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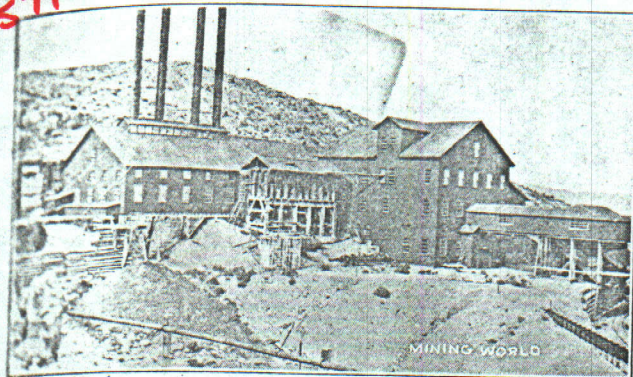
# MINING WORLD

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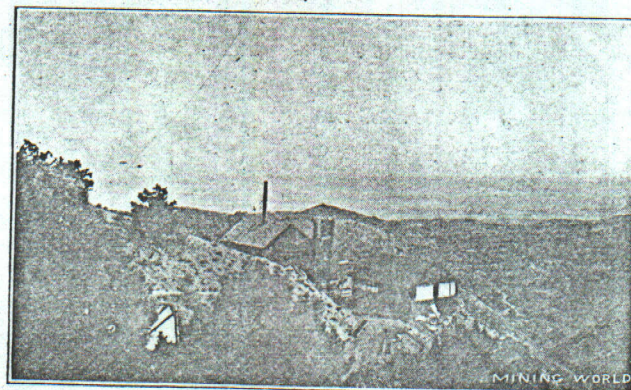
Vol. 45.

CHICAGO

September 30, 1916.



HOISTING WORKS OF THE RICHMOND-EUREKA.



SUMMIT QUEEN MINING CO.'S PROPERTY.

## Review of Conditions in the Eureka Mining District, Nevada

A. G. HILLEN.

The mines of the Eureka district should be among the most productive in the state in the future as they were in the bonanza days of early pioneering. After an absence of 12 years, during which period there have been many changes and much development, the writer is more impressed with this condition than would be an ordinary visitor. Twelve years ago it was my privilege to go through the various old properties, make examination of their workings and study the formations, both underground and through the various geologic sheets, and by contact and much field work with many individuals who had been active in the early development, many of whom are still on the ground and active in mine development work.

Studying the same geologic sheets, and visiting the same properties and many others, and reviewing development during this period, much new light is thrown upon mining conditions here at this time.

In the earlier period one was struck with the enormous production of silver, lead and gold ores, and the difficulty of defining clearly the method of deposition of these ores, just where they might or might not be found, and defining the course, direction or extent of the fissuring or faulting of the formations. It must not be understood from these remarks that the work of Joseph Story Curtis, the geology expert of the government, who completed the survey in 1884, was not of an exhaustive character, or that his conclusions

generally were not correct. With perhaps one or two exceptions, which later development has thrown much additional light upon, Curtis' work is authoritative and complete.

To get a comprehensive view of Eureka district and mines, the topographical features may be briefly outlined. The center or greatest elevation of the district, Prospect mountain, 9600 ft., constitutes the great pivotal uplift of this area, and is situated 3 miles southwesterly from Eureka, south and east some 3 miles is the Secret canyon section, with Hoosac mountain intervening, 8500 ft., north of Prospect mountain and immediately contiguous is Mineral hill, and divided only by a small gulch on the north of Mineral hill, is Ruby hill, 7500 ft., where it has been stated there was found a \$50,000,000 outcrop of ore, perhaps the richest of any known mineral deposit in the state. Again to the north and at an elevation of 6500 ft. is Adams hill, distinguished by perhaps 200 different mine shafts and tunnels, nearly all of which produced or show ores of good grade.

The course of this plane, which with its adjacent spurs form an anticlinal fold, is nearly due north and south, except at Ruby hill, where it turns towards the west, and has a width of a half mile at its narrowest point, and more than 1½ miles at its widest, being at least 7 miles in length, or from the Holly property on the north slope of Adams hill to the



Geddes and Bertrand mine at the southern point in Secret canyon, 5 miles south of Eureka.

