft. west of the Fairview tunnel, is the 175-ft. shaft of the Crescent lease, the dump of which shows, besides the surface rhyolite, much fine slate. Here the rhyolite contains inclusions of both granite and slate. A few hundred feet farther west a shaft sunk by the Daisy company is said to have encountered quartzite at a depth of 170 ft., and after passing through 35 ft. of this entered calcareous slate. The rhyolite in the Black Hawk tunnel is quite dark, showing hornblende and biotite, with both feldspar and quartz phenocrysts. More commonly it is light and much kaolinized.

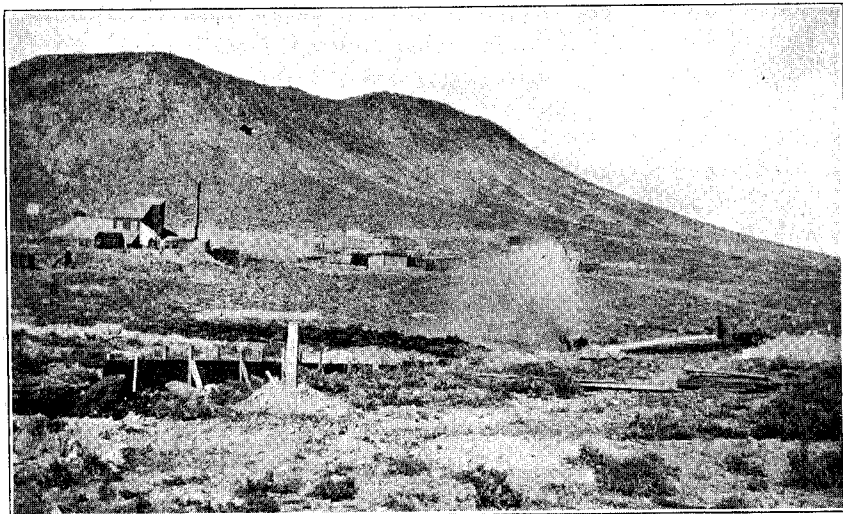


Town of Round Mountain, Nevada.

mobile from Tonopah by way of Manhattan. The distance from Tonopah to Manhattan is 52 miles by the auto road, and from Manhattan to Round Mountain 29 miles. The machines usually follow the old stage-road to Austin, well toward the west side of the valley, crossing back to the east opposite the camp. The daily stage from Manhattan keeps near the foothills of the Toquima range and by this road the distance is only 18 miles. Freight is transported over the Nevada Central railroad to Austin, from which point there is a 52-mile haul over a good road. The site of the town, which has a population of about 500, is on a broad flat gravel slope, offering excellent drainage. Water for domestic purposes is hauled from Shoshone canyon, a mile north.

The mountain from which the camp receives its name is a low flat-topped rhyolite hill, rising less than 400 ft. above the surrounding country, and connected by a ridge toward the east with the Toquima range. On the west slope of Round Mountain is the Sunnyside group of the Round Mountain Mining Co., the most developed property in the camp. On the same slope, to the north, are the Great Western, now controlled by the Round Mountain Co., the Black Hawk, and the Sphinx. Along the connecting ridge are the Antelope, Daisy, and Fairview, all in rhyolite. On the northerly slope of this ridge, near the east line of

W. H. Emmons and G. H. Garrey,* consider the rhyolite at Manhattan as belonging to the Tertiary. Presumably this is of the same period. The granite contains, in addition to the quartz and feldspar, widely varying amounts of muscovite, and shows a gneissoid structure. The shearing indicated by the structure



Sunnyside Mine and Mill. Starting New Pit with Giant of the Round Mountain Hydraulic Co. in Foreground.

of the granite is confirmed by the appearance of the rhyolite, the specimens of which indicate stress, alteration, and leaching.

The veins are of two classes. The larger appear to occupy zones of shearing, if not of actual faulting, and the ore is rhyolite, more or less silicified and altered, often showing much iron oxide. These veins are comparatively flat, though varying much in both

* Notes on the Manhattan District, Bull. U. S. G. S. No. 303

strike and dip. The main Sunnyside vein has a general northwesterly strike, but at one point makes a turn almost at right angles. The dip near the surface is northeast at an angle of 40° , but it flattens to 30° below. An interesting peculiarity is the frequent short drops in the hanging wall, as much as 18 inches, suggestive of step-faulting. In the upper levels the foot-wall is not well marked, and panning is the only method of determining what shall, or shall not, go to the mill. In fact, excepting in the case of the high-grade ore, there is little in the appearance of the ore to indicate its value. A piece of white rhyolite, apparently unchanged except for kaolinization, may run \$2 or \$200. The veins of the second type appear to occupy narrow fissures in the rhyolite; these are nearly vertical, but have a direction similar to that of the flatter veins. These seams, from a knife-blade to an inch thick, and of limited extent, are often very rich. They sometimes carry half an inch of almost solid gold, and appear to be the source of the gold that has made the dry-washing of the surface-gravels profitable. Rich pockets frequently occur where these vertical seams intersect the main vein. The gold occurs in finely divided particles disseminated through the ore, or in flakes, plates, and wires made up of connected fine crystals. Some specimens look like crushed masses of golden moss.

