

July 25, 1885 p63

## SAN BERNARDINO COUNTY.

**CALICO MINING AND REDUCTION COMPANY.**—The new five-stamp quartz mill was set in operation for the first time on the 4th inst. The mill is a few yards above the Daggett Sampling-Works, and the stamps of the former are operated by means of the engine contained in the latter.

August 15, 1885 p107

**JAMES W. MARSHALL.**

Could any thing be more pathetic than this brief notice that comes to us over the wires from Placerville, California?

"Aug. 12.—James W. Marshall, the discoverer of gold in California, died on Monday at his home in Kelsey. He was seventy-four years old, and died a poverty-stricken, disappointed man."

This was the man whose discovery in 1848 made the State of California, and led to that production of gold that has since then amounted to one thousand six hundred million dollars. Many a time since that fateful 18th of January has the unfortunate man cursed the day when he found the glittering nugget in the mill-race at Coloma, and full of golden dreams, flew with the news to his partner, General SUTTER.

Alas for the golden dreams, and for the peace and happiness of industrious obscurity!

His discovery was his great misfortune—a veritable curse through life. Adventurers flocked in from every part of the world. They dispossessed him of his hard-earned property and coolly appropriated his houses. His cattle were killed by the starving miners, his claims were "jumped;" and, superstitiously credited with some mysterious power of finding gold, the unfortunate discoverer was forever tracked and dogged by men whom disappointed avarice made demons.

Again and again he sought to elude them, and would steal off in search of some unexplored gulch, where in peace he hoped to find the millions, the vision of which forever burned in his brain; but go where he would, he could work but a few hours when a stream of men poured in upon him and took up the claims above and below him, and finally disappointed, they would even drive him from the little spot he had selected.

He was always unfortunate; he never made any rich strikes, but drifted about, forever seeking, Tantalus-like, the fortune that forever eluded him, until, disappointed and embittered by injustice and misfortune, the wretched man found only in the grave rest and refuge from the curse that pursued him.

The great State of California, with its millionaires whose lightest folly costs more than would have pensioned MARSHALL for life, abandoned the discoverer of California's wealth to poverty and wretchedness. Some years ago, the Legislature, recognizing the claim he had, appropriated \$200 a month for him; but this appropriation lasted only two years, and since then the great State and its millionaires have stood ignobly by and left to starve the man whose discovery was the origin of their wealth.

Feb. 6, 1886 p87

The Miner's Inch.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have been making inquiries as to the correct standard for the "miner's inch" as a measure for water, and find that, as all sorts of measures may be used, the choice would mostly fall on the side of intelligence and against ignorance, for considerably more water can be obtained under one standard than another. Please tell me (and I am sure many others would be interested) through your columns the different standards you may know of and the legal aspect of the matter.

As far as I can find, neither the general mining law nor the laws of Montana mention any standard; although California, I understand, has some standard.

I give below some of the standards I hear of for the miner's inch:

1. One inch square opening in a two-inch plank, the level of the water being six (6) inches above the opening (center, top, or bottom of said opening?).

2. 93 pounds of water per minute = miner's inch (1").

3. 196½ pounds of water per minute = 3 miner's inches (3").

4. 8 gallons of water per minute = miner's inch (1").

5. The depth of overflow in inches multiplied by the width of same in inches equals the number of miner's inches; for example, an overflow 20 inches wide and 2 inches deep gives 40 miner's inches.

I am satisfied that there are many more; but which one ought to be used and has custom sanctioned any particular standard?

If you think this a matter of any general interest to your readers, you will reply at your convenience. Truly yours,

C. F. PEARIS.

GILBERT, MONT., Jan. 21.

[The following extract from Bowie's Treatise on Hydraulic Mining (just out) will answer our correspondent.—EDITOR ENGINEERING AND MINING JOURNAL.]

"The miner's inch of water is a quantity which varies in almost every district in California; no one gauge has been uniformly adopted, nor has any established pressure been agreed on under which the water shall be measured. In some counties, there are 10, 11, or 12-hour inches, and in others there is a 24-hour inch. The apertures through which the water is measured are generally rectangular, but vary greatly in width and length, being from one inch to twelve inches wide, and from a few inches to several feet long. The discharges are through 1-inch, 1½-inch, 2-inch, and 3-inch planks, with square or with square and chamfered edges, combined or not, as the case may be. The bottoms of the openings are sometimes flush with the bottoms of the boxes, sometimes raised above them. The head may denote the distance above the center of the aperture, or again that above the top, and varies from 4½ inches to 12 inches above the center of the aperture.

"The Smartsville inch is calculated from a discharge through a four-inch orifice with a seven-inch board top; that is to say, the head is seven inches above the opening, or nine inches above the center. The bottom of the aperture is on a level with the bottom of the box, and the board which regulates the pressure is a plank one inch thick and seven inches deep. Thus, an opening two hundred and fifty inches long and four inches wide, with a pressure of seven inches above the top of the orifice, will discharge 1000 Smartsville miner's inches. Each square inch of the opening will discharge 1.78 cubic feet per minute, which approximates the discharge per inch of a two-inch orifice through a three-inch plank with a head of nine inches above the center of the opening, the said discharge being 1.78 cubic feet per minute. The Smartsville miner's inch will discharge 2534.40 cubic feet in twenty-four hours, though in that district the inch is reckoned for eleven hours only.

"Other Inches.—The miner's inch of the Park Canal and Mining Company, in El Dorado County, discharges 1.39 cubic feet of water per minute. The inch of the South Yuba Canal Company is computed from a discharge through a two-inch aperture, over a one and one half inch plank, with a head of six inches above the center of the orifice.

"At the North Bloomfield, Milton, and La Grange mines, the inch has

been calculated from a discharge through an opening fifty inches long and two inches wide, through a three-inch plank (outer inch chamfered), with the water seven inches above the center of the opening."

Experiments at Columbia Hill, 2900 feet above sea-level, gave the following results: One miner's inch discharged 1.57 cubic feet per minute, or 2280.8 cubic feet per twenty-four hours.

At La Grange, 218 feet above tide, one miner's inch discharged 1.50 cubic feet per minute, or 2159 cubic feet per twenty-four hours.

May 25, 1889

SAN BERNARDINO COUNTY.

A suit has been begun at Los Angeles by a representative of the Waterloo Mining Company, of Milwaukee, contesting the right of John S. Doe's patent to Oriental mine No. 2 in the Calico mining district of San Bernardino County. Superintendent Singer of the Waterloo company declares the Oriental patent is invalid, as no discovery of a lode was made before the location of the claim. He avers that the only ledge in the Oriental is a streak of silver ring lode owned by the Waterloo Company.

Dec 7, 1889 p 504

CALIFORNIA.

It is reported that a syndicate has been formed to build extensive smelting and reduction works at Los Angeles. At present, it is stated, there are but two smelters in Southern California, one at National City and the other at Colton, but they are not of large capacity.

March 29, 1890 p 366

SAN DIEGO COUNTY..

SAN TELMO MINING COMPANY.—This company has been organized in San Diego by J. M. Robinson, J. C. Amendt and E. Chamberlin, who have contracted with F. Osborne to open up the San Telmo silver and copper mine, and other new prospects.

April 5, 1890 p 382

THE MINES OF CALICO DISTRICT, CALIFORNIA.

Special Correspondence of the Engineering and Mining Journal.

Calico mining district is situated in San Bernardino County, Cal., and is of peculiar interest to both the miner and geologist. An important feature of the district is the fact that the mines have been self-supporting from the date of their discovery, the ore, which is chiefly chloride, and chloro-bromide of silver, occurring in such quantities in the upper parts of the mineral veins and deposits that general attention was attracted to this district almost immediately upon its discovery in 1880. Since that time Calico district has been a constant bullion producer.

There are now operating in the district four mills, having in all 115 stamps, with a crushing capacity of about 300 tons daily. The monthly output is at present probably not far below \$100,000, and may exceed this sum.

The crushing capacity of a stamp varies greatly in Calico district, as there is a very great difference in the character of ores from the various mines, and frequently in ores from the same mine. Indeed, I doubt if there is another district that can produce, in a limited area, such a diversity of ore, physically. Some of it is hard and flinty (jasper); some is soft, but brittle (calc-spar and barytes); other ores are soft and spongy, clogging the batteries ("tufa"), and some are sandy and quartzose.

The variety of colors in the ore and also in the mountain masses suggested the name for the district, "Calico." A massive mountain of red and violet rock is found flanked by a great band of pea-green tufa, and this by a buff-colored breccia, which in turn is overlaid by red and yellow conglomerates and porphyry.

The geology of Calico district is extremely interesting to the mining geologist, and will afford abundant opportunity for study. The proper time to visit Calico is in the winter, as in summer the visitor would prefer the shade of some friendly building or tunnel to climbing over the rugged, treeless slopes of the Calico mountains with the mercury marking 120 degrees in the shade.

The main range of the Calico mountains consists of an eruptive mass of violet-brown liparite, which in many places has been stained deep red by iron oxides. In order to account for the peculiar succession of rocks from the main or central core outward toward the desert plains below, there must have been at least three separate eruptions, with a considerable period elapsing between each disturbance. First the main nucleus, the violet liparite, followed by an accumulation of heavy beds of tufa—all purely volcanic. Some of the tufa is green, some is yellow, some bleached white, all being changed more or less by the pressure, heat and vapors incident to subsequent eruptions, and also partly by the agency of atmospheric influences.

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Following this, another eruption occurred which resulted in forming an immense layer of rock, which rolled up within itself all the loose boulders and stones which lay in its way, forming a heavy deposit of conglomerate—a brecciated mass composed of the previously erupted material. In a paste of rhyolite.

After this eruption must have followed a long period of freedom from volcanic disturbances, during which there was a vast erosion of the mountains, sufficient to form, in the sea surrounding this volcanic island, beds of sandstone, shale and mud at least 1,000 feet in thickness, and probably much more. That this period was of great duration is evidenced

by the fact that the water frequently became shallow, forming lakes of considerable size, which were evaporated on the mud flats, leaving deposits of gypsum and salt, and, in what is now called East Calico, a large and valuable residuary deposit of borate of lime remains to tell something of the early history of the district. These relics of the former lakes are followed by other heavy deposits of detritus from the mountains, which cover the borax deposit many hundreds of feet beneath the debris.

Again the slumbering fires were awakened and a new outburst of molten rock tore its way up from the regions far below, crushing, breaking and bending the rock formations on either side. This eruption consisted mainly of felsite, and extends from a point half a mile west of the Waterloo mine to the town of Calico. It seems to have found an easier passage between the ancient conglomerates and tufas and the more recent sedimentary deposits which were built up from the ruins of the former. The sedimentary beds are now found faulted, twisted and folded in every conceivable way. In some places one would think the rock was still plastic at the time of the later eruption, as the strata make the most abrupt bends and show the extreme effects of torsion without even cracking.

To the southeast of the town of Calico is a single hill of massive rock of grayish hue, which has been called hornblende-andesite. The joint planes in the rock show a greenish chloritic color, the result of the decomposition of the hornblende, probably.

A so-called "granite" has been found on the summit of a hill directly north of the Waterloo mine, but this I consider to be simply a coarser crystallization of the felsite, which occurs abundantly in the vicinity.

