1710 0001

23 p

(27)

Item 1

R E P O R T

Upon the Property of the

ELDORADO CROWN MINING COMPANY

Eldorado Mining District.

Clark County, Nevada.

by

WALTER M. BROWN,

Mining Engineer and U. S. Mineral Surveyor.

See also map files
(3 maps)

GEOGRAPHY.

The properties of the Eldorado Crown Mining Company are situated in the Eldorado Mining District, Clark County, Nevada. Until separated from the parent county by legislative act which became effective July 1st, 1909, Clark County formed the southern half of Lincoln County. It embraces the extreme southern end of the State of Nevada, bordered by southern California on the west, and the Colorado River and Arizona on the east. Las Vegas is the county seat, a growing city of about 2,500 population; the chief supply center is Los Angeles, and, to a lesser extent, Salt Lake City. Two great railway systems serve this section--the San Pedro, Los Angeles and Salt Lake R. R. (the "Salt Lake Route"), which runs through Clark County almost from end to end; and the Atchison, Topeka and Santa Fe, which operates a branch line from Goffs, California, to Searchlight, Nevada.

ACCESSIBILITY.

The little town of Nelson lies in the heart of the Eldorado Mining District, 23 miles north-easterly from Searchlight, and about the same distance easterly from Jean. Searchlight is the terminus of the branch line of the Santa Fe, while Jean is a station on the Salt Lake Route, midway between Nipton, California, and Las Vegas, Nevada, and is the supply point for a mining country lying to the west, which embraces Goodsprings and Sandy. A first class desert wagon road connects Nelson and the various active properties of the Eldorado district, with Searchlight, which is the sole distributing point for that

section at present. No connection exists with Jean, though a wagon road to that point is being strongly advocated by the residents of both places. If such a road is constructed, it will give Eldorado Canyon a choice between two railway systems, and two supply points, and can scarcely fail to result in better prices on most supplies. Nelson is also connected by wagon road with Las Vegas, 45 miles to the north. This road is now being improved with a view to establishing automobile service between the two places, and cementing closer relations with the county seat. Just as Reno is the northern gateway, so is Las Vegas the southern gateway to a large portion of western Nevada, and she is making a strong fight before the Interstate Commerce Commission to obtain terminal rates, which have already been granted to Reno. If successful in this fight, she will undoubtedly become a factor in the Canyon trade, as the back-haul from the coast will be eliminated. Moreover, produce from the Muddy and Virgin valleys, lying only a short distance to the north of Las Vegas, on a branch of the Salt Lake Route, now building, can be laid down in the Canyon cheaper than similar supplies from the coast, notwithstanding the longer wagon haul. Unless other projects now under consideration result in a radical change in the entire transportation situation, it is probable that ultimately a branch of the Salt Lake Route will be built from Las Vegas southerly to Eldorado. Furthermore, an extension of the Santa Fe branch to the head of the Canyon is perfectly feasible and comparatively inexpensive. The Canyon itself cannot be entered by the Santa Fe except at great expense, as it is about 11 miles in length, east and west, with a drop in that distance of fully 3,300 feet to the Colorado River.

CLIMATE.

This portion of the great southwest possesses the arid,

"desert" climate that is typical of southern Nevada, California and Arizona, but somewhat tempered by the altitude. It is literally the land of perpetual sunshine. At Searchlight, the climate the year round approaches the ideal. During the summer months, the midday temperature ranges from 90° to 110°, with an occasional climb to 115°. But the entire absence of humidity in the atmosphere renders these temperatures far more endurable than 85° or 90° in the east, middle west and south. The nights are invariably cool; and heat prostrations are almost unknown. Rainfall is scanty; the mountains are devoid of timber; the vegetation consists of "joshuas" or yucca palms, Spanish bayonets, greasewood and sagebrush, with an occasional mesquite; but the soil is wonderfully rich, and only requires the application of water in order to raise almost anything under the sun. During the winter months, an infrequent snowstorm visits the higher altitudes, including Searchlight and the head of Eldorado Canyon; but the snow seldom remains on the ground for more than a few days at a time. Mining operations can be conducted the year round, with little or no interruption from the weather.

HISTORICAL.

There is some evidence that the Eldorado Mining District was known to the Mexicans a great many years prior to American occupancy; but its modern history dates from its discovery in 1859 by a squad of soldiers from Las Vegas. They discovered the Honest Miner lode, now owned by the Rand Mining Company, and carried specimens of the ore with them upon their return to Las Vegas, where there happened to be several prospectors from Pioche and the Comstock. The news of the Honest Miner strike caused a rush into the new district. Among the earliest locations made were the Techatticup, Savage, Nash (now the Bus-

ter), Platt, Gettysburg, Rover, Wall Street and others.

During the civil war, noncombatants of both sides were engaged in prospecting the new district. Union sympathizers had their headquarters at what is now known as the Buster Falls, while the Confederate camp was about a mile further down the Canyon, where the Lucky Jim claim now lies. During the four years of the war, the two factions did about 4,000 feet of work in various parts of the Canyon. And many of their cuts, shafts and tunnels still exist, with their evidence of black powder blasting.

Early in the '70's, one Knox organized a company to work the Techatticup, Savage, Rover, Nash and Platt lodes. Later, these properties were sold to another company, known as the Southwest Mining Company. The price is said to have been $150,000. Among the members of the new company were Joseph Wharton and the Barker Brothers (bankers), prominent Philadelphia capitalists; one Burnham, then President of the Baldwin Locomotive Works; and the same Knox who promoted the first company. The first ores from the district were shipped down the Colorado River by steamboat, or hauled across country by wagon to San Bernardino, California. Later, two or three mills were erected on the Colorado River, at the mouth of Eldorado Canyon, and the ores were worked in the district. The surface ores of the Techatticup and that portion of the Canyon which first received the attention of the Southwest Mining Company, were rich in silver, and the first milling process used was the Washoe pan and settler system of amalgamation. Later, the company secured other properties (notably the Wall Street) in which the principal values were gold. One Mills was for years the local manager of the company, and appears to have been very successful.

During the panic of 1893, Barker Brothers failed, the

Southwest Mining Company became involved in financial difficulties, and about 1899, Joseph Wharton bought the company's entire holdings at sheriff's sale. At this time, the property consisted of the Techatticup, Savage, Platt, Jubelee, Rover, Rambler, Lucky Jim, Lone Cabin and Old John lodes, in the eastern end of the district; and the Wall Street, Mocking Bird and Quaker City lodes in the western end, together with a 25 stamp mill at the river. Meanwhile, Mills had died in 1896, and was succeeded as manager by Chas. Gracey, who abolished the pan and settler treatment, and depended upon straight plate amalgamation and concentration for the recovery of his values. As all of his tailings were discharged into the Colorado River, nobody but himself knows what recovery he made. When Joseph Wharton came into possession, operations were permitted to languish, and finally ceased entirely, after a disastrous experiment with a traction engine as motive power up and down the Wash, which is very sandy and has an average grade of 6% to 7% towards the river.

In the meantime, gold was discovered at Searchlight, and the foundation of that camp was laid in 1898. When, a few years later, Joseph Wharton made application for U. S. patents for several of his Eldorado Canyon properties, his manager employed surveyors from Searchlight, who brought back to that camp such glowing reports of the Canyon that another small sized rush was caused, and many new locations were made.

About 1904, the Black Hawk Mining Company was organized with Pittsburgh capital back of it. This was followed in quick succession by the Venus Mining Company, and the Mountain Eldorado Mining Company. These three were soon consolidated, and after a checkered career, due largely to a top heavy capitalization and dissensions among the stockholders, their properties

are now being operated by the Rand Mining Company, with every prospect of success and ultimate dividends. This company has a 10 stamp mill, located at the mine itself.

In 1907, the Nevada Eldorado Mines Company, composed of Colorado people, acquired the Flagstaff Group, at that time a mere prospect, and in the next three years, with a small force of men, developed 60,000 tons of $10 ore. This property was developed for a sale, and is now on the market at $325,000. The Nevada Eagle M. & M. Company, a Philadelphia promotion, has also developed a bare prospect during the last two years to a stage where it is ready to become a large low grade producer. This company plans to erect a 40 stamp mill this fall, 10 stamps of which have already been delivered. The Capitol mine, opened to a depth of 400 feet, has an excellent showing; and several other properties are being operated on a smaller scale. The development of the entire camp has been retarded, however, by the policy of Joseph Wharton and his heirs. The Wharton properties (comprising nearly all of the old time producers) can be neither leased nor purchased on anything resembling reasonable terms, and the present owners make no pretense whatever of working them themselves.

PRODUCTION OF THE DISTRICT.