The main shaft on the Sunnyside has reached a depth of 550 ft. on the incline, and the vein, which near the surface was about three feet wide, is 22 ft. wide on the 450-ft. level. At the time of my visit, in April, the vein had been cut on the 550-ft. level, but the width had not been determined. The length of the pay-shoot had been proved for 400 ft. Another shaft, about 1000 ft. east, is also in ore, but whether it is on the same vein has not been determined. The Sphinx has a shaft 200 ft. deep and some drifts, but the mine was closed at the time of my visit, though it was to be re-opened in May. The Fairview has a long tunnel and considerable stoping ground, from which 20 tons is hauled daily to the mill on Shoshone creek. The Daisy and Antelope are principally developed by lessees. The Mulholland lease is said, by the secretary of the company, to have yielded \$60,000 in a few months after the discovery of the camp. Much of this was very high-grade ore from which the gold was pounded out in mortars on the ground. Interesting stories are told of the shipments by suitcase, "which it took two men to lift into the buggy." There are six lessees on the Antelope. From one of them 12 tons shipped netted \$700 per ton, in addition to which about 200 tons treated at the local mill yielded \$32 per ton. The vein along the ridge where these claims lie has a northeasterly strike, and dips southeast near the surface. I was told that in the Antelope it straightens up and with depth dips northwest at an angle of 37° . This vein is from two inches to four feet in width. There is no work below the 100-ft. level on this property.

The manner in which the vein on the Antelope was discovered is interesting. The property was acquired soon after the discovery of the Sunnyside vein by C. C. Boak and others. A California pocket-hunter

was hired to "post-hole the ground" and try to find a vein. In the course of his work the Californian panned the dirt at the mouth of a badger's hole, with such astonishing results that he jumped on his horse, rode to Manhattan, and telephoned Mr. Boak at Tonopah. The owners immediately secured an automobile and were soon on the ground, opening up the badger's hole. At the bottom they found his nest of sticks and straw on top of rock on which was a solid gold plate covering half a square foot. This specimen is still preserved at the company's office.

For the mill-man Round Mountain is a Paradise, in striking contrast with some of the near-by camps. Thus far the ore contains no sulphides. It is soft, and even with coarse crushing over 90% of the gold is saved on plates. There are now four mills operating in the camp. Those of the Round Mountain Mining Co. and the Fairview Co. have been in operation a year. The former is the largest and handles about 80 tons per day. It was erected at the mine, water being obtained from the Hydraulic Co. The ore, after passing a jaw-crusher, goes over a grizzly, whence the coarse goes to a bin, from which Challenge feeders deliver it to two Nissen stamps. The fine is similarly delivered to two 5-ft. Huntington mills. The former have a 16-mesh Tyler rolled slot screen, while the latter have a screen of the same type but about 25 mesh. The stamps are crushing about 10 tons each, and the Huntingtons 30 tons each, per 24 hours. Each of these machines is followed by amalgamating plates 10 ft. long, with a drop in the middle, but in the case of the stamps wooden riffles have been placed over the lower half of the plates. The tailing from the plates passes through a 9-ft. tube-mill and thence over two more amalgamating plates 5 by 8 ft., in parallel. I doubt if the final product would be finer than that which is ordinarily delivered through a 30-mesh screen. In nearly all cases the plates are given a fall of quite two inches per foot.

The Fairview mill is on Shoshone creek, one mile north, and consists of a grizzly, crusher, elevator to bin, feeder, and 6-ft. Huntington mill, with plates. The screen here is finer, both 30 and 40 mesh being tried, and the capacity is only 20 tons per day. All crushing is done on one shift.

The other two mills are but recently installed. The one at the Sphinx is a Huntington, and is being started on ore from the dump. The other, a 6-ft. Elspass mill, is a custom-mill, on Shoshone creek, now treating ore from the Matley & Morley lease, on the Great Western. While the district produces some high-grade ore, the bulk of the ore milled yields between \$10 and \$20 per ton, and in some cases less.

Power for mining and milling purposes is obtained on some mines from fuel oil, costing about 52c. per gal., and on others from burning wood, costing from \$8 to \$10 per cord. It is noticeable that the Sphinx, which has a gasoline hoist, put a wood-burning boiler in its mill. In Jefferson canyon there is a good stream of water, said to flow all the year around. All the water rights below the old Jefferson mill-sites have been purchased by the Daisy Mining Co.