Not the least interesting part of Calico district are the ore deposits themselves, especially owing to their exceptional richness. The various forms of deposit are as numerous as the different kinds of ore. Fissures, blankets, chimneys, pockets and contacts all occur in this remarkable district. The later volcanic disturbances resulted in the formation of numerous faults, both great and small, some being single and others occurring in systems, being connected with each other.

The later disturbance was probably responsible for these fissures, cracks and gashes, as they are found in the "outside country" (as the sedimentary formation is called), as well as in the liparite, and as a rule the same vein filling (heavy spar) is found in both the old and the new formations. Another reason for thinking that these spar veins resulted from the last eruption is, that, so far as I know, no barites has ever been found in the conglomerate, except in veins.

The ore is usually found accompanying the veins of heavy spar, and is sometimes of extreme richness. The fissures are of variable depths and lateral extent: some are large, others small. Again, a zone of rock between two fissures will contain pay ore throughout.

In some of the mines are found vast bodies of white and light green or yellow tufa, impregnated throughout with chloride of silver. Last fall it was asserted (at Calico) that in one of the mines the ore in sight, of this character, was worth \$6,000,000. It was claimed that the ore body was 300 feet in length, 100 feet high, and about 40 feet wide, and that the rock would mill \$60 a ton. The deposit in another mine was locally valued at a million and a half. I am not able to verify these rumors, but have reason to believe that large and valuable deposits have been opened.

Another form of deposit is the impregnation of considerable masses of sandstone with chloride, as at the Humburg and Bismarck mines.

At the Waterloo almost every class and grade of ore peculiar to the district are found. Here is a band of sediment metamorphosed by heat and pressure into a compact flinty jasper. Some small lots of this rock will mill from \$300 to \$1,000 a ton. A few feet distant is found a band of coarse sand rock of most unpromising appearance, but a closer investigation discovers it to be rich in horn silver. In another place we find the miners knocking down the roof of the stope with picks and hammers, no drills being needed. This soft stuff, looking like dried putty, is rich enough to send to mill, and some of it is of high grade.

The Waterloo is in the "outside" or "mud" country. This mine has a slip exposed in the workings, locally referred to as the hanging wall, which for regularity surpasses anything I ever saw. It extends in an easterly and westerly direction for several hundred feet, inclining at an angle of about 35 degrees from the perpendicular. It courses in a perfectly straight line, and the face of the displacement is as smooth and regular as a hard-finished wall. It is a wonder to all who have seen it.

Some of the greater faults seem to have had a direct influence in forming the topography of the country, as in Wall street cañon, which unquestionably was induced by the fault which runs along its length.

April 5, 1890

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The source of the ore in the Calico mines is a matter to which little attention has been given. The silver is there, and that seems to be sufficient for most of those who have visited the camp. It is interesting, however, to note several points in this connection:

1. There are other hills of volcanic rock (identical with that of Calico) on the desert, extending from Lavic on the east to Acton and the head of Dead Man's Cañon on the west, a distance of at least 100 miles. Possibly these rocks have a much wider distribution. With the exception of the mines found at Calico and in that vicinity these liparites are not usually ore-bearing, as far as I have ever heard, and I have visited most of these volcanic hills.

2. The liparitic hills outside of the Calico Mountains, which include the Waterman's mine and the hills at Daggett, are not faulted and fissured as at Calico, and no veins of heavy spar are found.

3. The richest ores in the Calico district are found in the hills nearest the felsite eruptions.

4. All the felsite assays something in silver, and carries more gold than the liparites.

From these facts the general conclusion may be drawn that the felsitic and andesitic eruptions had a direct effect in causing the formation of the ore bodies of the district. The liparites probably carried appreciable quantities of silver previous to the felsite eruption, but the latter fractured the rocks in such a manner that planes were afforded for the free passage of solvent waters which, percolating through the masses of liparite and tufa, carried numerous solutions into these fault planes, where the action became more rapid and veins of taryta were formed, in the matrix of which the silver minerals were precipitated. Certain zones of liparite between two crevices became saturated, and here we find a rich ore body. In other cases, in either the liparite, the tufa, or the "mud," there have been local accumulations of ore, the silver contents of large rock masses

seemingly concentrating about a common nucleus. I believe that mineral solutions from the felsitic rocks aided largely in this formation of mineral deposits. In no other way can the very remarkable ore deposits of Calico be satisfactorily accounted for.

The "mud" country gives low assays in silver at almost any place; it is only in the region of extensive faulting and metamorphic action in the vicinity of the felsite that it is found to contain sufficient silver to make it profitable to work. Some of these impregnations or accumulations (there are both classes) are of high grade, running up into hundreds of ounces per ton.

Two and a half miles west of the Waterloo is the Langtry group of mines. The only thing worthy of mention in regard to them, from a geological standpoint, is the fact that, as far as developed, the vein exhibits every characteristic of a true fissure. The crevice is from two inches to 10 feet wide, and is largely filled with calcspar and quartz, carrying chloride of silver, iron oxides and some lead carbonate. The fissure is nearly vertical and cuts across the sedimentary rocks which lie almost horizontal. It is the only vein showing any considerable amount of calcite in the district.

Calico has always been self-sustaining and still possesses the elements of greatness and future prosperity, but no one has as yet been found who had the courage to sink deeper than about 400 feet. I believe the ore deposits extend to a much greater depth, but this needs to be demonstrated.

W. H. STORMS.

PASADENA, Cal., March 10th, 1890.

Apr: 15, 1890 P390

LOS ANGELES COUNTY.  
(From our Special Correspondent.)

LOS ANGELES, March 24.

There seems to be a very promising revival in mining matters this season throughout Southern California. A large number of prospectors and "chloriders" are now out in the mountains and on the desert at work, and some of them are doing well.

In Los Angeles County there is more interest in the business of mining than for years, if not more than ever before. The richness of the alluvies found last summer in the mines of the San Gabriel cañon has given an impetus to the business, which now bids fair to continue indefinitely.

Near Mouravia, twenty miles east of Los Angeles, prospectors are searching for gold-bearing veins, and at Azusa, a few miles further east, a stamp mill is being built in the Dalton cañon to treat the ores of that vicinity.

On the north side of the San Gabriel mountains at Acton, the Red Rover and New York mines are in constant operation, both turning out golden bars with pleasing regularity.

The Red Rover is the principal mine of the Acton region at present. The vein has been opened to a depth of 500 feet and is now looking well. Many beautiful specimens, showing bright yellow gold, are being taken out. This fissure occurs in a highly metamorphic rock; the quartz is saccharoidal, pure white. The average value of the rock is placed at \$12, which is probably not over-estimated. A company is now being formed in Los Angeles to develop this property thoroughly and make a mine of it. A new ten-stamp mill is at work on the quartz, crushing about 20 to 25 tons every 24 hours. The stamps weigh, I am told, 760 pounds. The screens used are 30 mesh. Battery and table amalgamation are in use.

The old Topeka mine, once a promising property, and producing, is still idle. About 175 feet of the 1,500 have been explored to, a depth of 125 or 150 feet. I consider the chances for good ore bodies still good. Some gentlemen of Los Angeles are negotiating for the purchase of a gold prospect near Acton, but the facts cannot be given at present.

A large and valuable deposit of gypsum at Alpine is being opened and the material manufactured into plaster, fertilizers, etc. This is a new industry and is likely to become what our English friends term "a going concern."

SAN BERNADINO COUNTY.

In this county matters are even more prosperous. The Garbutt Bros., of Los Angeles, who recently purchased a half interest in the Adams gold mine, near Oro Grande, are building a quartz mill at Victor, on the Mojave River, to treat this rock. The quartz runs about \$30 per ton on an average. The property is considered a valuable one.

The Black Hawk people, 45 miles east of Victor, are getting along with their affairs quite satisfactorily. A five year contract to transport supplies and ore was let a few days ago. The management evidently anticipates a continued period of prosperity.

At Silver Reef nothing is being done at present, but a few weeks from this date, I have been informed, work for the season will be commenced. This is a chloride camp, and, like many others, suffers from lack of proper management and scarcity of capital.

Barstow people still talk of a smelter. There is considerable lead rock in that section, and it is possible a smelter might prove a success.

The silver mill formerly owned by the late A. Barber, at Calico, is now under the management of a Mr. Stevens, and is running continuously on custom work, something it has not done before for nearly two years.

A number of chloriders are at work in the Lava Bed district and shipping ore.

Poor, unfortunate Calico, that town has been burned up completely several times, and here and there buildings every little while. The last episode of this sort occurred less than a week ago, when a store and two saloons were burned, with a loss of \$10,000. Calico is "tried in the fire," but she always comes up serenely smiling like the fabled phoenix.

SAN DIEGO COUNTY.

People in this county are making an effort to bring some of their mines into public notice. A syndicate of Pomona capitalists have interested themselves in a group of gold properties at Virginia Dale. The owners of claims near Twenty-nine Palms are also at work developing.

Along the Colorado River there are numerous flattering prospects, some of which are being operated quite successfully.

In Exchequer District, Mr. Spawforth is now at work doing the annual assessment work and shipping some high-grade ore.

Out on the Mojave toward Panamint and Resting Springs, prospects are reviving, and shipments may be looked for soon. Many of the miners are preparing for the coming of the new short line of the Union Pacific from Salt Lake to the Southwest.

There is considerable talk of building reduction works at Los Angeles, of which I will have more to say hereafter. "ROVER."

May 3, 1890 P502

INYO COUNTY.

It is reported that the borax deposits at Death Valley, Inyo County, owned by W. T. Coleman, have been sold to San Francisco parties for \$400,000.

Oct. 18, 1890 p447

THE SAN JACINTO TIN MINES.

On another page will be found a very full and accurate description of the tin deposits of San Jacinto. San Bernardino county, California. In some respects these tin veins are the most promising yet discovered in the United States. Many of the veins are large; they occur in a congenial country rock, and the vein characteristics are, to the miner, favorable and promising. It is true, as Mr. BENEDICT says, that the development is as yet but insignificant and not sufficient to justify the erection of a large mill, though it may reasonably be hoped that the veins will be found to contain paying ore in depth.

The experts' reports given in the prospectus of the company, which are said to show an *average* richness of 20 per cent. of black oxide of tin (say 15 per cent. of metallic tin) in the ore, are wholly misleading, and, we think, will certainly not be realized. From a recent visit to the mines, during which we were courteously extended every opportunity to examine the property, we feel justified in saying this, but such an *average* richness is quite unnecessary. The greatest tin mine in Great Britain, the Dolcoath, carries two to three per cent. of tin, and though it costs \$6 or \$6.25 a ton to mine and mill the ore and cover all expenses, the company pays large dividends. Now it is certain that the San Jacinto mines can be worked at a *less* cost per ton, than is done in Cornwall, because everywhere in this country we get so much more to the man that it more than compensates for the difference in wages paid. There is no mine in Cornwall that is to-day mining and milling ore as cheaply as are fifty mines that could be named in Michigan, Dakota, Montana and California, where miners' wages rise to \$3 and \$3.50 a day. San Jacinto could therefore pay larger dividends than Dolcoath out of ore of the same grade, and probably all the investors would be satisfied to be guaranteed Dolcoath's rate of dividends. The same is true of the tin mines of the Black Hills of Dakota, which we recently had the pleasure of visiting and will describe in these pages at an early date. Systematic work is being done, with encouraging results, in Dakota, yet there the judicious plans adopted do not contemplate the erection of mills and reduction works until large reserves are ready for extraction.