Many reports are rife as to the production of the district, intelligent and well informed old timers insisting that it was from $5,000,000 to $7,000,000. However, the principal production was made by the Southwest Mining Company, and the writer has been informed by Chas. Gracey himself that the books of that company show a production of about $1,750,000, which he credits to the following properties:

$950,000 to the Techatticup and Savage lodes.

$500,000 to the Wall Street.

$300,000 to the Rover, Lucky Jim, Mocking Bird, Quaker City and Jubelee.

As has already been said, the surface ores of the Techatticup carried proportionately large amounts of silver and little gold. Old timers who had ore worked by the various mills tell of settlement being made on the basis of the silver contents only, any gold that might be present being considered a "perquisite" of the mill. As silver in those days sold at from $1 to $1.29 per ounce, these silver bearing ores were naturally much higher grade ores then than they are today; but improvements in mining and milling methods should fully offset this difference in grade. The Wall Street, Honest Miner, and others are strictly gold producers; while even the Techatticup in its lower workings, carries much larger values in gold than in silver.

All of the old time work was done through tunnels and shallow shafts, and by hand. Much of it was done with black powder. Until within the last 10 years, there never was a piece of machinery on any of these properties more complicated than a windlass, a wheel barrow, or a hand pump. No effort was made to accomplish anything below water level. Even the Wall Street, with its production of half a million dollars, was worked to a depth of less than 100 feet, because water level was struck at about that depth. The last work that was performed upon the Wharton properties, some four years ago, was the sinking of a shaft upon the Techatticup vein, from one of the tunnel levels. This shaft showed ore all the way, though considerable of it was narrow. At 250 feet below the tunnel, and 430 ft. below the apex, 3 to 4 feet of ore was struck, and opened by drift for 100 feet in length, which runs about $75 per ton, when

reasonably clean. Some 600 tons of mixed ore and waste, from this drift and stopes just above it, were milled 3 or 4 years ago, and averaged $48 per ton. This constitutes the last work done for Joseph Wharton, who died soon after. Nothing has been done by his heirs.

ELDORADO CROWN MINING COMPANY.

The properties of the Eldorado Crown Mining Company consist of the following named lode claims, viz:

The Queen, Crown, Jubilee Extension and Waterloo lodes, lying in a group and aggregating about 64 acres; and the Cross lode, an isolated but nearby claim, of 18.709 acres. However, the owners desire to retain the Cross lode, and its sale will not be considered with the other group, except at an advanced price. It is practically undeveloped.

The Queen and Crown lodes of the main group, aggregating 24.566 acres, and the Cross lode, are in course of patent, the Register's Final Certificate of Entry being about to issue. The other two claims, the Jubilee Extension and the Waterloo lodes, comprising about 40 acres, are held by location, possession, and compliance with the laws of Nevada, with no known adverse claims.

There are several incumbrances against the property, but owing to the changeable nature of some of them, it is deemed advisable to treat of them in a supplementary report, which can be readily kept up to date.

LOCATION.

This property is situated 2½ to 3 miles easterly from Nelson, in the eastern end of the Eldorado Mining District, and is, therefore, about 26 miles distant from Searchlight. If the

visitor to the district prefers the Salt Lake Route to the Santa Fe, Searchlight can be reached by a daily automobile stage from Nipton, California, a distance of 25 miles. From Searchlight, a stage runs to Nelson six times per week. A telephone system connects all the important mines and business houses of the Eldorado and Searchlight Districts, and extends to Nipton, California. Another line is projected from Eldorado Canyon to Las Vegas, for early construction.

The elevation of the Santa Fe station at Searchlight is 3550 feet; while the property of the Eldorado Crown Mining Company is from 2,000 to 2,200 feet above sea level, and about 1200 or 1300 feet above the Colorado River, at the mouth of Eldorado Canyon, a little more than 4 miles easterly.

The main showing, as so far developed, is upon the Queen lode, although the Crown lode, which forms the direct eastern extension of the Queen, has some immense quartz croppings that have scarcely been touched. The Queen lode is a full length claim, but only 317 feet wide; and the vein is very close to its north side line.

COUNTRY ROCK.

The country rock is classed by F. L. Ransome as a fine grained quartz monzonite, intermediate in composition between a true granite and a quartz diorite. (See Bulletin No. 303, U. S. Geological Survey, page66). The veins are essentially well defined fracture zones in this quartz monzonite or quartz diorite, and the vein filling consists in part of vein quartz and calcite, and in part of shattered country rock that has been cemented and partly replaced by quartz and calcite.

The Queen vein has the following characteristics:--

Strike: N.87°E., on the Queen, gradually swinging

to about S.45oE. on the Crown.

Dip: Southerly, varying from 45° to 60° at the apex on the Queen, to 76° or 77° in the bottom of the Queen tunnel. On the Crown, the croppings are much flatter, a 54 ft. incline on the vein showing a dip of only 26°, although it is getting steeper in the bottom.

Width: Not clearly shown, but apparently from 12 to 18 or 20 feet, with some evidence of a width of 30 feet just west of the Queen tunnel.

Outcrop: Not unduly prominent, except on the Crown claim. It can be traced from the Queen discovery monument 400 feet westerly, where it is faulted and thrown about 150 feet northerly, into the Jubelee lode, and continues westerly a distance of approximately 950 feet, faulted at frequent intervals, until it disappears beneath erosion detritus, just west of the boarding house on the Cross lode. Easterly from the Queen discovery post, it can be traced more or less continuously for 250 feet, where it disappears, to crop again about 200 feet further east. A short distance beyond this, an immense cropping appears, which is presumed to be the same ledge, although it is materially different in texture and composition, and has a much flatter dip. This large outcrop, broken by many faults, and displaying other irregularities, continues in a south easterly direction, crosses the Queen and line into the Crown, traverses the full length of that claim, and continues to crop, more or less irregularly, for another thousand feet beyond, or a total distance of approximately twenty-eight hundred feet beyond the Queen discovery post.

Hanging Wall: On the Queen, the vein as a whole does not appear to have any distinct hanging wall. The country rock on the hanging wall side is the characteristic quartz monzonite, more or less altered by silification. This is also doubtless

true of the Crown, though lack of development precludes a definite statement on that point.

Foot Wall: It is doubtful if the vein, on the Queen, has any distinct foot wall. The country rock on the footwall side, on the Queen, Midway and Cross lodes, and most of the Jubelee, is quartz monzonite or quartz diorite, more or less altered, and frequently showing a network of calcite and quartz stringers. But this condition is radically different on the Crown, where the main croppings rest upon a basalt footwall. The 54 ft. incline on the Crown lode has been driven partly in the vein quartz and calcite and partly in the basalt footwall, and the line of demarcation between the two is absolute. This incline shows a badly shattered condition of the ledge, in a transverse direction. Open fissures from a mere seam to five or six inches in width, and at intervals of from a few inches to a couple of feet, extend across the vein apparently from wall to wall, suggesting that the vein has fallen over upon the basalt and been shattered by the fall. Whether or not the footwall of the vein in place is basalt, remains to be proven. On the Queen, at least one basalt dike cuts cleanly through the vein, and through all intervening formation, clear to Eldorado Wash, clearly proving that the basalt in that case is the later formation. Yet, notwithstanding the shattered condition of the Crown vein, with its gaping fissures, the basalt does not penetrate any of the crevices and interstices in the ledge, but forms a smooth wall upon which rests the fractured and fissured ore body. This condition would seem to indicate that the basalt is older than the vein (which is extremely doubtful); or, if of later origin than the vein, that the upper portion of the latter has broken over upon it since its extrusion. This same condition exists upon the eastern portion of the Jubelee, and a

pretty problem of correlation remains to be worked out. It is possible that a microscopical examination will prove this so called basalt to be a much older eruptive rock, of somewhat similar texture and composition.

Vein Filling: At or near the center in width of the Queen vein, the vein filling consists of a layer or streak of almost solid calcite, with perhaps a little quartz and dolomite scattered through it. This streak, as a rule, is very hard, from 2½ to 4 or 5 feet in width, and is differentiated from the rest of the vein by the possession of distinct walls. At a casual inspection, this calcite impresses one as being comparatively barren, and particularly of gold. Yet it is the most consistent ore in the vein, and averages higher in its gold content than the most likely looking quartz. It is usually good for a value of $12 to $20 per ton, nearly 50% of which is gold. This calcite sometimes encloses fragments of unaltered quartz monzonite.