Development the past 32 years, the period since Curtis' examination and report, has gone steadily forward, with years of little or no great development, and others when development proceeded with strides and with important results. Perhaps the most active of any during this interval being the years 1907 to 1911, inclusive, when the consolidation of the Eureka Con. and the Richmond-Eureka was effected, these mines resuming development and shipments of a large daily tonnage during this period, and were purchased and operated by the U. S. Smelting & Refining Co. In 1911, the railway connecting Eureka with the main line of the Southern Pacific, was washed out by heavy floods, and a general financial depression prevailed throughout the country, and the mines were shut down.

This line of railway has been repaired, and its operation resumed, but with freight rates at \$20 per ton, and the smelters having more ores than may be profitably handled in the plants at Murray and Midvale, which are the smelting centers of the intermountain territory, the larger mines of the district still defer operations, though they are in excellent condition and may be started on 24 hours' notice.

#### Much Development in Recent Years.

Much development of vital importance to mining in the Eureka section has been consummated in recent years. Development of bodies of ore in contact with the porphyry, in contact with the rhyolite and in contact with what has recently been pronounced granodiorite by the University of Nevada, in contradistinction to the classification of Curtis as being granite, but which is probably a mineralized porphyritic granite, or at least a much altered granite. At this writing, it is a matter of discussion whether the rhyolite, or porphyry, or both, do not extend the entire distance from the north end of Adams hill, southerly to and beyond the Geddes and Bertrand property in Secret canyon. There are numerous outcrops along the strike of the formations, cutting both the limestone and quartzites over this area. In some places the rhyolite may be traced considerable distances; in others the only evidence of its intrusion is in underground workings, which are extensive and would probably aggregate more than 100 miles in this 7-mile mineral area.

There are numerous lime-shale contacts, rhyolite-lime contacts, fissures and faults in lime and quartzite and ore bodies in contact with porphyry in the lime, and with an extensive faulting or fissuring system the mines have developed, the Eureka district offers splendid opportunities for development of productive mines, and many large areas where outcrops of ore are numerous, including many properties that are only partially developed, but which have pay ore exposed.

This is the condition seen in making a trip around

the district. The intrusives undoubtedly created a condition which fissured the surrounding areas of lime, making possible the deposition of extensive bodies of rich ores, by replacement of areas in the "mineralized" limestone in chambers and caves, by deposition of ore in contacts and fissures and faults, and to an extent that is beginning to be understood and appreciated.

The district has produced more than \$50,000,000 in lead-silver and gold ores, and no great depth attained, most of the production coming from above the 600 and 700 levels. There are two or three shafts below this, but difficulties of pumping water has prevented extensive development below the 6th or 7th levels in these properties. A new 1000-ft. 3-compartment shaft has been sunk on the Richmond-Eureka, and the mine equipped with a fine hoisting plant, which will go to 3000 ft. Centrifugal compound high-pressure pumps are now at the plant ready for placing in the mine when operations are resumed.

On the west side of Prospect mountain, and portions of the Adams hill area, gold and silver ores predominate, while lead-silver ores, practically all of which carry gold, run through all the mines from the Bullwacker, to the Geddes in Secret canyon, and many thousands of tons of rich silver-lead ores have been shipped from the Silverado district, and beyond to Newark and the Hamilton district, 40 miles to the east and south.

#### Mining Development in Various Properties.

Richmond-Eureka, comprising the former Eureka Con. and Richmond groups, have probably 30 miles of underground workings, and have produced jointly something over \$40,000,000. The property, is owned by the U. S. Smelting & Refining Co., and is equipped with a large hoisting plant, machine shops, etc., costing upwards of \$200,000. These two mines were famous for their extensive ore bodies and rich ores. Underground chambers or caves were opened in development work, containing large bodies of ore, between the 300 and 700 levels. Practically all the ores of commercial grade were reduced in local smelters, or "lead stacks," as they were called, the evidence of which remains in the huge "slag" piles at several points in the district.

There can be no doubt but that these properties will again be put in productive condition, and that conditions favor as rich or richer bodies of mineral below the 1000 level, as formerly existed in the upper levels, and that the upper levels at the present time contain large bodies of low-grade ores. I. H. Rogers, of Eureka, is general superintendent of the Richmond-Eureka.

Next in point of importance is the Diamond mine, 3 miles south of Eureka, with some 40 miles of underground work, hoisting plants and equipment, both on the surface and in the various tunnel levels, and which has produced about \$4,000,000, most of which was shipped to the Salt Lake smelters. The property is

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at present idle. The greatest depth in the Diamond is between the 700 and 800 levels. The property embraces a large area of patented ground. There are conditions at the Diamond that should make this one of the big properties of the district.