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### THE SAN JACINTO (CALIFORNIA) TIN MINES.

Written for the Engineering and Mining Journal by W. deL. Benedict, E. M.

The recent announcement of the sale of the San Jacinto tin mines to an English corporation is confirmed. During the past year the sale has been announced several times, but such reports were premature. It was not until the 6th of August that the first payment was made and the deed of the property transferred from the San Jacinto Tin Mining Company to the San Jacinto Estate, Limited.

It is the general belief among those who are conversant with mining matters that there are no known deposits of tin ore in this country that can be worked at a profit. A great deal has been said and written at various times about the occurrence of tin in the Black Hills, S. Dak.; at Kings mountain, N. C.; in Virginia; in Georgia; and, lastly, in California. But these different deposits are all thought to be too poor in tin to pay to work, and not without reason, for so far they have proved unprofitable. Large sums of money have been expended in the purchase and advertisement of the Black Hills properties, and considerable development has been done there; but as far as can be learned it has been without remunerative results. In a letter reviewing Prof. Vincent's very sanguine report on some of these properties, published in the *ENGINEERING AND MINING JOURNAL* October 26th, 1889, it was shown that even if his expectations as to the yield of the ore, cost of production, price of tin, etc., were realized, there would still remain a loss of \$425,000 on the quantity of ore he estimated to be "in sight." Yet it is to be hoped that tin ore will be found there sufficiently rich to pay for working.

The investigations at Kings mountain disclosed a great deal of ore which very closely resembled that found in the Black Hills; but notwithstanding the advantages that locality has in the way of cheap labor and fuel, abundance of water, and proximity to market, the ore was considered to be too lean to be profitable.

Of the tin deposits of Virginia and Georgia so far discovered, the former are said to be worthy of more extensive development, but the latter are not looked upon as having any value.

We come now to the San Jacinto district of California, which forms the subject of this article. The existence of tin ore in this locality has been known for about a quarter of a century. Tradition states that the Indians discovered mineral there as early as 1840, and the place of the discovery is now pointed out on a small hill close to where the largest amount of development on the property was subsequently made. Later on the Mexicans there are said to have ascertained, either from the Indians or as a result of their own prospecting, that the property contained veins rich in what they supposed was silver, for such they called the white metal which they smelted from some of the ore. Still later the whites learned of the ore discoveries in that vicinity, and there was quite a rush of people to the new district, and several hundred mineral locations are said to have been made there. The newcomers were, however, doomed to disappointment, for the land upon which the veins were found formed part of a Spanish grant that had been made to Don Maria del Rosario de Aguirre in 1846, and the property was so held till Octo-

ber, 1867, when a United States patent was issued for it. About this time it was found that what was supposed to be silver was tin. The news of this discovery was soon noised abroad, and the San Jacinto Tin Mining Company was formed by San Francisco capitalists to purchase the

grant. This company was capitalized at \$4,000,000, and in June, 1868, it took possession of the property.

As a natural result litigation ensued. Some of those who had been ousted united forces with the owner of an adjoining grant, who claimed the tin district as a part of his property, and this litigation continued spasmodically until the United States Supreme Court finally confirmed the title of the San Jacinto Company in March, 1888. Operations were

commenced by this company as soon as it obtained possession in 1868. About \$100,000 were expended in developing the property and in connection therewith. But either because the facilities for transportation were inadequate, or because of ignorant or extravagant management, or all

combined, the work was not profitable and the mine was closed down. Quite a display was made of the ore and the tin that was obtained from it at the Mechanics' Fair held in San Francisco in 1869. Two or three tons of metal are said to have been smelted from the ore and used in making type metal, tin plates, various articles of tinware, etc., for exhibition.

From the time that work was stopped until the recent negotiations were

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concluded many attempts to sell the property have been made even by those who have had faith in its possibilities. After the advent of railroads in that part of the State the cloud on the title seemed to be one of the greatest bugbears in preventing a sale. Then the large amount of land outside of the tin district was a drawback; for the veins are all embraced within an area of ten or twelve square miles, which is only about one-sixth of the tract; and as most of the remainder is very hilly and suitable only for grazing, possible purchasers of tin mines did not care to buy a large amount of what was considered worthless land as well, the price asked for tin district being the same as that for the entire property. And so for one reason or another nothing was done until now, though probably all the mining men who have had occasion to examine the property have pronounced in its favor.

The Rancho Sobrante de San Jacinto, as patented by our government, consisted of eleven Spanish leagues, or about 48,400 acres. But the mining company disposed of about 3,500 acres to the town of Riverside, so the present property consists of about 45,000 acres, or about 70 square miles. The tin district is, in a straight line, about ten miles south of Riverside, in San Bernardino county. Also it is about fifty-five miles easterly from Los Angeles, and fifteen miles southerly from Colton, a station on the Southern Pacific Railroad. The California Southern Railroad, running from Colton to San Diego, passes the property on the east, about three miles from its boundary; the Riverside, Santa Ana & Los Angeles Railroad passes within a mile or two of the most westerly veins on the tract, and the Pomona & Elsinore Railroad (in process of construction) will skirt the southerly boundary, along Temescal creek; so the property is now virtually surrounded by railroads.

Temescal creek will supply an ample amount of water for dressing the ore; but it may be necessary to construct a bed-rock dam to bring all the water to the surface.

The tin veins are found in the low, rolling hills of the San Jacinto mountains, the Gabilan hills, and are elevated several hundred feet above the creek, offering an excellent opportunity for cheap working by tunnels, if sufficient ore is found.

The country rock is composed of syenitic granite, syenite and slate; but the veins apparently extend but a short distance into the latter. Veins of porphyry and quartzite cut across the country rock in various places, but in a direction different from that of the mineral veins which pass through them, showing that the former were made first. The courses of the veins vary from north and south to east and west, swinging around gradually from the former to the latter direction as one goes from the west to the east. The hills are entirely destitute of all vegetation excepting the native grasses, which enables one to see readily the black croppings of the veins, which may be said to be unique in their distinctness. By standing on the summits of the higher hills one can see them running across a level space, climbing a hill, extending down the other side, crossing a gulch, running up another hill, down again, and so on, continuing in the same plane with unusual regularity. Again, a slide on the side of a hill exposes a vein standing almost perpendicular, and as black, nearly, as a seam of coal.

The widths of the veins are, of course, not uniform; they vary from 18 inches to 30, or more, feet. The widest one measured was found to be 24 paces—say 60 feet—in width, and it was a most promising one, too.

From the most westerly to the most easterly vein the distance is, as the crow flies, about three and a half miles, and within this space upward of 70 lines of croppings of apparently as many different veins were found. They were practically identical in character; a sort of syenitic rock which, in Cornwall, is known as "tin capel," or "lode granite." With the exception of the more extensive ones on the Cajalco lode, the developments consist of a number of "test pits" sunk to various depths—usually from 2 to 12 feet—in the croppings of different veins, all of which show more or less of the black and white mottled ledge matter that is so characteristic of this locality. In some instances copper is found in the ore in considerable quantities; in others it is found only as a stain; and, again, it is not seen at all. Silver, gold and nickel are said to be found there also.

The most extensive and, substantially, the only developments are on the before-mentioned Cajalco lode. This vein dips at an angle of about 60 degrees from the horizontal; and the workings consist of an adit, or tunnel, along the vein about 420 feet in length; a level 300 feet long, and 60 feet below the adit; two incline shafts from the surface to the adit, respectively 45 and 95 feet deep; and two winzes, connecting the adit and level, each 60 feet deep. Also there is another tunnel started in a hill on the other side of the narrow gulch from which the main adit starts, and which is said to be 60 feet long; so the total amount of developments aggregate something over 1,100 feet in length.

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The first or main shaft is about 110 feet from the mouth of the adit, and the second or Williams shaft 330 feet. The first winze is really a continuation of the main incline shaft, and the second is about 150 feet further in. A perpendicular shaft was started close to the main incline shaft, and was apparently 50 or 60 feet deep; the fact that it was located at such a place where nothing could be gained by it indicates a lack of good judgment on the part of those in charge of the work. The adit is partly in the vein and partly in the foot wall. The same is true of the lower level, and in consequence the vein is not shown up as completely as it should have been. But several cross-cuts have been made to the hanging wall, which indicate that the ore commences at a point just beyond the main shaft, and continues at least as far as the Williams shaft—nearly 300 feet. Beyond this the adit is in the foot wall, but the characteristic black ledge matter is shown at the extreme end, proving the continuance of the vein at least so far. The croppings, however, continue several hundred feet further.

Both walls of the vein are very well defined, and slickensides were observed in some places. The gangue presents an appearance totally different from that of the light brownish country rock, making it impossible for even a novice in mining to mistake one for the other. A black streak (which may be termed the "pay streak"), sometimes split into two or three parts, continues along in about the middle of the vein. Where it contained most cassiterite, it was about two feet wide; but it extended into the mottled ledge matter in some places, enriching it sufficiently to work. The entire vein was from three to thirteen feet wide, averaging about six feet.

The chimney of richer ore seemed to be about 125 feet long. For this distance the black, or "pay" streak contains fully 4 per cent. of tin. Assuming, for the purposes of calculation, that it continues from the lower level to an average height of 60 feet above the adit at an average thickness of 2 feet, there are about 2,700 tons of ore "in sight" containing 100 tons of tin. Estimating the value of the tin at 20 cents per pound—\$400 per ton—its gross value is \$40,000. From this must be deducted all expenses for mining, reduction, transportation, offices, salaries, etc., which would amount to, say, \$8 per ton, or \$21,600 on the 2,700 tons, leaving \$18,400 as the net value of the ore "in sight." It would, of course, be most unwise to erect reduction works, etc., on such a small showing of ore as this, particularly as the above estimate of cost per ton is based upon operations on a large scale.

But, though it is not always safe to place entire confidence in "indications" only, a general comparison of the San Jacinto district with Cornwall brings to light some facts that are interesting, and which, taken as a whole, are not unfavorable to the future of the San Jacinto Estate, Limited. For example, the best deposits of tin ore in Cornwall are found in granite. The famous Dolcoath mine was at first worked for copper, this ore having been found in the "Killas," or slate, which overlies the granite. When the line of contact between the two was approached, however, tin ore commenced to show itself, and when the granite was finally penetrated the copper gave out entirely, having been replaced by tin.

The San Jacinto veins are found in granite, but on the southeasterly side of the district the slate overlaps the granite, and a few of the veins continue into it for a short distance. By comparing a characteristic sample of the granite from this district with a piece of the country rock from the vicinity of the Dolcoath mine, the two are found to be almost identical in appearance. J. W. Henwood, in his treatise on the "Lodes of Cornwall" (published in the *Transactions of the Geological Society of Cornwall*, 1843), in writing of the appearance of the country rock, says: "If the rock be neither very fine nor particularly coarse grained, the embedded crystals of feldspar of a greenish pink or brownish hue, and their bounding planes rather indeterminate or passing gradually into the basis of the rocks, and if the basis consists of greenish feldspar besides quartz and mica and sometimes schorl, the character of the rock is considered a very favorable one." Which seems to prove that "indications" were not deemed altogether unreliable in Cornwall. Still, it would not be entirely wise for a person to go about hunting for tin ore with such an elastic description of country rock as that for his sole guide! But when one compares the two different pieces of country rock, above mentioned in the light of this description it does not seem so vague.