The rest of the vein filling varies greatly in its character. Sometimes it is a brittle, oxidized, "fly-specked" quartz; at other times it is a nearly solid white quartz, only slightly stained with iron; a large part of it is a mixture of quartz and calcite; and at times it consists of shattered monzonite, cemented and partly replaced by quartz and calcite. Nearly all of this mixture of quartz, calcite and altered country rock originally contained finely disseminated pyrite, and, doubtless, galena, which are now oxidized. The best of the quartz can be readily identified by its brittle character and "fly-specks" of brownish iron oxide which liberally besprinkle it. There are other "fly-specks" existing in much of this ore, consisting of black oxide of manganese, some of which appears in its graphic form. The manganese is no indication of value. The

quartz may be liberally sprinkled with it, but if the brown iron specks are missing, the ore is almost invariably low grade.

Length of Ore Shoots: The surface does not afford much opportunity to judge of the probable length of ore shoots, without doing a great deal of open cut work and trenching. Practically the entire outcrop, on both the Queen and Crown, is low grade where exposed to the weather, and it is evident that a considerable amount of leaching of the surface values has taken place. The outcrop immediately above the Queen tunnel does not begin to hold up to the value of the ore in the tunnel itself. Apparently, however, this surface leaching does not extend to any great depth. During the course of my examination, I opened new ore at two widely separated points on the Queen, which did not show a color in the pan at the surface, but which, at a depth of one to two feet, panned nicely.

Surface values ranging from $1.00 to $10.00 per ton can be obtained for 600 feet in length on the Queen vein; and there would seem to be either a single continuous ore shoot of that length, or several shorter ones, with comparatively little barren ground in between. Both the Techatticup and Savage veins show continuous ore shoots of 600 and 800 feet in length; and it would not be at all surprising to find the Queen vein doing likewise.

The Crown is largely an unknown quantity. My sampling of this claim was limited to a single sample, partly because I already knew the outcrop to be low grade, and partly because, at that time, I had no idea of finding better than average values in the calcite, as disclosed in the Queen tunnel. The Crown incline is also in calcite, which, in the light of my results on the Queen, is well worth close study and accurate sampling.

Oxidized Zone: In general, the oxidized zone in El-

dorado Canyon is limited to a depth of 100 feet or so. Whether or not the Queen vein will follow the rule in this respect remains to be proven. The water level as shown in a couple of shafts on the Jubelee, is about 130 feet below the Queen apex, but the water level is far from uniform in the Canyon, and the Queen may differ radically from the Jubelee. The Queen vein is larger and more open in its character than most veins of that section, and the oxidation may extend considerably deeper, if the water level proves to be lower.

Sulphide Ores: Except for an occasional small patch of partially oxidized pyrite, near the surface, no sulphide ore has been encountered in this property. But it is probable that, when the ore does turn base, it will resemble the sulphide ores found in the Rand, Flagstaff and Techatticup properties, as country rock, vein formation, and oxidized ore are all very similar. The typical Techatticup sulphide consists of a quartz gangue with little or no calcite, carrying considerable quantities of galena and pyrite, and small quantities of sphalerite and chalcopyrite. In ores of an average grade, these are all finely disseminated, and the degree of concentration is about 30 to 40 into 1. The Techatticup contains some ores that consist of nearly half mineral, but they are very high grade, running from $300 to $1,000 per ton. In the Rand and Flagstaff, and probably in the Techatticup also, the value of the base ore seems, to quite an extent, to vary according to the amount of galena present.

SURROUNDING COUNTRY.

The general formation of the entire north side of Eldorado Canyon, from the summit on down to "Four Dollar" Mountain, a distance of about seven miles, and for a width of a mile to a

mile and a half, is this same rock which Ransome classes as quartz monzonite. North of this, there is a wide stretch of country consisting of successive flows of a dark, purplish basalt, and lighter colored flows of rhyolite and rhyolite breccia, which are known locally as "malpais." North of the Techatticup, great layers of these volcanic flows, of different shades and textures, are tilted at an angle of about 30° to the north-east, in the direction of the Colorado River. While much of this "malpais" is a surface flow or capping, its source cannot be far distant from the mineralized zone of Eldorado Canyon, and one would naturally expect it to have exerted marked influence upon the various mineral veins of the district, even though of later origin. A casual examination will convince one that such is the case. Faults are numerous, and many of them are undoubtedly due to lines of weakness created by the extrusion of the tremendous masses of basalt and rhyolite; basalt and rhyolite dikes in the monzonite are not uncommon; and even the dip of the veins themselves must have been more or less influenced by these flows.

Commencing at the head of Techatticup Wash, the southern edge of these volcanic rocks describes a well defined and fairly regular arc of a circle, swinging first slightly to the north, and then gradually to a south-easterly direction. The immense basalt flow (approximately 1,000 feet thick) at the head of Techatticup Wash is clearly shown in photos Nos. 13 and 19, in the right hand background. About a mile and a half or two miles east of the Jubelee, this flow swings across Techatticup Wash, there being a great hill or Mountain of basalt and rhyolite on each side of the wash. These hills are both shown in photos Nos. 12 and 17, while the north hill is also shown in Nos. 5 and 18, and the south one in No. 9. Somewhat closer, and

still further south, is "Four Dollar" Mountain, shown in photos Nos. 11 and 21. This mountain is only about half a mile easterly from the easterly end of the Crown claim, and the entire Cross outcrop may be said to be roughly parallel to the southern edge of the volcanic formation. It seems probable that this is more than mere coincidence, though it is impossible at this time to state to what extent, if any, the Crown vein owes its present situation and condition to these eruptives.

Another item worthy of remark in connection with this volcanic flow is the presence of a narrow dike of rhyolite breccia in the basalt on the easterly end of the Queen and the westerly portion of the Crown, about 40 feet north of the main quartz cropping and roughly parallel to it. This dike, on the surface, appears to be only 1 to 1½ feet in width. Its dip is not clearly shown, though probably to the south. Near the westerly end of its outcrop, it is plentifully sprinkled with fine grains of ixidized pyrite, and a specimen showed free gold to the naked eye. Further east, the brecciation is much more marked, but its mineral character generally less favorable. No work of any kind has been done upon this dike, nor were any samples taken from it, in connection with this report.

Much of the apparent irregularity of the Crown outcrop is doubtless due to its flat dip, transverse fracturing and uneven erosion. But both the Queen and Crown show frequent faulting. Just north of the Crown discovery post, a secti on of the vein appears to have been thrust bodily to the north, a distance of 30 feet or so. However, basalt appears between it and the continuation of the ledge east and west, and it is probable that this part of the outcrop consists of a portion that has broken off and fallen a few feet down the hill, beyond the southern edge of the basalt.

Going west on the Queen outcrop, the vein is faulted at irregular intervals, ranging from 40 or 50 to 200 feet, and, in every instance observable, displaced northerly. Most of these displacements are for distances less than the width of the vein, indicating that a drift can be driven continuously upon the vein, and that little or no dead work will be required to keep in touch with the ore. The present Queen tunnel shows up the following conditions, more or less clearly defined:--

1. A break or fault in the cross cut tunnel, striking in the same direction and dipping west at an average angle of about 35°. This entire cross cut tunnel is filled with crushed ore, but if there is any displacement along the break, it would seem to be slight.

2. A basalt dike, with a strike of about S.24°W., and a dip somewhere between 45° and 60° to the north-west, which cuts cleanly through the vein, but apparently without displacing it.

3. A nearly vertical fault or break, approximately at right angles to the course of the vein, which may or may not displace the ore a few feet, and is, itself, cut and displaced by No. 4.

4. A flat fault, with a strike north-east and south-west, and a dip of somewhere around 20° to the north-west, which cuts and displaces not only the ore, but also the vertical fault, No. 3. Fortunately, the tunnel itself gives the measure of this throw. The upper portion of the ore body has been displaced about 10 feet easterly and about 4 or 5 feet, plus the thickness of the vein, to the north. This flat fault is deemed of considerable significance in connection with conditions affecting the Jubelee and Queen lodes, which will be touched upon when the Jubelee is described.

WATERLOO AND JUBILEE EXTENSION LODES.

These lodes were taken up principally for surface ground and to cover a small flow of water in Techatticup Wash at a point where bedrock comes to the surface. This water is so far below the Queen apex that it would seem to be more economical to sink wells in Techatticup Wash, above the Queen, where the water will run down by gravity after being pumped to the surface, rather than to attempt to pump it from the Waterloo. However, a good portion of the surface of these claims is fairly level, and would make an excellent site for boarding house and dwellings. Their value as mining claims is small.

CROSS LODE.

The Cross lode contains a large bluff or hill, which is mainly composed of quartz, calcite and brecciated monzonite. It has the appearance of a possible junction between an east-west vein and a north-south one, though if two such veins exist, it is impossible to trace either on the surface for any distance. At the east base of this quartz hill, two or three open cuts disclose some very good ore, but it is so badly complicated by faulting that its extent or direction cannot be determined. For this reason, and also because the local owners desire to retain this claim, I did not attempt to make a very careful examination, and took no samples. The extension of the Queen vein doubtless strikes across the width of the Cross claim, but it has not been opened at any point, and its value is not apparent. The value of the property of the Eldorado Crown Mining Company rests upon the Queen and Crown lodes, and while additional acreage might be desirable, it is by no means essential, except possibly in the case of the Jubelee.