One of the late developments in the Eureka district has been the bonding of several well-known groups in and near the California and in California gulch, by a group of New Yorkers headed by Major Catlin, who is on the ground in charge of development. Machinery for complete hoisting plant has been purchased. The Old Dunderberg mine, the New Dunderberg, the Uncle Sam, and others, have all been segregated under Catlin's management. Ore bodies

reaching the 100 level, the ore is hoisted and shipped as broken in the mine, and these shipments are now running about \$65 per ton in carload lots. It is stated more than 50% of the purchase price has been paid in royalties since shipments were started, and there is no doubt they have opened a body of ore that will make huge profits. Some of the better grades will run up to \$200. A new hoist and engine equipment is being installed and new development planned.

Immediately adjoining is the Murphy lease on the Helen Mortimer claim. Here are two sets of lessees. Both are taking out shipping ore of practically the same character and grade.

Above the Mortimer is the property of the Hueb-



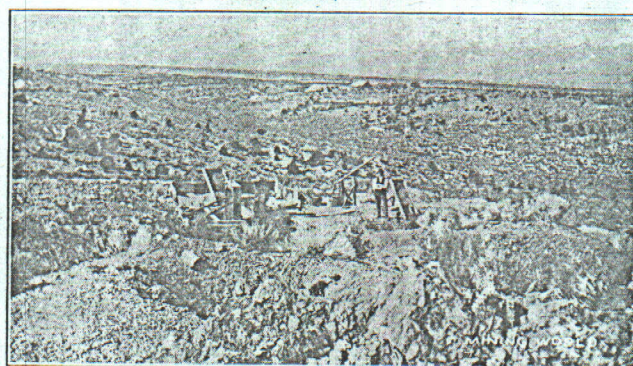
THE DIAMOND PROPERTY.



SUMMIT SOUTH OF DIAMOND PROPERTY.



ADAMS HILL, LOOKING SOUTH—ORIENTAL AND BELMONT MINES.



ADAMS HILL, LOOKING NORTH—HOLLY MINE IN DISTANCE.

are being opened up, new ground developed by shaft and tunnel, and ore is now being shipped by leasers from this group.

Within 100 yds. of the proposed shaft house and head frame of the Catlin property, leasers are shipping high-grade ore from the California property now under bond and lease to Rebellette & Kelly. Since taking hold of the property a little over a year ago, they have steadily worked the property, sinking and drifting on a body of low-grade ore, or iron capping, and have run a tunnel in about 50 ft., sinking 50 ft. where shipping grade ore was encountered. Since striking the ore about 20 carloads have been shipped, which ran well over \$50 per ton. At first the ore had to be sorted, but at present, and in fact ever since

ner Bros., now under bond to D. States, formerly of Salt Lake. The Huebners and A. Affranchino have been shipping from this property at intervals for more than a year, and have developed several faces of shipping grade of ore in four or five different drifts and raises. Running through the last three properties mentioned is a strong outcrop of rhyolite, with a strike a little west of north and east of south, that also appears on the Uncle Sam property, and is reported on the Hamburg mine to the southeast and at the Windfall mine, a mile farther southeast. Ore has been found in the contact and making in the lime in the California and Mortimer, and it is expected this contact will be cut in the Huebner claims in the lower development tunnel that is proposed. Fine



pages of shipping grade ore have been exposed in development of the Huebner claims. The illustration shows ore sacked for shipment at the mouth of tunnel and at the side of the road about 300 ft. distant. On this property there is an east and west fissure and north and south "break" or fracture showing mineral of good grade, all in the lime. There is a strong outcrop of rhyolite running parallel with and cutting through a portion of this property. The tunnel is now in 150 ft. The property lays between the California on the north, and the Diamond on the south, and was acquired early in 1915. A tunnel started on a heavy iron outcrop developed \$12 ore near the surface. Sufficient ore has been shipped to pay for all development and leave a good surplus for equipment.

#### The Silverado District.

The Summit Queen Mining Co. is planning extensive development work. This company, recently organized by Charles L. Broy, C. Johnson and associates, acquired the Queen and Result properties. This company also owns a group of claims known as the Summit, between the Diamond and Geddes and Bertrand, in the Secret canyon section, where a good grade of lead ore is sacked for shipment. The south 2000-ft. drift in the Diamond approaches the northerly line of the Summit. In this south drift a body of ore was developed and shipped said to have exceeded 18,000 tons of \$80 average grade. The Summit will be developed by both shaft and tunnel.