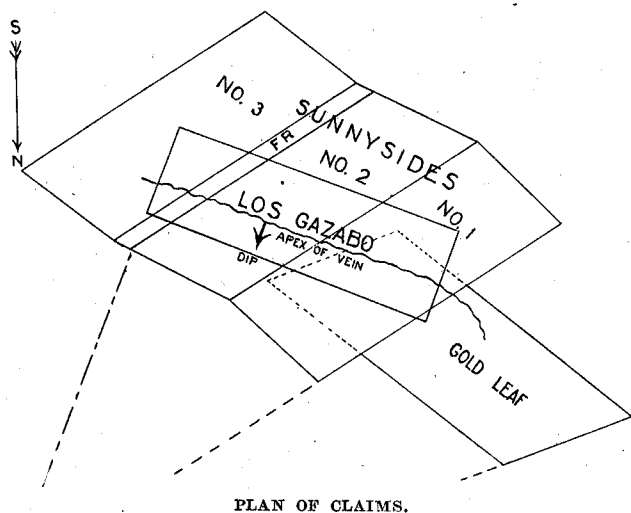
industrious workers, and are satisfied to earn a pittance. Gold is widely distributed throughout China, but probably in no readily accessible district in sufficient quantity and sufficiently concentrated to warrant foreign exploitation. The evidence seen during the trip in 1903 led to a conclusion precisely similar to that of von Richthofen, who traveled extensively through China and whose opinion reported to the Shanghai Chamber of Commerce in 1872 may be quoted in conclusion:

"From my own experience on the subject I have arrived at the conviction that the great number of places in which gold is washed from river-sand in China at the present day, far from furnishing a proof of the wealth of the country, is, on the contrary, clear evidence of the superabundance of human labor, the general prevalence of relatively low wages, and the poverty, individually, of those

engaged in the search for gold. The gold washers of today, with probably very few local exceptions, earn less than the lowest wages which they can get for ordinary labor, and take to that occupation in those seasons only when there is the least demand for field-work. We can, therefore, safely conclude (with those few exceptions) that the greater the yield in gold, the greater will be the poverty of any one province. The sum total is, in some over-populated districts, not inconsiderable, and has quite misled the judgment of those who have even witnessed the miserable conditions of the gold diggers. The number of places in which gold occurs in the various hilly countries of Europe is probably greater, on an average, than an equal area of China. But no notice is taken of them, because nobody could be induced there to wash gold for so little return as is generally obtained in China."

The Round Mountain Case

The Supreme Court of Nevada, on January 4, filed its decision in the case of Round Mountain Mining Co. v. Round Mountain Sphinx Mining Co. *et al.* The case is rather a novel one, presenting the peculiar situation resulting from a single location on the one hand and a group of locations on the other, covering the same segment of vein apex, and illustrating the attempt of the owner of these conflicting locations to change the direction of the extralateral sweep flowing from this segment of vein apex by



attempting to shift the previously asserted priority as between the two sets of conflicting claims.

The plaintiff had obtained a patent to the Los Gazabo and Sunnyside groups of claims. The Sunnyside locations conflicted in surface area with the Los Gazabo, the conflict appearing on the face of the group patent.

Defendants owned the Gold Leaf and Black Hawk claims, adjoining the Sunnyside group. The conflict arose over extralateral rights claimed by the Los Gazabo owners extending beneath the Gold Leaf and Black Hawk. If the end-lines of the Los Gazabo were to be taken as the boundaries of the extralateral plane, then the orebodies beneath the Gold Leaf and Black Hawk would be included therein. If, however, the Sunnyside claims, which lay across

the Los Gazabo, were taken as the basis for the extralateral right, it would be bounded by the side-end lines of the Sunnyside group and no conflict with the Gold Leaf or Black Hawk would exist.

The Sunnyside and Los Gazabo owners, in other words, had proceeded to patent their claims so that the extralateral sweep of these claims flowing from the same segment of vein apex might be taken in either of two directions, and, as development proceeded, elected to use the Los Gazabo lines as giving the most valuable extralateral sweep on the dip of the vein. No adverse claims were filed prior to patent, and the group patent issued, showing the Sunnyside and Los Gazabo lying across each other, and the patent itself gave no light as to which claims took the conflict area. Plaintiff's contention was this was an attack on the patent which was not possible in a collateral proceeding.

The defendants, however, claimed, and their contention was sustained by the court, that inasmuch as a conflict in area was shown on the face of the patent, it was open to construction as to which one of the claims was entitled to the conflict area, because the Government cannot convey the same piece of land twice, even though it is twice described in the same patent. That it was therefore competent for the defendants to go back of the patent and determine which of the locations on which the patent was based was prior in date. That having found as a matter of fact that the Sunnyside locations were prior in date to the Los Gazabo, the Los Gazabo location was invalid as to the conflict, and hence the Sunnyside claims took this conflict area under the patent. That defendants were not estopped by their failure to adverse as to surface area because extralateral rights are not the subject of adverse claims.

The court held in substance:

"It cannot, of course, question the validity of the surface conveyed, but as the patent contains grants of distinct mining claims described by metes and bounds in conflict with each other, and controlling extralateral rights in different directions, it can insist on a determination of which particular claims the apex of the ledge belongs to, as controlling the extralateral rights."