JUBELEE LODE.

This is a patented claim, of full size, belonging to the Estate, or the heirs, of Joseph Wharton. The owner and operator of the Queen and Crown lodes should also own the Jubelee. The latter is the senior location, and, as shown upon the ideal cross section, the dip of the vein is such that if it continues at the same flat angle, it and the Queen vein will intersect at a depth of about 400 feet on the latter. Just what happens at that depth is problematical. If the Jubelee vein should unite with the Queen, or cut it off, the Jubelee would take the ore from that point on down. However, I am by no means convinced that this condition exists--rather the reverse. The Queen vein, for a portion of its length, once apexed on top of Jubelee hill, the highest point shown in photos Nos. 1, 2, 4 and 16. Erosion on the south side of the hill cut the vein in two, leaving a small part of the original top portion of the vein still on Jubelee hill, but forming a second apex inside of the Queen lines. A portion of the original apex broke over onto the north side of Jubelee hill, and now lies upside down on the hillside, with a flat dip to the north. The ideal cross section of the Jubelee vein shows that there, too, a portion of the outcrop has broken over, and, while maintaining about the same dip as before, lies several feet lower. These various conditions, coupled with the frequent faulting observable, particularly the flat fault in the face of the Queen tunnel, and with the fact that the Jubelee vein or veins lie in the same formation as the Queen, and apparently swing around in a circular course to the latter vein, causes one to consider whether or not the Jubelee vein is not the top of the Queen vein, displaced to the north by a combination of faulting and breaking over. If this proves to be the case, the Jubelee vein can not

extend to any great depth, and no apex complications can arise by reason of the union or intersection of the two veins. Added force is given to this view by the fact that the Jubelee vein dips southerly at about 34°, and that a persistent flat southerly dip is unknown elsewhere on the north side of Eldorado Canyon. To be sure, the Crown vein has a similar dip, but I am well satisfied in this case that the Crown vein has broken over to the north from its original position; and that when found in place, it will have either a comparatively steep dip to the south, or, possibly, a northerly dip, which is the prevailing dip of all that portion of the district. I am prepared to see even the Queen vein continue to straighten up as depth is attained, and ultimately dip the other way--to the north. There are but two south dipping veins, aside from the Queen, Crown and Jubelee, on the entire north side of Eldorado Canyon--the Skylark-Rover vein, between the Techatticup and the Flagstaff, and the Wall Street, about a mile west of Nelson; and neither of these is anywhere near as flat as the Jubelee and Crown. Unfortunately, neither of them has been developed to a depth sufficient to permit of the drawing of comparisons, notwithstanding the fact that the Wall Street is credited with the production of half a million dollars.

Although there is a strong possibility of the Jubelee being the faulted top of the Queen vein, and therefore its possession not particularly essential, I strongly advise its purchase if it can be secured at a reasonable figure, as I believe it can. Not only will its possession forestall possible litigation, but there is sufficient ore on it to justify the payment of a reasonable price. It also affords a better site for a mill than can be found upon either the Cross or Crown. No samples were taken from the Jubelee in connection with this

report.

DEVELOPMENT.

On the Queen claim, there is a total of 181 lineal feet of development (exclusive of six or eight open cuts and a couple of stopes), consisting of:

47 feet of cross cut tunnel.

94 feet of Drift tunnel.

30 feet of raise.

10 feet of cross-cuts. Value about $1,500.00

Practically every foot of this work is on ore, except possibly a few feet in the face of the cross cut tunnel.

On the Crown, there is a 54 ft. incline and three or four open cuts, of a total value of about $800.00.

On the Cross, there is a 58 ft. shaft and three or four open cuts, a couple of which are of pretty fair size. These improvements are worth about $1,000.00.

MINING FACILITIES.

Power: On a small scale, gasoline engines doubtless are most economical, with distillate as fuel. On a larger scale, the choice would probably lie between a steam plant and a gas producer plant, burning fuel oil in either instance. Ultimately, electric power will be available from the Colorado River. The Chuckawalla Development Company is planning to erect an immense dam at Bull's Head Canyon, some 50 to 60 miles below the mouth of Eldorado Canyon, and has had a surveying force of 18 men at work along the river for the past three months or more, making the preliminary surveys for this purpose. This enterprise has a double object in view--the irrigation of vast tracts of bottom land along the Colorado River, and the development of power for

its own use and for sale.

Fuel: No. 1 Engine Distillate can be delivered at this property, in small lots, at 18¢ to 20¢ per gallon. Buying in carload lots direct from the oil fields (around Bakersfield, California), and using a tank wagon between Searchlight and Eldorado Canyon, it can be delivered for about 14½ to 15 cents per gallon.

Crude oil, or fuel oil, can be delivered at the property at from 9¢ to 9½¢ per gallon, by buying in carload lots direct from Bakersfield.

Drift wood from the Colorado River can be obtained from the Indians at the mouth of Eldorado Canyon, cut to 4 ft. lengths, at $4 per cord, but it will cost fully that much more to deliver it at the mine if done by company's teams, and more if contracted, owing to the extremely heavy pull up the wash.

Mining Timber and Lumber: Drift timbers from the Colorado River, absolutely sound, and ranging from 8 to 12 ins. in diameter, and from 8 ft. upwards, in length, can be had from the Indians at an average price of 50¢ each; but, like the cord wood, the cost of delivering them upon the ground would about equal their first cost. The distance straight up Techatticup Wash is only 4½ miles, but the wash is very heavy and sandy, with an average grade of nearly 7%. At present this road is washed out and an expense of several hundred dollars would be incurred in its repair. While this road is out of commission, travel from the river must come up Eldorado Wash a distance of nearly six miles, cross over into Techatticup Wash, and back down about a mile and a half.

Mining timbers and other common lumber cost, in small lots, $40 to $45 per M. at Searchlight. But they can be bought on the coast in carload lots and delivered at the property for

about $45 per M. Four and six inch tongue and groove flooring or ceiling, rustic, shiplap and other similar grades of lumber run $10 to $15 higher per M.

Water: A 6" well, 117 feet deep, on the northerly end of the Cross lode, equipped with a 5 H. P. gasoline engine and a Bulldozer pump, supplies 30 tons of water in 24 hours. This water is used for both domestic and milling purposes. Additional water can be obtained in Techatticup Wash by sinking other wells, or by deepening this one. Shafts upon the Cross and Jubelee have developed water within 20 or 30 feet of the surface of the wash, and doubtless, with the sinking of a shaft on the Queen to a depth of 300 or 400 feet, there will be developed a sufficient flow for milling purposes, in the mine itself. The Rand Mining Company has a good supply of water on its Venus claim, at a depth of 300 feet. The Flagstaff mine has a flow of water at 500 feet which measures about 15,000 gallons in 24 hours. The well on the Cross is to be transferred with the Queen and Crown, either by deeding the ground upon which it is located, or by long time lease.

SUPPLIES.

40% powder can be laid down at the mine, in small lots, for 17¢ ot 18¢; in large quantities, for 14¢ to 15¢.

Blacksmith coal, in small lots, $45 to $47 per ton; car load lots, $42. It would generally be possible to combine with some other mine, or with the Searchlight blacksmith, to purchase a carload together, if it were not expedient to get so large a quantity at one time. This is also true of many other items.

Fuse, case lots, $30 to $35. Candles, 16 oz., $6,90 per box. Prices on these last two items, in quantity, are not

at hand, but probably they will show the same proportionate discount as the preceding.

Alfalfa hay, $25 per ton at Searchlight. Can probably be delivered at the mine for about the same price, by buying it direct at the ranches on the river, east of Searchlight, and having the Indians bring it up the river on flat boats.

Portland Cement: Portland cement, in carload lots, ranges from $1.70 to possibly as high as $2.40 per bbl. at Los Angeles and Colton, Cal. This means about $6.00 to $6.50 delivered at the property.

FREIGHT RATES TO SEARCHLIGHT.

Carload Lots: Mining timbers (everything down to 2"x6"), from Los Angeles, San Pedro or Redondo, $5.40 per ton.

Lumber (everything smaller than "Mining Timbers"), from same points, $8.00 per ton.

Mining machinery from Los Angeles, minimum car 24,000 lbs., $18.70 per ton.

Portland Cement, from Los Angeles, minimum car 40,000 lbs., $12.00 per ton.

Portland Cement, from Colton, $10.80 per ton. Cement may be loaded with mining machinery, but in that case takes the higher rate.