Though it may be of no importance, and may depend only on local causes, the general direction or strike of the San Jacinto veins is the same as that of the Cornwall lodes, viz.: northeasterly and southwesterly.

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The gangue of the San Jacinto veins, as has already been observed, is to all appearances the same in all of them, though its characteristics may vary somewhat in the different varieties of country rock in which it occurs. J. A. Phillips, in describing the lodes of Cornwall in his treatise on "Ore Deposits," makes note of a similar feature in the veins there, saying, "they, however, in some degree partake of the characteristics of the different rocks through which they pass." Then the "tin capel" or "lode granite" of Cornwall has its counterpart in the "mother rock" or gangue of the San Jacinto veins. Pieces of the latter, when compared with samples taken from a waste pile near the Tincroft mine, Cornwall, had such striking resemblances to each other, that they surely seemed parts of one and the same piece. And this great similarity is also noticed in a sample of "tin capel" taken from the lowermost workings of the Dolcoath mine, at a depth of more than 2,500 feet below the surface.

Again, a variety of ore known in Cornwall as "blue pitch" (or "peach," the orthography is doubtful), and which usually occurs in rich ore bodies, is found in some of the San Jacinto veins; and in general the principal features of the mode of occurrence of the tin is greatly similar in both districts.

Then the "elvans," of Cornwall, have their counterparts in the veins of quartz-porphry that intersect the veins of tin ore in the San Jacinto district, and in each case the mineral veins were formed subsequently to the "elvans." Altogether it is extremely doubtful if any deposits of tin ore so far discovered in the United States can in any way approach those of the San Jacinto district in closeness of resemblance to the lodes of Cornwall.

As for the richness of the ore and the quality of the tin produced, these points remain to be more fully determined by the new English corporation or its successors. As already stated, the developments so far made are substantially confined to but one of the 70 or more veins that are on the property. The croppings of this vein show very little tin (which is best found by "panning"), not more than is shown in many of the others, not as much as in some. But at a depth of from 60 to 100 feet, and directly under the practically barren croppings, pay ore is found as before described. Theory may give as a reason for this that the "surface action" has removed the cassiterite, but, be this as it may, the fact remains that what the "indications" pointed out as probable has actually been proved to exist in at least one of the veins; rich ore has been found beneath, when it was not found on the surface. Whether this will be the case with all, a few, or none of the rest remains to be proven by actual development. The chances, however, seem to be all in favor of finding an abundance of pay ore in a few of them; it would be too much to expect to find it in all, though tin is found in the croppings of the first vein, the last vein and many of the intermediate ones. In one where no ore showed in the croppings, at a depth of eight feet, a streak two inches wide of 20 per cent. ore was found, and at that depth work was stopped. So much for indications.

The San Jacinto Estate, Limited, has a share capital of £505,000, which is divided into 500,000 ordinary shares of £1 each, and 1,000 founders' shares of £5 each. Also £125,000 of debentures will be issued, making a total capital of £630,000; or, at \$5 to the pound, \$3,150,000. It is also stated that the price to be paid for the property by the English corporation is \$100,000 in cash and £250,000 in ordinary shares. The amount already paid is known to be \$150,000 cash. Of this sum \$100,000 were paid to the shareholders of the old company, leaving \$50,000 to be used, pre-

sumably, for various expenditures made in connection with the sale. If the above statement as to the amount to be paid for the property is correct, then the promoters will receive \$50,000 in cash and \$1,250,000 (£250,000) in shares. Then it is stated that \$250,000 (£50,000) in cash have been placed in the treasury of the company as working capital, so the total cash outlay is \$650,000. This just equals the sum of the debenture capital, £125,000, and the founders' shares, £50,000. Hence the ordinary shares seem to be "distilled" water. The new company, therefore, starts in business with a total capital of \$3,150,000. Six per cent. per annum on that amount is \$189,000.

Let us now see what the English experts say as to the quantity and quality of the ore so far discovered. The late Capt. Charles Craze, of Cornwall, states in regard to the Cajalco vein: "Its width is found to vary from three to seven feet . . . and will produce from five hundred-weights to one ton of tin per fathom for upwards of 30 fathoms in length."

Taking five feet as the average width, a "fathom" would contain 180 cubic feet (6 feet x 6 feet x 5 feet), or, say, 15 tons of 2,000 pounds each. Again, taking the average of five hundred-weights and one ton as equal to 1,400 pounds, the percentage of tin (black tin) is 4 1/2 per cent., equal to about 3 1/2 per cent. of metal. As to the quantity of ore "in sight" Captain Craze writes: "The mine having been opened out to a very limited extent, it is impossible to make any definite calculations as to what the output of tin may be in the near future," though, in continuing, he says: "I have never seen in any mining district so many large and promising lodes cropping out at the surface as there are on this property."

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Mr. Francis estimates roughly "12,000 tons of dressable ore, ready for stoping, averaging say five per cent. of tin," but he does not give the dimensions of the ore body estimated upon, though in one place he speaks of it as 200 feet long. Assuming this to be the length, and taking the width at five feet, the height would be about 140 feet, and to get this it is necessary to go below the lower level. But five feet thick of five per cent. ore appears to be a far too liberal estimate. Taking Captain Craze's estimate of 3 1/2 per cent. of metallic tin as being the true amount contained in the ore, and assuming that 80 per cent. of this is obtained in the form of pig tin, the value of the ore per ton would be \$11.20, estimating tin at 20 cents per pound. From this must be deducted all expenses for mining, milling, smelting and transportation: also salaries, office, traveling and legal expenses, commissions on sales of tin, etc., which may be put at about \$7 per ton of ore mined, leaving \$4.20 per ton available for dividends. Therefore, to make \$189,000 per year it would be necessary to treat about 45,000 tons of ore annually, or 150 tons per day for 300 working days.

In addition to the probable worth of the tin veins, the property acquired by the San Jacinto Estate has a large value for agricultural purposes, as a part of the land can be irrigated by a suitable system of storage reservoirs, and possibly by artesian wells. Such land is now worth \$100 and upward per acre. Also, the water in Temescal creek could be used to irrigate adjoining land. So that if the tin veins, in spite of their promise to the contrary, should prove to be comparatively valueless, the entire amount of cash paid for the property, and perhaps much more, could probably be realized from sales of land and water.

Finally, in regard to the expenditure of the new company's working capital, it is greatly to be hoped that it will not be used for building extensive mining and reduction plants until sufficient ore has been found to warrant such works. To build such plants now seems most unwise and uncalled for. Let ample exploration work be done before even the foundations of the mills and smelting works are laid. The only secure foundation for such structures is ore, and plenty of it. When this is found all the buildings necessary for its reduction may safely be built upon it. To be sure, the veins are very promising, but it has been shown only too often in mining that it is not always safe to place much confidence in a promising outcrop: it is much safer to profit by the experience of others. Therefore, build reduction works *after* sufficient ore is found, not *before*.

Oct. 19, 1891 p 695

**THE SAN JACINTO TIN MINES.**

The general meeting of the San Jacinto Estate, Limited, was held in London on the 2d inst. There were the usual statements from the chairman and the directors setting forth the strength of the Cajalco lode, the high grade of the ore and the value of the property in general; but no very satisfactory explanations concerning the tardy development of the mine and the smallness of its output up to the present time, though many months have passed since the company took possession of the property, and much money has been spent. According to the statement of Sir JOHN STOKES, the chairman of the company, there has been trouble with the furnace originally erected. A new furnace has been built, and an output of 25 tons of pig tin is expected during December. The product prior to this month has, we believe, been about 23 tons only.

Judging from the financial statement for the year ending June 30th, 1891, the undertaking has suffered from gross extravagance and general mismanagement. Out of a total of expenditures amounting in round numbers to £150,000, the sum of \$50,000 was spent on buildings, \$80,000 on plant and machinery, and but \$7,550 on the development of the mine. As the latter is still comparatively unexplored, and as there is some doubt

concerning the percentage of tin which the ore will actually yield this outlay on the mine seems disproportionately small.

During the summer, however, a change was made in the management. Work has been suspended on the expensive dam, which had been commenced, and on the agricultural land of the estate and all efforts concentrated upon the mine. So far the new openings which have been made in the mine are said to be showing a satisfactory amount of ore of good grade. Captain HARRIS, who is now in charge, reports that he is confident that the ore will yield an average of 5 per cent. tin.

Naturally the company is in need of more money with which to continue development work, and an attempt is to be made to dispose of that portion of the \$250,000 bond issue, authorized last year, which remains unsold. With the money thus raised it is thought that the enterprise can be put upon a successful basis. The company now has its machinery, and furnaces of an estimated capacity of 48 tons of ore per day; and the additional funds are required for the exploration of the mine only. The project seems to us to afford a fair prospect of success and we trust the present owners will provide the capital necessary for its development.

Jan 2, 1892 p 49

**THE CALIFORNIA TIN MINES.**

(From our Special Correspondent.)

The San Jacinto Estate (Limited) has become a regular producer of tin during 1891, and work at the mine is now progressing steadily and satisfactorily. The outlook now is somewhat different from what it was a year ago, when everything was in an experimental stage. Within the year the necessary machinery has been placed in position, and the development of the Cajalco vein extended quite materially. To be sure numerous difficulties and stoppages have occurred, but these, if not satisfactorily overcome, have at least been reduced to a great extent. The principal trouble seems to have occurred in the control of the petroleum steam blast in the furnaces, which has proved damaging to the fire bricks, necessitating their frequent renewal. The output of pig tin during the last part of the year has been reduced somewhat, owing to the reconstruction of the reverberatory furnace.

The output of the company during the year is shown by the following figures, for which I am indebted to the kindness of Messrs. W. W. Stewart & Co., of San Diego, who are the sole agents for the product of the Cajalco mines. The shipments of tin commenced in June last, during which month 11,820 lbs. of pig tin were consigned to Stewart & Co. The second shipment consisted of 8,180 lbs., arriving the latter part of June or early in July. The third shipment weighed 14,071 lbs., which was received in August. In the month of September 13,900 lbs. came down from the mine, followed in October by 17,875 lbs. The November shipment was somewhat less than that of the previous month, weighing 15,420 lbs. On December 22d a lot of 26,000 lbs. was received. The product for the remainder of the month may be safely placed at 5,000 lbs. It will be seen by these figures that 106,866 lbs. of pig tin produced from ore from the Cajalco mine, have passed through the hands of Stewart & Co., who have readily placed every pound of it at the ruling market price. The gross value of the metal is placed nominally at 20 cents at the mine. In addition to shipments above given, a quantity was sent directly from Cajalco to San Francisco, amounting to about 12,000 lbs., which was also marketed by Stewart & Co. The product of tin in 1891 may therefore be placed at approximately 1,3366 lbs., having a gross value of \$24,673.

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THE TEMESCAL TIN MINES.\*

By Enoch Knight.

At the present writing, the end of the year 1891, it can be said that the Temescal tin mines, in the hills of that name, that seem to form a detached fragment of the Sierra Madre range, and only eight miles easterly from the Santa Fé station at South Riverside, Cal., have produced the first and only American tin ever sent to the market.