The Summit Queen Co. also controlled the Oriental and Belmont claims on Adams hill. Leasers are sacking and shipping ore from the Belmont. Much development has been done on both the Oriental and Belmont and a great deal of silver-lead ore shipped. In the early days the Belmont shipped quantities of lead-silver ore, but little depth was attained. At the Holly and Bullwhacker, at the northerly portion of the Adams hill region, large bodies of ore have been developed in the lime and at or near the porphyry contact, and a great deal of high-grade ore shipped.

At the Marne group on Adams hill, Harris and Fine have developed bodies of shipping ore during the past several months. There are numerous workings on this property, some of which are connected underground, but the deepest shaft is only about 100 ft. It has been the practice of leasers on various properties (still being carried out in places), that when the ore bodies showed signs of depletion, to start work at some other point and fill up the older workings with waste from the newer workings, and there is no doubt that many workings on Adams hill would show good ore at the present time if the older workings were cleaned out. There has also been much caving of the older work. Harris and Fine are developing a very promising property, and are making shipments to more than compensate for the expense and labor involved.

Alex. Fraser, with his associates, has under de-

velopment the Wild West property, adjoining the Cyanide mine on the southwest, the property between the Wild West and the Marne on Adams hill. A large amount of ore has been shipped from the Wild West, and at present a drift is being run from the lower level to get under a big outcrop on the surface upon which a tunnel was driven in early days and much ore extracted. This drift will reach a point where the ore is expected in the next 50 ft.

The Cyanide property is equipped with hoisting plant and has an incline down 300 ft., with various levels and drifts, and gold-silver ore of good grade is being extracted.

Owing to limited space, a description of the Holly, the Bullwhacker, the Windfall, the Geddes and Bertrand, the Hamburg and others is omitted.

A. Affranchino & Sons, of Eureka, owners of the Pack Saddle group, are shipping \$40 lead-silver ore from the Lucia Tuffa, located in the mineral-bearing lime belt between the Hamburg and the Old Dunderberg mines,  $3\frac{1}{2}$  miles southeast of Eureka, and on similar formations to the Richmond-Eureka. A strong fissure is being followed in the Lucia Tuffa and Pack Saddle southeasterly and northwesterly, and is mineralized throughout, so far as developed. Cross fractures occur leading off from this fissure to the shale, at intervals of from 50 to 150 ft. Along these cross fractures and in contact with the fissure the ores make and in contact with the lime and shale. In the contact the ores are heavily oxidized and occur in quartz and iron. Values run about \$7 gold, 1 oz. silver, 30% iron with some lead.

The Extension, adjoining the California, is owned by M. Murphy, and Ban Repetto and Alf. G. Repetto have shipping grade of ore. The property is developed by tunnel, shaft and drifts, the shaft being in the tunnel about 200 ft. Shipments averaging \$15 per ton, and a carload per month are reported.

The Silver group, comprising claims 1, 2 and 3 on Adams hill, is owned by Ban Repetto and associates, and have a big iron outcrop, showing values, and is considered a very promising property.

M. Murphy and Phil Paroni have a property adjoining the Silver group on Adams hill, showing considerable development in varying grades of ore carrying lead, silver and some gold values.

Business and mining men of the Eureka mining district have organized a mining bureau for the dissemination of information of reliable and authentic nature covering mining operations in this section. The Eureka Mining Bureau is composed of the leading operators of the district and every attention will be given inquirers desiring information.

The occurrence of mica deposits in many countries insures future supplies of mica for the world for years to come, and the numerous undeveloped mica deposits of the United States may be considered among these resources.

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The mines in the world, at depths corresponding to the question of the attainment, defective occasions the mine is the time it has frequently the above is considered which represents at any rate due to the limit at agency, and as the more serious volume of air ions, and by 1 has passed over (outside two) dis surface, instead as in the old conditions will Due to the position as regards its being in Watts has proved block by one very show that this in diameter give ample venting out of a blinze for minerpeast, which disappears as the the mining operationize from one to ft. from the hole, and some return airway with that of the old two vertical winay and the eas in the tempo 3 to 4 ft. ste formerly used is tunneling between winze and the b the temporar another advan when it is comp permanent way i It was difficu Superintendent of Mining Co.; ex