Fuel oil or distillate from Bakersfield, $5.75 per ton. Weight computed on basis of 7.75 lbs. per gallon.

Local Rates: 1st. class, $1.67 per C.
2nd class, 1.43 " "
3rd class, 1.28 " "
4th class, 1.10 " "

Searchlight to Eldorado Canyon: The regular freight rate between Searchlight and the Eldorado Crown property is $12

per ton, but where large quantities are being hauled, this is reduced to $10. Possibly a still better price could be obtained on oil, by the carload, the teamster using a tank wagon. Prices, delivered, can be easily computed by adding the proper freight charge to Los Angeles prices. In general, small lots will cost from 1.6 to 2.25 cents per lb. more than Los Angeles prices. In dealing with local merchants, 10% to 20% must be added to the above.

LABOR.

Miner's wages, drifting or stoping, - -	$3.50
" " sinking, - - - - -	4.00
Carmen and Muckers, - - - -	$3.00 to 3.50
Carpenters and Blacksmiths - - - -	4.00
Common top labor, - - - -	$3.00 to 3.50

Teamsters, $75 per month and board.

Four horse team with teamster, per day, about $10.00

CONTRACT WORK.

Tunnels, 4x6½ ft. in the clear, per foot,	$6.00 to 7.00
Drifts on veins, same size, per foot -	8.00 to 10.00
Raises on vein, same size, per foot, -	5.00 to 7.00
Incline shaft on vein, 4x6 ft., per foot,	10.00 to 14.00

These prices for contract work are generally exclusive of timber, which is seldom required above water level. The lower prices will usually hold good provided the company does any hoisting that may be required. While some extremely hard ground is encountered in Eldorado mines, it is the exception rather than the rule.

ORE TONNAGE.

Just what amount of ore is in sight in the Queen tunnel, and the value thereof, is difficult to say, notwithstanding the thorough sampling which I gave it. In the first place, a certain amount of surface leaching has unquestionable taken place, and is a factor that must be considered. No samples taken at or near the surface held up to the average of the tunbel, and it is open to question whether the average of the tunnel may justly be held to apply to the entire block of ore above the tunnel. However, the value of the property does not depend greatly upon the amount of ore actually in sight, but rather upon the extreme rapidity with which a comparatively small amount of additional development will block out additional ore. The block of ground above the tunnel level measures 98 feet in length, and will average about 40 feet in height, on the slope of the vein. If we assume a width of 12 feet of ore (which my sampling justifies), the solid block of ground contained about 3618 tons, allowing 13 cubic feet to the ton. Of this amount, 250 tons are composed of barren basalt, and about 570 tons have been mined, leaving 2800 tons still to be taken out. This is making no allowance for any ore below the tunnel level, or ahead of the tunnel faces. As to values, the average of all my tunnel samples, excluding none, is $8.20 per ton, and the average of the widths actually sampled, 8.4 feet. Excluding some of the low grade bunches along the foot wall, an average value of $9.50 is obtained, and a new average of the widths sampled of 6.9 feet. The 2800 tons above mentioned probably contain a gross value of from $22,000 to $25,000.

EQUIPMENT.

This property is equipped with the following, all of

which is to be included in its sale, to-wit: a small milling plant and cyanide equipment, comprising:--

1 - #3 F. A. Huntington crusher, of the Blake type, 7 or 8 x 9 ins.

1 - W. W. Edwards 3 stamp mill, with individual mortars and quadruple discharge, individual Challenge feeders, and a 5'x8' amalgamation plate, etc.

1 - 3½ ft. Huntington mill, broken in two and fit only for the scrap heap, with feeder, 3'x10' amalgamation plate, etc.

2 - Frenier sand pumps, 48" and 54", respectively.

2 - Centrifugal pumps, 1" and 1½", respectively.

6 - Leaching tanks, 34" high, 19' 4" diameter.

2 - Storage tanks, 8' 8" high, 10' diameter.

2 - Solution tanks, 5' 9" high, 10' diameter.

2 - Sump tanks, about same size as solution tanks.

2 - Small experimental tanks.

2 - Tanks at mill, for water supply.

1 - V shape Classifier, 7 ft. deep and 40 ft. long.

5 - Zinc boxes, 15" diameter and 15" deep.

5 - Zinc boxes, 16" square, and 18" deep.

1 - 2" Rotary solution pump.

1 - Otto gasoline engine, of the very earliest type, supposed to be 40 H. P. (in mill).

1 - 15 H. P. Sampson gasoline engine (in mill, but not in use).

1 - 1½ H. P. Jack of all trades gasoline engine.

1 - 5 H. P. Golden Gate gasoline engine (at well).

1 - 12 H. P. Western gasoline hoist, 500 ft. 5/8" cable, bucket, etc.

This engine was bought at constable's sale, and the validity of the sale is now being attacked in the district court, but it is doubtful if the sale willbe set aside.

1 - Bulldozer pump (at well).

4 - Flasks quicksilver.

2 - Ore cars. 3 Chute gates. 6 Turnsheets, 4x10 ft.

20- Bars uncut drill steel, besides 30 or 40 assorted drills.

About 400 feet of 8 lb. track.

200 or 300 feet of 6" galvanized air pipe.

About 1800 feet 1" and 1½" pipe, extending from well to mill.

Miscellaneous lot of electrical fixtures, arc lights, incandescent sockets, wire, bells, etc. (but no dynamo).

Team of mules, harness and light wagon, pretty well worn out.

Blacksmith shop and fair equipment.

Fairly complete, medium grade assay equipment.

Well, bunkhouse, boarding house and assay office, all situated upon the Cross lode, which are either to be transferred outright with the other claims, or leased on long time lease.

Stable and corral, on Jubelee claim, near water, also a tent house.

MILL AND CYANIDE PLANT.

The mill and cyanide plant, above described, can be considered in no other light than that of a crude testing plant. It would be the height of folly to attempt to operate them in

their present situation and condition. The mill was erected first and an effort made to recover the values by straight amalgamation. In order to avoid hoisting the few thousand tons of ore which the tunnel disclosed, the mill was located at the tunnel mouth, instead of at the level of the apex. Amalgamation alone failed to recover 50% of the values, and it became necessary to add a cyanide plant. Owing to the slight fall of the little gulch in which the mill is situated, and the refusal of the Wharton heirs to permit the tailings to be discharged upon the Jubelee claim, the cyanide plant had to be erected above the mill. This means that to avoid hoisting one ton of ore about 40 feet, the plant is so arranged that it is necessary to raise 6 or 7 tons of pulp 32 feet. Other defects of the mill are: a flat grizzley, at the level of the floor on which the crusher rests, requiring all coarse stuff to be shoveled off the grizzley and raised to the height of the crusher; and a flat bottomed ore bin, which does not keep the feeders full except when the bin itself is full. The cyanide tanks are all built of a light weight galvanized iron, with joints lapped, riveted and soldered, and the tops stiffened and reinforced with flat bar iron. Some of the leaching tanks have never been made leak proof.

RECOVERY IN PRESENT MILL.

No data is available to show the extraction secured in the present plant. Even the actual amount of ore milled is a matter of conjecture. My measurements show that about 570 tons of ore have been extracted from the drift, raise and stopes. Practically all ore that came out of the drift itself was thrown on the dump, before the mill was erected. Afterwards, the best of this dump was milled, but there are a good many tons of it

still remaining. It is probable that the ore milled did not greatly exceed 500 tons. Some of the early mill tailings and most of the slimes have not yet been cyanided. These are scattered around in so many shallow gulches that it is a waste of time to attempt to measure them.

The company's receipts from Selby's for bullion and zinc slimes show a production of $3,700, in addition to which there is still on hand approximately $300 worth of zinc slimes. That is, the milling and partial cyaniding of the above ore, ranging somewhere from 500 to 570 tons, has produced about $4,000, or from $7 to $8 per ton.

Upon being advised of the average of my samples, the local manager insisted that the mill heads had maintained a higher average than my sampling indicated. The above figures apparently justify his statement. The average extraction to date must have been considerably below 85%, in view of the conditions that obtain in the mill and cyanide plant, and the fact that a portion of the tailings has not yet been cyanided.

METHOD OF TREATMENT.

Oxidized Ore: Attached to this report are blueprint copies of percolation cyanide tests on this ore, conducted by E. E. Burlingame & Co., of Denver. It is worthy of note that while the ore tested was somewhat higher grade than the average of my samples, the proportion between gold and silver values is almost identical, to-wit: gold values, 44% of the total; silver values, 56%.