"The San Jacinto Estate, Limited," is the title of the new ownership of the Temescal mines, which for over twenty years after their discovery were tied up in litigation. Colonel E. N. Robinson, through whose efforts most of the developments and improvements have been made, effected a sale of the property to this new English company a year ago last August. By a provision of the transfer it is guaranteed to the former American owners that they may be reinstated in interest again in agreed proportion of ownership by making good certain advances for purchase and development; but the English stockholders are to retain control in any event. It is not undertaken here to state details of the deal, nor is it deemed pertinent to the purpose of this paper. It is a vast property of over 45,000 acres, a considerable portion of which is productive and easily tilled land and has, besides, a valuable water right and showings of gold in one place that will some day be followed up, or rather down. Sir John Stokes, of London, vice-president of the Suez Canal Company, is chairman of the company; Mr. Hugh Stephen, general representative; Mr. E. C. West, engineer, and Captain Stephen Harris, for 40 years a Cornwall mine manager, superintendent of the mining department. These latter gentlemen have recently been sent out from England and

are under instructions to concentrate all their efforts upon the development of the ore bearing lode already opened, the "Cajalco," in which is being led a third level, and preparations made for the most thorough test of the extent and quality of the ore. There are 30 or more lodes, with substantially the same tracings and croppings as this one, and their long black lines stretch across the crests of the low lying sandy hills that form the mining camp, as one has seen weather-beaten fences show their black outlines above wasting snow banks. These lodes are only a few rods apart and can be marked from one out-cropping to another for half a mile even by the unpracticed eye.

Some 20 buildings, neatly kept and planted about with young trees and flowers, make up the camp; and a pretty sight it is, on a December morning, set off against the distant snow mountains whereon winter has placed her sentinel outposts whose helmets glisten like burnished silver in the quivering sun-lit atmosphere. All work upon the property is stopped except the tin mining and the occasional "feeling" of the other lodes, as opportunity offers, it being, as I have said, the policy of the new company to develop this one source and in the meantime to realize as much as possible for the product, the average British stockholder having become somewhat weary, it is said, in contemplating the nebulous nature of many of his recent American investments. The company is so simplifying that the very restaurant has been let to outside parties, who board the hundred and more men for 25 cts. a meal, the company only supplying bunk room.

The fuel used is the lowest grade of soft coal and is hauled 18 miles from Elsinore, the last three miles being over the rude trail that traverses the very pinnacles of the hills, no serious attempt having been yet made to construct easy grades. The coal costs, laid down, \$5.25 per ton. Everything else, also, is necessarily taken over this rude mountain roadway. By and by, no doubt, a short branch railway to the Santa Fé station at South Riverside, about seven miles away, will be built.

The writer, on a recent visit to the mines, was allowed to see the confi-

\*Abstract of an article in the *Overland Monthly*, February, 1892, to which we are also indebted for the accompanying illustrations.

dential reports of the directors of the company, also of the experts, and given the fullest use of all official information. The amount of ore being daily handled, now that things are working well, is something over 30 tons, and the tin metal product about three-fourths of a ton. Captain Harris assured the company, during his visit to England last summer, that he expected soon to be able to make the mine pay expenses; and he says he is now doing it. The product for December was 25 tons marketed (a little being left over from November): the actual amount smelted was slightly more than 20 tons. He estimates the output of this one lode for 1892 at 250 tons, at the present rate of work and yield of ore. With the third level he expects to get better ore, the present yield being about 43.

March 5, 1892

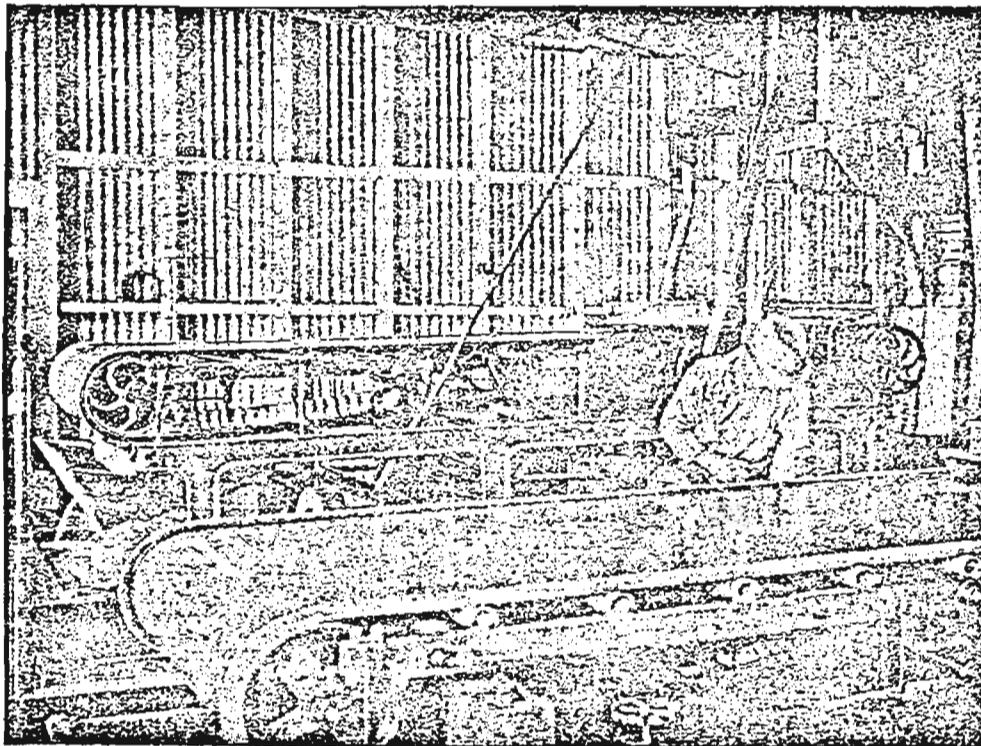
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The gross value of a ton of 2,240 lbs. of pig tin, at the highest price yet paid, 23 cents, is \$515. The superintendent's conservative estimate, however, is \$450 a ton; and this year, then, working the ore near the surface and taking into account only this one lode, will, at the lowest estimate, bring to the company, in round numbers, \$112,000. Were it not for the high price of labor and the present rude conditions of manufacturing and marketing the product, there would be a handsome profit in working ore that yields even 4%, that being more than double the yield of the Cornwall mines. The prices for labor are as follows, per day: Engineer, carpenter, etc., \$5; engineman, \$3 25; miners, \$2.75; surface laborers, \$2.25. The miners that work by contract make about \$3. The lowest price paid any man is \$2.25, and this leaves him, after paying his day's board, \$1.50 a day clear. As to imported labor, there are a few Cornish miners, but they have been years in this country, and even if they were to come from England to-morrow they would demand and receive the local market price of labor.

I wish it were possible to make estimates and predictions as to the future

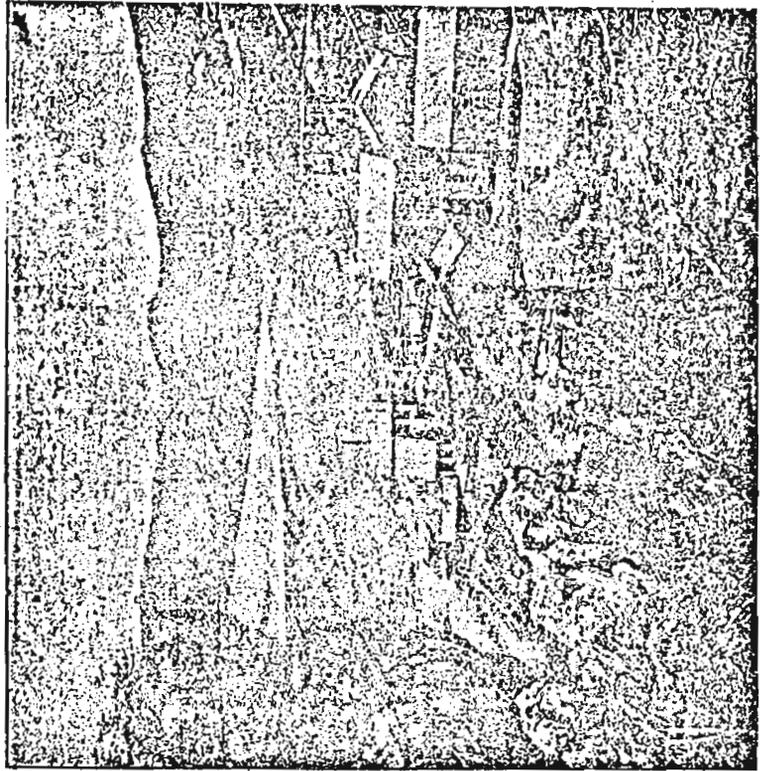
of the Temescal mines more specific and satisfactory, but I have contented myself with presenting all of the obtainable facts and the best opinions of men, who, it would seem, are entitled to be believed. My own opinion is that the work now being done, and which is bringing in returns that cover the cost of these twenty or more tons a month, will be doubled before another year, and thereafter increased precisely as fast as the new lodes can be advantageously worked; for there are many things to be attended to all the while, like providing a better and cheaper fuel supply, improving the roads and generally lessening cost and waste.

But there is even now an assured American tin mine. There is no doubt about it. It is very easy to work, the ore cropping out so near the surface of these little low-lying hills over and among which one may drive anywhere in a buggy. It is near a great railway, and in the midst of a rich, cultivated country. I cannot learn that any other deposit of tin ore of equal richness and amount has ever been found that could be so easily developed and handled; and I am very positive that the men who have staked reputation and capital upon this venture feel that they have made no mistake.

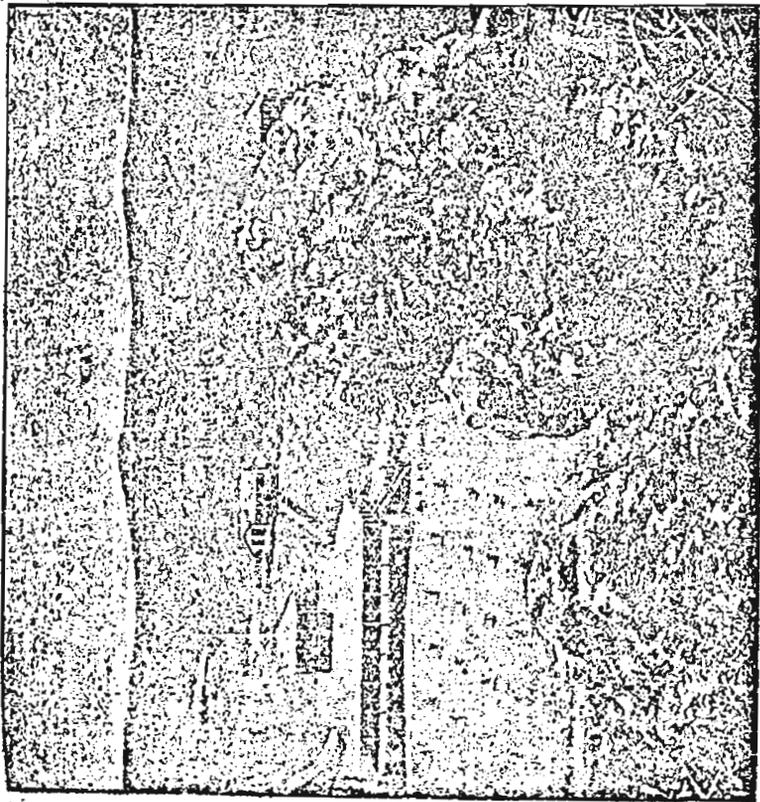


THE CONCENTRATING MILL.