These tests show a recovery, after eight days percolation (and with small consumption of lime and cyanide), as follows:--

20 Mesh, - Gold 76.60% - Silver 75.00% - Total 75.90%

30 Mesh, - Gold 86.66% - Silver 83.64% - Total 84.22%

There is such a decided increase in extraction at 30 Mesh that the question naturally arises whether still finer crushing would not be commercially profitable. A series of tests to determine this point is being conducted in our own laboratory, as other work will permit.

A grading test gave the following results:

		oz.Gold	oz.Silver	Total Value
Through 40 Mesh,	100.00%	0.25	11.21	$10.60
On 60 Mesh,	18.75%	0.115	7.06	5.83
" 80 Mesh,	23.44%	0.125	8.38	6.69
" 100 Mesh,	10.94%	0.18	10.00	8.60
Through 100 Mesh,	46.87%	0.31	15.28	13.84

Our best recovery so far has been obtained at 100 Mesh, with 12 hours agitation in a Pachuca tank, as follows:--
100 Mesh Gold 98.00% Silver 87.02% Total 92.17%

Except in the matter of recovery, these agitation tests have not been very satisfactory. They have been conducted in "tanks" improvised out of quart bottles, and therefore of small capacity; while the air pressure available has been extremely variable, resulting in uneven and erratic agitation, excessive oxidation of the cyanide solution, and occasional losses of both solution and pulp by "boiling over" of the "tank," due to a sudden increase in pressure. These tests should, therefore, be repeated on a larger scale than has been possible up to the present time in our laboratory.

The present milling process consists of plate amalgamation and cyanidation. An effort was made to treat the entire mill product by percolation, but it was found necessary to make a rough separation of the sands and slimes, and treat the latter by agitation, although no adequate equipment exists

on the ground for that process.

In the light of our tests to date, however, I am very much inclined to favor straight cyanidation for the oxidized ore, with fine grinding in cyanide solution and subsequent agitation, either by the air lift or hydraulic method. And it seems extremely probable that an extraction of from 90% to upwards of 95% can be had with a plant of this type, properly designed and handled.

Sulphide Ore: So far as I know, no tests have ever been made upon the sulphide ores of Eldorado Canyon to determine whether or not the cyanide process can be adapted to any of them. I know that they concentrate readily, and make a high grade concentrate, but the percentage of extraction by this method is unknown to me. This information might have been secured from the records of the Southwest Mining Company; but upon the death of Mr. Wharton, all these records were removed to Philadelphia, and are not now readily accessible.

As a matter of fact, the exact milling process that will give the best results upon either the oxidized or base ores of the Eldorado Crown property must yet be determined by actual tests; and no reduction plant should be erected for other than testing purposes until a considerable depth has been attained upon the vein, the extent of the oxidized ore determined, and the character of the deeper ores fully established.

ESTIMATE OF WORKING COSTS.

In the absence of producing properties near by, working under somewhat similar conditions, it is not easy to make reliable estimates of mining and milling costs. The expense of mining, in particular, depends largely upon conditions yet to be proven. For instance, if the ore body, on its dip, is found to

be fairly regular, a modification of the caving system can probably be used, whereby little timber will be required, and a heavy item of expense will be eliminated. On the other hand, if the ore is found to be displaced every 30 or 40 feet, on its dip, timbering will be required, and probably more or less waste broken for filling. The ground above water level is easy ground to handle, but some heavy ground may be found at or below water level. There is little bad ground shown in any of the Canyon properties so far, but on the other hand, there has been no extensive stoping done upon an orebody as large as that in the Queen.

The following estimates are based upon a moderate production, and I consider the allowance to be very liberal. The estimated cost of development includes much prospecting that would be required in the early stages of a new enterprise, and is based upon the development of 2 tons of ore for each ton milled; but even at that it is a very high estimate if the ore holds to anything like its present size--for in that case the actual cost of increasing the ore reserves by advancing working faces already existing, running necessary cross cuts and raises in the ore, etc., should not greatly exceed 15¢ per ton unless a great deal of timber has to be used. All mining costs, particularly stoping, could be greatly reduced by using machine drills.

Stoping, - - - - -	$1.00 to $1.50
Milling, - - - - -	1.80 to 2.15
Development, - - - -	1.00
Bullion Tax, - - - -	.15
Other taxes, - - - -	.05
Office and superintendence,	.08 to .12
Miscellaneous, - - - -	.20
Estimated total cost,	$4.28 to $5.17

Analysis of Estimated Cost of Milling:-

	50 tons daily		100 tons daily
Labor and superintendence,	$0.80	-	$0.55
Power, - - - - - -	.30	-	.20
Cyanide, - - - - - -	.40	-	.40
Zinc and lime, - - -	.10	-	.10
Supplies, - - - -	.20	-	.20
Renewals and repairs, -	.25	-	.25
Extras, - - - - - -	.10	-	.10
Milling cost, per ton,	$2.15	-	$1.80

These figures can be considered only as rough estimates. If fine grinding is necessary, power will cost more than estimated above. But if the ore holds to its present size, and a thoroughly up to date plant is installed throughout, I see no reason why the total working costs, given above, should not be reduced in time by nearly or quite 25%.

ESTIMATE OF PROFIT, BASED ON ABOVE FIGURES.

	50 tons daily		100 tons daily
Value of ore, per ton, $8.20			
Loss in treatment, 10%, .82			
Recoverable value per ton	$7.38	-	$7.38
Cost of mining and milling per ton	5.17	-	4.28
Net profit per ton,	$2.21	-	$3.10
Net profit per day,	$110.50	-	$310.00
Net profit per month of 28 working days,	- $3,094.00		$8,680.00

Of course, if the ore is graded up to a higher value than the above, which can easily be done by leaving a foot or two of low grade stuff on the footwall, the net profit per ton

will be correspondingly increased over the above figures. It must be remembered that $8.20 per ton is the average value of all my tunnel samples, excluding none.

TERMS OF PURCHASE.

This property can be purchased outright from the Eldorado Crown Mining Company, or the three several interests can be acquired separately (one in toto and the other two in major part). The latter method would result in taking over the present corporation, and while somewhat more complicated, would probably afford the lowest price and best terms. On this latter basis, 15% of the stock is to be retained by the present stockholders and parties in interest, which must be made non-assessable. As a rough outline of terms (subject to modification in several ways), will state that a small payment will be required upon signing agreements, with reasonable payments thereafter at intervals of 6 months, and liberal time--say 18 months or thereabouts--for completing purchase.

CONCLUSION.

This property, unlike most new properties on which camp and other necessary buildings must be constructed, roads built and several thousand dollars' worth of machinery installed, requires only a gallows frame and the setting up of the 12 H. P. hoisting engine (already on the property) to be completely equipped for immediate deep development. After the necessary agreements are signed up, immediate sinking should be begun, and active development prosecuted vigorously during the first six months, at least. From the present indications, six months active development, at a cost of $10,000 to $12,000 should

develop ore of a gross value of close to a quarter of a million dollars.

Respectfully submitted,

Walter M Brown

Mining Engineer.

Searchlight, Nevada,

June 1st, 1911.

ASSAY REPORT on the QUEEN LODE

of the

ELDORADO CROWN MINING COMPANY.

---ooo---

The following samples were all taken and assayed by Walter M. Brown in person. Gold valued at $20.00 per oz., silver at 50¢ per oz.

No.	Description	Oz. Gold	Oz. Silver	Total Value
1 - 3 ft.	across roof, 5 ft. W. of main Cross cut. Not extra good looking.	0.06	5.86	$ 4.13
2 - 5½ ft.	across roof, 11 W. Main X-cut some fair looking stuff, containing 18" hard calcite about cen.	0.12	9.40	7.10
3 - 2½ ft.	below #2, mixture good looking quartz and calcite.	0.12	6.10	5.45
4 - 5½ ft.	45 ft. W. of Main X-cut, just west of west end of first stope. Taken from well defined wall on N. side drift to extreme upper corner on S. side. About 20" of quartz below this, not sampled, but resembling next sample (#5) in appearance.	0.58	25.5	24.35
5 - 12 ft.	straight across roof at 50 ft. Includes main drift and X-cuts north and south. Length of cut is 14 ft., but represents 12 ft. of ore. Characteristic mixture of quartz and calcite.	0.25	11.52	10.76
6 - About 3 ft.	of ore, on S. side of drift, 55 ft. W. of Main X-cut, adjoining E. edge of basalt dike. Cut is 6 ft., nearly perpendicular, and owing to distortion of ore body by dike, is difficult to tell thickness sample represents, but probably about 3 ft.	0.17	13.56	10.18