March 5, 1892



Hoisting and Reduction Works from Cajaloo Ledge.



Office Building and Tin Ledge, Cajaloo.

THE TEMESCAL TIN MINES.

July 23, 1892 785

## San Bernardino County.

San Jacinto Estate, Limited.—The San Francisco "Examiner" states in a late issue that the Temescal tin mines at San Jacinto are an utter failure, according to John J. Quick, a miner of long experience in Cornish tin mines, and who worked in the San Jacinto mines. Mr. Quick declares that the mines are not producing sufficient tin to keep a mill going, and that the little ore in sight will soon be exhausted. No large body of ore, the working of which would pay, has been found in any part of that district. The mines commenced operations in April, 1891, and notwithstanding expectations that they would produce from 100 to 200 tons of ingot tin monthly the average production for the past two months is said to have been less than 12 tons. During that time the English stockholders, it is alleged, have been sending out upward of \$8,000 per month to meet deficits. The production for the past three months was from scraping out leavings in the old stopes, the new workings not revealing any pay ore. The English stockholders have summoned to London Captain Harris, late superintendent of the mines, who resigned his position because he was convinced that the property would not pay. Harris left San Jacinto on the 13th inst. for London, and in a few days there will be a meeting there of the stockholders of the company at which facts in connection with the mines will be made public. On the other hand, the Associated Press has a dispatch from Los An-

geles in which Mr. Gervase Purcell, a civil engineer and financial agent of San Jacinto Estate, is quoted as saying in relation to the above statements that so far from being exhausted the mines are in the infancy of development. There are 150 men at work and new machinery has just been ordered. Shipments of tin ore are made by carloads, and the output of the mines in June was double that in May. Purcell says the company owns a tract embracing many thousands of acres in which a large number of tin-bearing lodes have been traced for long distances on the surface. They have every indication of being of true fissure character, and Purcell says he has no doubt of their permanency.

July 30, 1892 798

## OUR TIN MINES.

The tin mining industry of this country is not in a flourishing condition; in fact, it is very unsatisfactory.

The Harney Peak Mining, Milling and Manufacturing Company's mines in South Dakota have been opened to a considerable depth at a great number of places, and a very large amount of money has been expended in this development work, and more recently in building a fine mill (which is illustrated in this issue of the ENGINEERING AND MINING JOURNAL), yet we hear of paying results, and, according to our private information, the supply of ore does not justify the starting of the mill. Moreover, the local papers are outspoken in denouncing the expenditures for property, claiming, with much corroborative evidence, that there has been gross dishonesty in this department of the company's business.

The ENGINEERING AND MINING JOURNAL was fiercely denounced some years ago when it warned English investors against this enterprise which was then being floated in the London market at \$15,000,000. The outcome thus far, and the present prospects, have fully justified the advice we then gave. It seems pretty well established that at the present time no paying tin mines have been opened in South Dakota, though magnificent specimens and "promising" veins have been found in many places. Unfortunately the mines, like the companies, are better at "promising" than "performing."

In California the Temescal mines of the San Jacinto estate, also an English corporation, have greatly disappointed the investors and the experts who made such glowing reports on the property a few years ago. There the company injudiciously expended a very large amount of money in a worthless dam and in a mill, without ascertaining that the mine could supply it with paying ore—a blunder against which the ENGINEERING AND MINING JOURNAL warned the company at the very outset of its career. At present there are practically no reserves of paying ore in the mine. The output of tin which, up to a few months ago, had amounted to 120,000 lbs., will probably not exceed 300,000 lbs. this year. The ore in the reserves, it is said, runs only 3 to 3½ per cent. of black oxide, instead of the 12 to 20 per cent. so confidently set forth in the prospectus of the company two years ago.

July 30, 1892

It is yet perhaps too early to say that this property does not contain paying veins, but it is certain that there is nothing yet in sight which would pay, the quantity being wholly insufficient to supply an economical plant, and too poor to work on a small scale.

The company owns a large estate and has many chances yet for redeeming the past, but if our advices are to be relied on, a pretty thorough change in the administration will take place before dividends come in sight.

In Virginia, the Boston Tin Mining Company, operating the Cash Mine, in Rockbridge County, have built a large (\$75,000) plant and have developed the property to the depth of 60 ft., and a length of some 200 ft., exposing a vein about 7 ft. wide of ore that is said to average 8 per cent. of tin. Unfortunately, the title to this property is so defective that it is at present impossible to say when or how it can be perfected. The vein is here said by experts to be extremely "promising," and the reserves already large for the amount of work done. Until the title is made clear, it is, however, unlikely that this mine will become a producer of any importance.

From all of this it is evident that our tin mines have thus far been disappointing. We do not, however, abandon hope that this industry will some day become important. Except in South Dakota the amount of development work done has been too little to condemn the properties, and even there it is possible that permanent deposits of ore of paying quality may be proved, as we sincerely hope they will be. Had the work of development preceded the sale to the English company, and had the whole enterprise not been floated with so many and gross misstatements its

failure up to the present time to have become self-sustaining would not have attracted so much attention or criticism.

The manufacture of tin plates in this country has also been disappointing, though there is no reason whatever why this industry should not grow to very important proportions, even though the tin mines should defer for years the fulfillment of their promise.

Oct. 29, 1892 p 420

San Diego County.

(From our Special Correspondent) X

Good Hope Mine, Ferris.—Since this property was purchased by its owners three years ago the most extraordinary progress has been made. Then it was a mere prospect hole, but active work in sinking and developing revealed an important ore body. At the beginning of 1891 the mine had been opened sufficiently to show an ore body valued at \$200,000 and a Bryan mill with a capacity for working 25 tons every 24 hours was erected. To date this mill has been kept continuously at work. The ore is mostly decomposed, carrying free gold, though sulphurets are found in paying quantities. Since being first worked the ore has averaged \$23 per ton, and as the cost of working has been \$5 per ton there has remained a net gain of \$18 per ton. The most conservative estimate of the ore in sight puts it at 75,000 tons, and as the owners of the property have refused this summer \$500,000 for the mine, it is safe to say the outlook is in every way satisfactory.

March 11, 1893 p228

San Bernardino County.

(From our Special Correspondent.)

Vanderbilt Mines.—There has been placed on record a deed conveying two gold mines, known as the Gold Bar and Gold Bar Western Extension, with water right and mill site, to W. S. Lyle for a consideration of \$40,000. It is understood that the Bonanza firm are behind the old Quijotoa manipulator. Mr. Lyle sank 3 shafts, varying in depth from 40 to 100 ft., and prospected 600 ft. of the ledge. The main ledge was found to be from 15 to 30 ft. wide, the pay streak from 4 to 8 ft. Underneath the decomposed croppings the ore was found to be a sulphuret, and a quantity of rock milled in San Francisco returned \$40 per ton. Other experts, who have been on the ground and examined the ore, make a different statement. It is denied that a pound of \$40-rock ever came from the mines.

California Mining and Development Company.—This corporation has been formed for the purpose of working the mines at Vanderbilt, the capital stock being set at \$10,000,000. The incorporators are J. W. Mackay, W. S. Lyle and G. R. Wells, with \$2,500,000 each; J. L. Flood, \$2,490,000 and J. E. Walsh, \$10,000.

April 15, 1893 p538

IMPROVEMENTS IN THE CYANIDE PROCESS.

After a certain amount of experience with any process, its weak points are seen and opportunities for improvements present themselves. To this rule the cyanide process is no exception. One of the great difficulties experienced in this process, or indeed in any lixiviation process, is the treatment of the slimes of an ore otherwise well suited to reduction by the method. They pack upon the filter, forming beds impermeable to the solution, and even if mixed with large quantities of coarser material are rarely attacked, although laboratory experiments will show that their precious metal contents are extremely soluble. Of such material the Robinson Gold Mining Company, of South Africa, operating one of the largest cyanide plants on the Transvaal, has accumulated 60,000 tons, and the management has long despaired of treating it successfully, as the gold would not amalgamate nor would the cyanide permeate the mass if it were charged into vats. The average assay value was between \$7 and \$8 a ton, but the fineness, it is estimated, is such that it would pass a 225 mesh screen.

Mr. WM. BETTEL, the chemist of the company, has been experimenting with these slimes for some time past and has devised a plan which, it is claimed, will solve the difficulty. The process consists in mixing a mass of the slimes with 50 per cent. of its weight of the double cyanide of manganese and potassium (K<sub>2</sub>Mn<sub>2</sub>Cy<sub>12</sub>) mixed with ordinary cyanide solution.

The fine slimes are thoroughly mixed with this solution, and while in a state of suspension are pumped into a Johnson filter-press under a pressure of 100 pounds to the square inch. Charging the press occupies about 20 minutes. At the end of this period the charging of slimes is shut off and water is forced through the press, which, it is said, thoroughly washes out the gold cyanide solutions. Forcing water through the slimes is continued until the escaping fluid does not show an alkaline reaction. The gold in the solutions which flow off is precipitated preferably by the Molloy process. Slimes at the Robinson works which contained originally \$7 to the ton showed but 12 to 16 cents after treatment by this method.

In various experiments, 97.6% to 98.2% was obtained, and from fine ground concentrates 90.85% was extracted. When it was attempted to treat coarse sands by this method, an absolute failure was made, however, showing that the ore must be in an extremely fine state of division to be successfully treated by Mr. BETTEL'S process. When tailings and slimes are treated direct from the mill, the use of classifying spitzluten is proposed.

While the application of the filter-press to the treatment of ores by the cyanide process is undoubtedly new, yet such a procedure has been proposed for the hyposulphite lixiviation process by the late E. N. RIOTTE; a description of it will be found in the ENGINEERING AND MINING JOURNAL of March 31st, 1888.

May 13, 1893 p439

## AN ELECTRIC MINING PLANT AT BODIE, CAL.

The Standard Consolidated Mining Company has recently completed arrangements for a water-power and electric transmission plant to run its mill at Bodie, Cal., where it was believed that an important saving could be realized in this way. As wood costs about \$10 per cord at the mill, and the fuel bills frequently exceeded \$2,000 monthly, there was certainly an opportunity for improvement.

An excellent water-power was found at Green Creek, a mountain stream on the north slope of Castle Peak in the Sierra Nevadas, forming one of the chief sources of the East Walker River, and arrangements were made for a perpetual right to its use for power purposes, under very favorable conditions. This stream carries 500 miner's inches of water at its lowest stage, and runs six or eight times that amount at the time of melting snows. An old ditch was cleared out

and practically rebuilt for a length of nearly one mile, and a site selected for a power-house at 355 ft. vertically below the lower end of the ditch. The work of clearing the ditch, building dam, head-gate, waste weirs, flume and penstock, the power-house, and of laying and anchoring the pipe, was pushed during the months of August, September and October, and in November the water wheels were put in place, so that by December the water-power plant was completed and ready to run. A pole-line was constructed following a straight line 12½ miles in length over the mountains from the mill to the power-house, the copper wire was strung thereon, and 14 miles of telephone line was built between the Bodie office and the power-house, but at a distance from the power line in order to avoid induction and consequent bad service of the telephones. The motor foundations were also put in at the mill, and a motor room 26 by 18 ft. built, while the necessary counter-shafting and pulleys for making the connection between the motor and battery shaft were made ready to be put in place.

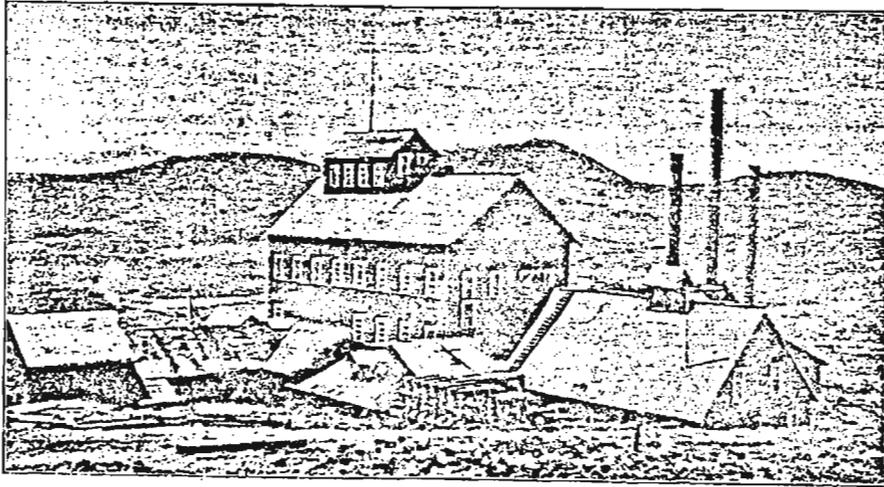
Lumber and other material from the old Bulwer-Standard mill was used in construction at Green Creek, thereby greatly reducing the cost. The power-house, 30 by 40 ft. in size, was the former salthouse, and the penstock, or pressure tank, was one of the water tanks at that mill, while the steel receiver at the lower end of the pipe was made at the mine from an unused steam-drum. The ditch is 4,558 ft. long and is connected with the penstock by a short piece of flume fitted with the usual screen, sand-box, waste-weir and flushing-off gate. The pipe leads into a steel receiver, 40 in. in diameter by 9 ft. 8 in. long, from which four taper pipes lead the water under pressure of 350 ft. vertical head on to as many 21-in. Pelton water-wheels, each pipe being fitted with two nozzles, and each wheel capable of developing 62½ H. P. The wheels run at 865 revolutions, and the wheel shaft will be connected by a patent insulating coupling to the armature shaft of a Westinghouse 120-kilowatt alternating dynamo, generating current at

3,530 volts. A Doolittle governor is attached to the wheels, and a No. 2 Pelton motor has also been put in to run the exciter required for generating the initial current in the fields of the large machine.

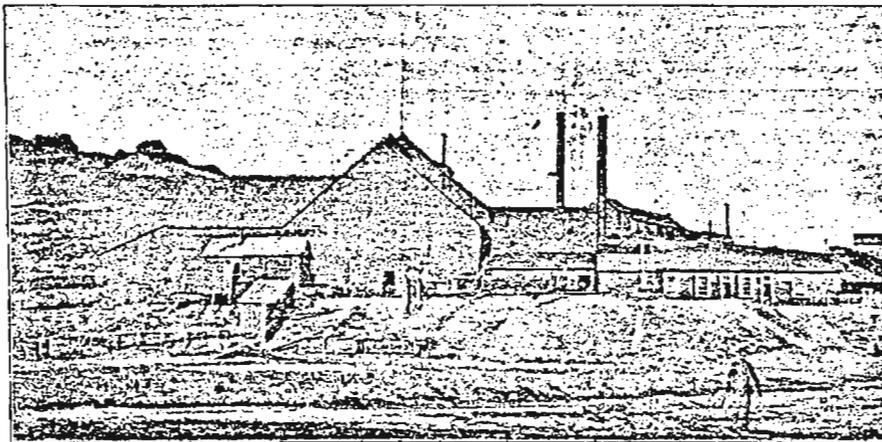
The poles of the line are of round tamarack timber 21 ft. long, 5 in. in diameter at the top, 25-ft. poles being used through the town and where the ground required it. They are spaced 100 ft. apart, and fitted each with a 4-in. by 6-in. by 4 ft. cross-arm, boxed into the top of the pole, and fastened with one bolt and one lag screw. The wire is of No. 1 B. & S. gauge soft drawn bare copper, and is attached to standard double petticoat, deep grooved glass insulators carried on Klein ¾ in. by 8 in. iron pins. The wire used is of large section, but the distance of transmission is just at that midway point where the cost of converters about equals the difference in cost between a No. 1 and a No. 6 wire; hence it was considered better to use a higher potential and large wire and avoid the complicated and often troublesome converter. The loss of potential on the line is estimated at 15%, and the current delivered to the motor will therefore be of 3,000 volts tension. The motor is of 120 H. P., and will be brought up to speed by a small motor of 3 to 4 H. P., which is built on the same bed-plate with the larger, and thrown out of circuit as soon as the latter is running at the proper speed, or in synchronism with the generator at the power-house. Two transformers, ratio 30 to 1, of a capacity of 100 incandescent lights each, will be used for lighting the mill and offices at Bodie.

The cost of this plant is given as follows: Water-power, including ditch, pipe, water-wheels, etc., \$8,915; wire line, 12.46 miles, \$10,474, or \$840.63 per mile; motor-room, countershafts and pulleys at mill, \$1,791; telephone line, 14 miles, \$1,090, or \$78.52 per mile; sundry expenses, \$305; total, \$22,584. This does not include the dynamos and motors, which had not been put in at date of the report. The cost of the work was somewhat reduced by the use of material from the old mill, as stated.

May 13, 1893 p439



THE STANDARD HOISTING WORKS, BODIE, CAL.



THE STANDARD MILL, BODIE, CAL.

June 24, 1893 P588

Leland Stanford, who died at Palo Alto, Cal. June 21st, aged 69 years, had served as Governor of his State and United States Senator, and was the first president of the Central Pacific Railroad Company. He was born near Albany, N. Y., and studied law; but in 1832 went to California and

entered into business. For some time past he has been in failing health, and it is possible that his mind has been affected, a supposition which would explain his advocacy in the senate of some extraordinary financial vagaries, the fallacy of which must have been apparent at once to a clear-headed business man such as he had shown himself to be. Senator Stanford left a very large fortune, variously estimated at \$30,000,000 to \$50,000,000, a large part of which will go to the University which he founded in memory of his only son.

June 2, 1894 p 516

## Kern County.

In speaking of this county's mines the Bakersfield "Californian" says: "Miller & Co., at Havilah, are now working a force of miners day and night in their antimony mines. John Hayes has a force of men working the Canty gold mines near Havilah and intends soon to start up his mill. It is stated that a fine vein of pay rock is now being opened in this mine. At Keyville, one of the first and most prosperous mining camps in Kern county, there are now some 30 or more men at work, most of them taking out good pay. At Erskine creek, Stebbins & Potter are still developing the Heidman mines.

Mining locations, both quartz and placer, are constantly being made out on the desert, says the Bakersfield "Californian." Ex-Senator Del Valle has recently bought a one-eighth interest in the San Francisco, the rich gold mine which has lately been discovered between Jawbone and Kelson Canyons, about nine miles from Red Rock. It is said the Messrs. Valencias have refused \$30,000 for their three-quarter interest. The main shaft is only 21 ft. deep. The ledge is said to be from 18 to 24 in. wide and has been traced through two extensions, the San Domingo and the Philadelphia.

Sunrise.—A strong ledge has been struck in the new incline shaft being sunk on this mine on Osborn Hill, says the Grass Valley "Telegraph." A contract will be let to sink the shaft 100 ft.

## Riverside County.

Within the past few weeks a great many new finds have been reported, says the Riverside "Enterprise." A very rich find is said to have been located a few miles from Yuma on the line of the Southern Pacific road. The new mill recently erected by the Ibis Mining Company, is now in operation, but owing to a short water supply the mill is not to run to its full capacity.

Santa Rosa.—This quartz mine, near Perris, has been sold by ex-Governor Blaisdell, of Nevada, to W. W. Breyoort and W. H. Griffith, of Denver, Colo. The new owners, it is said, will build large reduction works at once.

## San Bernardino County.

Altunia Mining Company.—At this company's property in the Morongo district a tunnel 145 ft. long has been run, which tapped the vein 75 ft. below the surface. At this point a body of rich ore, said to run over \$100 per ton in gold, was found. A drift has been run on the vein about 20 ft., and about 5 tons of rich ore have been taken out and sacked for shipment. The ore body is about 2½ ft. wide and is continuous as far as the development work has been carried.

June 9, 1894 p 540

## Kern County.

Little Frank.—A lot of ore from this lode, one of the veins tributary to the Big Blue in Kernville, returned \$20 gold per ton.

## Los Angeles County.

The Rubio Canyon Gold Mining Company.—This company has been formed for the purpose of developing the mines that have been started during the past year by Messrs. Carson and Dickey on the low ridge lying between Rubio canyon on the west and Pine canyon on the east, says the Los Angeles "Times." Ore is gold bearing, but the mines have not been developed to any extent by reason of a lack of machinery and capital. Mill machinery and an engine will be ordered at once.

## San Bernardino County.

Vanderbilt Mining and Milling Company.—This company has put on an additional force and is pushing work on the Gold Bronze mine. In the main shaft the ore body continues to increase in size. The mill is working steadily.

## San Diego County.

Golden Eagle.—The last assay from this mine, in Crescent Valley, shows that it is smelting ore and runs \$80 to the ton, according to the Escondido "Advocate." Three mines are now being developed in this district, all of them showing good prospects.

June 23, 1894 p 588

## Riverside County.

Good Hope Consolidated Mining Company.—This company's new 20-stamp mill 4½ miles southwest of Perris has started up and is doing good work.

## San Bernardino County.

Dryden & Sons have struck a gold-bearing ledge at Old Woman's Springs. They are now at work upon it.

Ord District.—The San Bernardino "Times-Index" publishes the following mining news: Favorable reports are being received from this new placer district on the desert in this county. The place is between the old Ord mine and Daggett, and is from

July 28, 1894 p. 84

## San Diego County.

Cargo Muchacho Mining Company.—This company is running a 20 stamp mill with water pumped from the Colorado River, 10 miles away. The district is in San Diego County.

Aug. 18, 1894

## Inyo County.

Mazourka.—The miners of Mazourka canyon continue to bring in gold, says the Inyo "Independent." Last week over \$600 worth of gold dust was brought to Independence from the lately discovered placers. At present there are but few men working, owing to the scarcity of water. The Mexican Gulch continues to yield good returns. All the work yet done has been superficial.

Oct. 13, 1894 p 348

## Kern County.

Bonanza Mine.—This mine, in the Red Rock district, is being actively worked by the owners, R. C. Hall and others. The great drawback during the present season has been the lack of water, and the company is now engaged in building water-works. They have sunk a well to bed-rock, and have ordered a large pump of 45-H. P. boiler, and 2 coils of 5-in. pipe, by which the water is to be pumped to the reservoir above the mine.

Success Mine.—On this property, which adjoins the Bonanza, work has also been successful, and the owners are now engaged in searching for a supply of water.

Oct. 20, 1894 p 372

## Inyo County.

Panamint.—A valuable find is reported in this district near the town of Panamint.