No.	Description	Oz. Gold	Oz. Silver	Total Value
7 - About	2' 9" in roof, 60 ft. W. of Main X-cut. Basalt dike fills bulk of drift at this point, and the ore exposed is very small portion of vein. S.end of cut rests on dike, N. end about 12" from it.	0.165	4.94	$ 5.77
8 - 8 ft.	across roof, 65 ft. W. of Main X-cut. Cut is 10 ft. long, nearly horizontal, and ends on N. side at calcite streak, dipping 52½° S. Ore probably has about the same dip.	0.19	9.26	8.43
9 - 4 to 4½ ft.,	at 70 ft. W. of main X-cut. Cut is on S. side, 6 ft. nearly vertical. This sample is in Second stope, which, at this point, extends about 15 ft. on the incline (approximately 45°) to flat fault, which displaces top of ore body to the north. No ore shows in the roof, as the ore body has not been opened above the fault, at this point.	0.09	5.00	4.30
10 - 3 ft.	ore, at 72 ft. W. of Main X-cut. This sample represents a portion of the ore body not exposed at 70 ft., lying above that sampled in #9. Nos. 9 and 10 are fairly representative of a width of 7½ ft., which has been stoped to flat fault.	0.04	4.00	2.80
11 - 6 ft.	at 75 ft. W. of Main X-cut, sampled on S. side. Shortest distance from top of this sample to footwall calcite streak is 6½ ft. #10 may be considered to roughly represent 3 or 4 feet additional, lying above #11.	0.18	9.58	8.39
NOTE:	At 80, 85 and 90 ft. W. of Main X-cut, the ore body has been stoped from the drift level to the flat fault, which descends, going west, until in the face of the tunnel, it is only 3½ ft. above the level. The ore above the fault has not been opened at any point except in the extreme face. Consequently, there is nothing exposed for sampling at 80, 85 and 90			

ft., except in the bottom of the drift. As it would require considerable work to clean out the bottom sufficiently to avoid danger of salting from the fines and dust deposited from above, no effort was made to sample these places. There is ore on the H. W. side of the drift at these points, but it is standing at the same angle as the vein, and a sample down the side would represent the value of only a scale of ore. In other words, the sample would have to be taken with the dip and not across it--hence would be valueless as a sample.

No.	Description	Oz. Gold	Oz. Silver	Total Value
12 -	4 ft. ore in extreme S. W. corner of the face of the main drift, below flat fault. Ore not limited to this width, but this is all that is exposed. This ore goes down.	0.28	16.52	$13.86
13 -	2½ ft. ore in extreme N. W. corner of the face of the main drift, above flat fault. Ore not limited to this width, but this is all that is exposed, the bulk of the vein being further north. This ore goes up.	0.08	6.20	4.70
Special	10" of the best of #13. This ore is exceptionally good looking, but belies its looks.	0.12	10.00	7.40
14 -	4½ to 5 ft. in west end of First stope, 40 ft. W. of Main X-cut, towards H. W. Sample taken from extreme upper corner to center of hard streak in middle of ore body.	0.36	15.00	14.70
15 -	1' 9" hard calcite and quartz, just under #14. It is worthy of note that this hard calcite streak, which varies from 18" to 5' in width, is the most consistent ore in the mine, although to a casual inspection it would appear to be the most worthless.	0.33	13.82	13.51
16 -	1' 9" quartz, just under #15.	0.19	10.18	8.89

No.	Description	Oz. Gold	Oz. Silver	Total Value
17 -	3½ ft. brittle quartz, 32 ft. west of Main X-cut, 2 ft. W. of chute, and just under calcite streak.	0.22	8.68	$ 8.72
18 -	2½ ft. brittle quartz, 36 ft. west of Main X-cut, below calcite streak. Length of cut, 4 ft.	0.09	7.12	5.36
19 -	1½ ft. hard calcite immediately above #18. Part of calcite is hard and barren appearing, while balance is soft and verging toward lime.	0.35	19.70	16.85
20 -	1½ ft. hard calcite immediately above #17.	0.29	16.60	14.10
21 -	5½ ft. to 6 ft. mixed quartz and calcite above #20.	0.305	15.38	13.79
	At the above point, there is 13 ft. of ore exposed, with ore still continuing toward the hanging wall. This is composed as follows: 1 ft. on H. W., not sampled at this exact point, but 1 to 3 ft. further west, 3½ ft. #17; 1½ ft. #20; 5½ ft. #21; 1½ ft. on F. W., so irregular as to preclude accurate sampling at this point, but resembles #24 in general position and appearance.			
22 -	2 ft. ore in extreme top, S. side first stope, 1 to 3 ft. W. of #21. This sample overlaps #21 by 1 ft.	0.265	8.74	9.67
23 -	5 to 5½ ft. mixed quartz and calcite, above #19. Difficult to sample accurately, owing to its being arched instead of squared up.	0.18	8.44	7.82
24 -	2' 9" slab on F. W., at 23 ft. W. of Main X-cut, between #17 and #18. This slab is next below the one sampled in #18.	0.06	3.04	2.72
25 -	2½ ft. in center roof at 25 ft. W. from Main X-cut. Brittle quartz with enclosures of hard country, little altered. above hard calcite streak.	0.08	6.40	4.80

No.	Description	Oz. Gold	Oz. Silver	Total Value
26	2' 9" hard calcite under #25	0.23	10.66	$ 9.93
27	3 ft. quartz under #26.	0.05	4.22	3.11
28	3 to 3½ ft. quartz, under #27, but at 22 ft. W. of Main X-cut.	0.045	4.35	3.07
29	3 ft. mixed quartz and waste, below #1. Cut 5½ ft. almost vertical, on N. side.	0.07	4.18	3.49
30	6 to 6½ ft. hard calcite, at 18 ft. W. of Main X-cut.	0.12	5.50	5.15
31	2 ft. ore, below #30, separated from it by what appears to be a 2½ ft. horse of waste, not sampled.	0.12	5.60	5.20
32	4½ ft., mostly hard calcite, at 14½ ft. W. of Main X-cut.	0.18	12.12	9.66
33	3 ft. brittle quartz, immediately above #32. This sample is across an arched body of ore, not faced up.	0.22	15.30	12.05
34	2½ ft. ore and waste, toward F. W., under #32. More ore towards H. W., not exposed.	0.04	2.74	2.17
35	6 ft. across west side of raise, at 7 ft. below level top. Greenish quartz and calcite.	0.14	8.22	6.91
36	4 ft. across E. side of raise, 1 ft. higher than #35. Looks like waste at first glance, but looks better when examined closely.	0.14	7.88	6.74
37	1½ ft. below #36, towards F. W. Fine brittle quartz, extending back towards F. W., and only partially exposed.	0.26	19.06	14.73
	SURFACE SAMPLES.			
38	4 ft. ore in Discovery Cut, west of, but close to, basalt dike. Sample taken 4 to 5 ft. below original surface.	0.10	10.20	7.10
39	Rough sample 2 ft. in small cut 20 ft. W. of Disc. Post.	0.05	7.70	4.85

No.	Description	Oz. Gold	Oz. Silver	Total Value
40	Rough sample at 125 ft. W. of Disc. Post. Extent not shown.	0.13	4.28	$ 4.74
41	Rough sample from extreme N. W. cor. of Southernmost cut of double cut, 145 ft. west from Disc. Post. Typical quartz, but without iron oxides, which carry the value.	0.0075	0.90	.60
42	Rough sample small portion outcrop 160 ft. W. of Disc. post. Fair quartz, but without iron oxide.	0.02	1.60	1.20
43	Rough sample about 1 ft., 215 ft. W. of Disc. Post.	0.0075	0.20	.25
44	Rough sample about 1 ft., 218 ft. W. of Disc. Post.	0.06	2.00	2.20
45	Rough sample about 1½ ft., 240 ft. W. of Disc. Post.	0.03	1.20	1.20
46	Rough sample 3½ ft. across E. side of open cut, 310 ft. W. from Disc. Post, 5 ft. below surface.	0.04	1.36	1.48
47	Fair sample 3 to 3½ ft. of outcrop, 1 ft. below surface, 10 ft. east of last fault west (approximately 340 ft. W. of Disc. Post)	0.04	1.88	1.74
48	Rough sample 4 ft., in cut on Midway claim, near Jubelee.	0.03	0.30	.75
49	Rough sample from road, 220 ft. E. of Disc. Post. Cut is 4½ ft. long, but it is impossible to tell how much ore it represents, as road crosses vein at very acute angle. Vein shows for 40 ft. in road.	0.15	12.25	9.12
50	Fair sample 3 ft. from cut about 420 ft.E.of Disc. Post	0.03	2.94	2.07
51	Rough picked sample from easternmost cut on Crown claim, merely to see if values exist at all	0.27	8.60	9.70

All samples after #38 can be considered only as a rough indication of the nature of the spots sampled. None of them cover the extent of the vein, which is not shown by any of the surface cuts.

E. E. BURLINGAME & CO.

CHEMISTS AND ASSAYERS

ESTABLISHED 1886

GOLD AND SILVER BULLION

REFINED, MELTED AND ASSAYED, OR PURCHASED.

1736 and 1738 LAWRENCE ST.

Denver, Colo. Aug 5/10

Percolation

~~Final~~ cyanide test on ore from Geo Berryman

Dry crushed to 20 mesh.

76x Lbs. Raw / Roasted Ore	Assay		Assay Solution		Per Cent Extracted		Value Per Ton Extracted			
	Oz. Gold	Oz. Silver	Oz. Gold	Oz. Silver	Gold	Silver	Gold $	Cts.	Silver $	Cts.
Before Treatment	0 30	15 65								
After 3 ~~Hours~~ Days Treatment	0 12	5 20					6	00		78
After 4 ~~Hours~~ Days Treatment	0 4	5 00								
After 6 ~~Hours~~ Days Treatment	0 08	3 20								
After 8 ~~Hours~~ Days Treatment	0 07	3 87			76 60	73 00	4	60	5	89
After ..... Hours Treatment					Total Extraction 75 90% or $10 50					

Lime used per ton ore 7 1/4 lbs.

~~Strength of solution potassium cyanide used~~ 0 30 per cent.

Amount solution used per ton treated 4000 lbs.

Amount wash water used per ton 3000 lbs.

Potassium cyanide consumed per ton 160 lbs.

Value potassium cyanide consumed per ton $ .40

Total time of treatment, percolation and washing 10 days 1 day maceration 8 days percolation 1 day washing

Character of ore Siliceous

Amalgable or non-amalgable

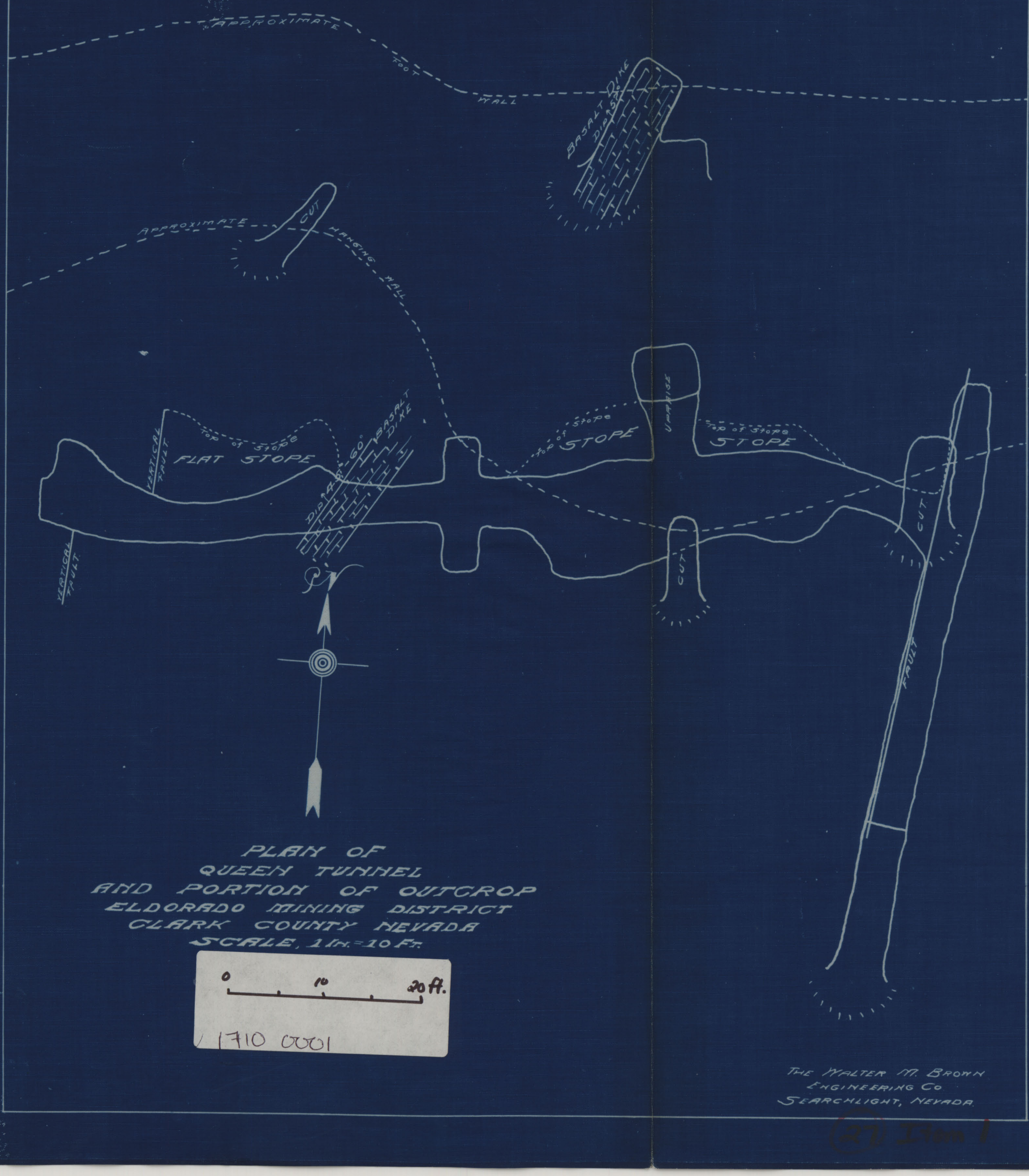
Analysis of ore:—Copper per cent Iron per cent Zinc per cent Maganese per cent

Lime per cent Sulphur per cent.

E E Burlingame & Co

1710 0001

27 Item 1



PLAN OF
QUEEN TUNNEL
AND PORTION OF OUTCROP
ELDORADO MINING DISTRICT
CLARK COUNTY NEVADA
SCALE, 1 In. = 10 Ft.

0 10 20 ft.

1710 0001

THE WALTER M. BROWN
ENGINEERING CO
SEARCHLIGHT, NEVADA.

(27) Item 1

PROPERTY OF THE ELDORADO CROWN MINING COMPANY AND ADJACENT CLAIMS

SHOWING MAIN OUTCROPS
ELDORADO MINING DISTRICT
CLARK COUNTY NEVADA
SCALE, 1 IN. = 300 FT.

0 300 600 ft.

N

WATERLOO

JUBELEE

JUBILEE EXT.

CROSS

MIDWAY

QUEEN

SEC. 1
SEC. 12

CROWN

KING

GOLD HILL

T. 26 S., R. 64 E.
M.D.M.

LEGEND

- Quartz Outcrops
- Dikes
- Probable Fault
- Direction of photograph, camera being set up at ○ number of arrow = number of photograph.

The Walter M. Brown Engineering Co.
Searchlight, Nevada.

27 Item 1

E. E. Burlingame & Co.

CHEMISTS AND ASSAYERS

ESTABLISHED 1866

GOLD AND SILVER BULLION

REFINED, MELTED AND ASSAYED, OR PURCHASED.

1736 and 1738 LAWRENCE ST.

Denver, Colo. Aug 5/10

Percolation

~~Final~~ cyanide test on ore from Geo Bergman Mgr

Dry crushed to 30 mesh.

234 Lbs. Raw ~~Roasted~~ Ore	Assay		Assay Solution		Per Cent Extracted		Value Per Ton Extracted			
	Oz. Gold	Oz. Silver	Oz. Gold	Oz. Silver	Gold	Silver	Gold $	Cts.	Silver $	Cts.
Before Treatment	0 30	15 65					6	00	7	82
After 3 ~~Hours~~ Days Treatment	0 11	4 39			63 20	71 00				
After 4 ~~Hours~~ Days Treatment	0 10	4 08			—	—				
After 6 Days Treatment	0 10	3 16			66 60	79 00				
After 8 Days Treatment	0 04	2 56			86 66	83 64	5	30	6	54
After ..... Hours Treatment			Total Extraction		84 27% or $11 74 per ton					

Lime used per ton ore 7 4/4 lbs.

~~Strength of solution potassium cyanide used~~ 0 33 per cent.

Amount solution used per ton treated 4000 lbs.

Amount wash water used per ton 5000 lbs.

Potassium cyanide consumed per ton 1 60 lbs.

Value potassium cyanide consumed per ton $.40

Total time of treatment, percolation and washing 10 ~~hours~~ days } 1 day maceration, 8 days Percolation, 1 day washing

Character of ore Silicious

Amalgable or non-amalgable

Analysis of ore:—Copper per cent Iron per cent Zinc per cent Maganese per cent

Lime per cent Sulphur per cent.

E E Burlingame & Co

1710 0001

27 Item 1