## Riverside County.

Arica Group.—This group of gold mines has been bonded by San Francisco parties who propose to work actively.

## San Bernardino County.

Calico District.—In this district more work is being done than for a long time past and nearly all the mines are running. The Runover mill, near Daggett, is being repaired and by November 1st there will be 125 stamps at work in the district.

## San Diego County.

Johnson Mine.—At this mine, adjoining the Golden Cross, some parties with capital have taken an interest and contracts have been let for a 20-stamp mill.

Nov. 3, 1894 p420

## San Diego County.

Gleason & Hoff Claim.—The development work on this mine has been carried on actively through the season. A five-stamp mill has been purchased and will soon be at work.

## San Bernardino County.

Barstow District.—Some three weeks ago gold was discovered north of the Waterman stamp-mill, which is located about a mile in a northwesterly direction from Barstow, says the Los Angeles "Herald." The same locality has repeatedly before been searched by prospectors in quest of silver ore, and it was by the merest accident that gold was discovered. The gold-bearing district is some six miles square and is rapidly being covered with claims. The ore is free milling, composed of decomposed quartz, and so far there have been no indications of base rock. People are rushing in from the Calico mining district, the Needles, Victor and San Bernardino, and the laying out of claims goes merrily on.

Nov. 10, 1894 p444

## Los Angeles County.

San Francisquito Canyon.—Some work has been done this season in the placers, beginning at a distance of about three miles from Saugus, a station on the Southern Pacific Railroad, and running in a northerly direction for about 10 to 13 miles. The grounds are extensive and are all taken up. They lie chiefly in township 5, range 18 west, San Bernardino meridian, in sections 22, 14, 13, 11, and 1 north, range 15 west, and are owned by individuals and two or three mining companies. The Cora Bell mining district, on which these placers are located, is a well known district to miners. It is very hard to say at present how rich these grounds will run, and it can only be determined by working the same on a large scale. Several men are now working on a small scale with insufficient water and still make more than wages every day. These men naturally are compelled to waste time in prospecting for rich pockets and yet do well.

Dec. 1, 1894 p516

## Riverside County.

(From our Special Correspondent.)

Golden Chariot.—Mr. J. M. Day, San Francisco, has made a deal with Jerry Shea, whereby he has obtained control of the Golden Chariot, the south extension of the Santa Rosa, and will soon begin developing the same.

Santa Rosa Mining Company.—This property was formerly known as the Rosalia. It is situated about

six miles west of Perris, in Pinnacate district. Many years ago this vein was worked to water line, 50 to 150 ft., by Mexicans. Since that time it was worked to a limited extent by Americans, who had a small hoisting and pumping plant and light 5-stamp mill. It was not a success. The workings on the surface extend in a series of cuts and cones for about 1,000 ft., indicating a long shoot. A year ago or so the property passed into the hands of a Mr. Blaisdell, who sold it to a corporation of Eastern people, known as the Santa Rosa Mining Company, W. H. Griffith, superintendent. In September last the mine was full of water. Machinery for hoist and mill had commenced to arrive. The intention of the management, as expressed, was to wait until the hoisting and pumping machinery was in place before attempting to unwater the mine. At that time it was stated that a new shaft had been sunk to a depth of 200 ft., exposing a 3-ft. vein of rock of good grade. The quartz in this mine mills from \$7 to \$30 on an average of \$12 to \$15. Sulphurets are said to assay over \$100 and constitute 1 to 3%. These statements, it is believed, come within the limits of truth. The mill, etc., were to have been finished in November. The mine makes considerable water. The formation is syenitic granite.

Dec. 29, 1894 p612

## San Bernardino County.

(From our Special Correspondent.)

Gold Mountain.—This mine, better known as the Lucky Baldwin mine, situated on the north side of the San Bernardino Mountains, 45 miles east of Victor, is again attracting attention. A party left last week for the mine, coming from San Francisco. This mine was at one time equipped with a 40-stamp mill, and quite a little village nestled at the foot of the hill. The mill was burned down years ago, and Blairstown is now a single house. The mine is a very interesting one. It occurs at an altitude of about 7,000 ft., overlooking a picturesque lake of several hundred acres, beyond which rise majestic pines, over whose waving tops the smooth, snow-clad summits of the San Bernardino Mountains may be seen. Turning to the northward, a long, steep slope runs down 4,000 ft. or more to the broad expanse of sand, rugged mountains and waterless lakes which go to make up the Mojave Desert. The view is unrestrained for over 100 miles in that direction. The mine itself consists of a great mass of quartzite, tilted, scattered and crushed. In those portions where the crushing has been most pronounced silica has been deposited, together with iron sulphides and gold. It is claimed that the granular quartzite also contains gold. This is not without precedent, as in South Dakota and in Colorado at several places gold occurs in the quartzite of the Cambrian. At the Gold Mountain mine, however, no eruptive dykes or intrusive masses were discovered. The region near the Gold Mountain mine appears to afford numerous deposits similar to that of the mine itself, but none of them has been worked. I am told these quartzites assay in gold, but often do not prospect in the pan or horn spoon. If this be a fact, these ores are not suited to amalgamation, but may be treated by chlorination or by the cyanide process. It is also said that these ores must be pulverized very fine before the gold can be extracted by amalgamation. This statement only tends to confirm my belief that they are in some respects similar to the ores found at Terry's Peak, near Deadwood, S. Dak., at Leadville and Red Cliff in Colorado.

## MINING IN THE MOJAVE DESERT IN CALIFORNIA.

Written for the Engineering and Mining Journal by E. M. Endlich.

Kern County, California, has only recently been known as a gold-producer. About three years ago a few venturesome prospectors essayed to examine the narrow mountain ranges which separate the individual valleys constituting the Mojave Desert. Intense heat, endless sand-clouds and lack of water rendered their work anything but pleasant, yet they found reward in the gravel of waterless canyons and along sandy ridges. Little was said at first, and less believed of the rumors which credited them with finding a \$1,000 gold nugget, and numerous others worth more than \$100. And yet they were true.

Eventually the usual rush to the new placers started. An area of over 2,500 acres was found to be gold-bearing, but there was no water within reach. Under the circumstances, all work was done with dry washers, a most primitive method of saving gold. Nevertheless, in a little more than two years the Goler District had yielded more than \$500,000 in nuggets and dust.

Goler

After the value of the Goler camp had been demonstrated, further discoveries of placers were made to the southward, in the Last Chance and Red Rock districts. Here, too, the lack of water interfered greatly with the proper extraction of the gold. Under such adverse circumstances neither systematic nor regularly sustained work could be expected, and most of the men abandoned their claims after roughly working over the most favorably located spots. At the present time but a handful of men are to be found in these districts, although the ground has barely been scratched. The time for individual labor has practically passed by.

The occurrence of placer-gold naturally led to a search for veins from which it might have been derived. Quite recently the Randsburg District has been established, not far from Goler,

and present developments prove the existence of gold-bearing quartz veins. Still later some excitement was caused by the discovery of similar veins near Soledad Canyon, which belongs essentially to the same geologic system as the Randsburg mines.

Skirting both slopes of the narrow ranges northward of Mojave Station, the gold-bearing gravels are found at a distance of 30 to 50 miles from the Southern Pacific Railroad. A broad valley with alkaline soil and but a few springs along its edges, affords easy transportation to the placers. Eighty miles beyond them the Panamint District is beginning to be recognized as a gold camp.

On either side of the valley the ranges rise 1,500 ft. above it, sending narrow, bench-like ridges downward to meet the lower ground. In part these ridges are gold-bearing throughout, although of low value. The depressions between them, temporary water-courses, are better supplied with the metal. At Goler Camp a narrow, rocky canyon leads upward to the divide, and it was within this canyon that the richest gold-deposits were found. Apparently the canyon was formed by disruption, so that the gravel extends to a great depth. Near its mouth a shaft was sunk for over 300 ft. without striking bedrock. At other points, especially where the confining rock-walls closely approach each other, the gravel extends downward for but a short distance. In determining the chances of finding gold on the bedrock within a canyon, the method of genesis of the latter and the contour of its bed-rock surface are of prime importance. Ravines, draws and arroyos lead laterally into the main canyon and form depositories for gravel. A unique feature is, that near the highest points of the range, at the head of Goler Canyon, isolated deposits of gravel occur, small in extent, but of unusual richness. Apparently their position is anomalous, but can be explained under the assumption of certain data given below.

Certain interesting facts are found in connection with the Goler placers, some of which are partially reproduced at Red Rock. Metamorphic schists and slates form the country rock, heavily fissured and charged with iron oxides. The latter are evidently secondary products, although their origin is not quite clear. At some points in the range such oxides so thoroughly permeate the rock as to produce intense coloration. It is evident that the schists have been subjected to enormous strains due, probably, in part to eruptive action, in part to subsequent, seismic disturbances. Dikes and overflows of trachytic and doleritic lavas are rather numerous in the ranges, although they seem to bear no immediate relation to the mineralization of the rocks.

Near the Goler Divide vast masses of gravel, sand and some clay overlie the schists, effectually concealing the more ancient courses of erosion. The boulders and gravel here found are foreign to the locality. Their origin is probably glacial and they were transported for long distances from their original sources prior to a period of gigantic erosion. There is evidence that this material has furnished much of the fine gold found in the upper gravels of the district, the latter becoming gradually enriched by a process of successive concentration. The coarse gold, in structure and appearance, indicates an origin in the schists. In many cases the nuggets really resemble casts which had schistose material for their molds. As the genesis of nuggets, however, is unexplained, there is no reason why it should not be assumed that these nuggets are accretions formed within suitable cavities in the schists from fine gold primarily contained in the glacial drift or in the older gravel, as well as in the schists themselves. The latter are distinctly auriferous, but thus far no nuggets have been found attached thereto, except when cemented by some substance of secondary deposition.

As a matter of interest it may be stated that the channels bearing the older gravel do not coincide with the superficial ones, and that they are almost entirely hidden from sight by overlying gravel and debris.

In various localities the upper portions of the bedrock underlying gold-bearing gravel have become the repository for more or less gold, but in this respect Goler presents some extreme features. Certain sections of the most prolific ground really contain no gravel whatever. As a matter of fact the country rock has been crushed into small angular fragments to a depth of 8 to 16 ft. below the present surface. These fragments are loosely cemented together by a soft clay, irregularly distributed, and they are the result of several successive crushing strains exerted in different directions. The causes for their formation are purely physical, not chemical. Into the interstices, cracks and seams, which were not filled with clay, the gold has found its way in proportionately large quantities and in pieces of relatively large size. The rock, in this condition, has effectively taken the place of riffles. Within the zone of this broken rock narrow, shallow channels of gravel are found, exceptionally rich and different in character from the superficial channels. The conclusion is obvious; they belong to the older series of gravels which have, to some extent, been scored away, but of which large masses must still remain underneath the more recent deposits.

At Red Rock similar conditions obtain in certain localities. There can be no doubt that the working of these placers would disclose a number of instructive facts, pertaining more especially to the natural concentration of gold during transportation.

Randsburg district lies opposite Goler in a metamorphic range. The veins traverse granite, carry quartz as gangue and rather coarse, free gold as value. They are of good workable size, clean-cut and bear all the marks of persistency. It is somewhat difficult to predict how the ores will change below the reach of surface-action, but probably the gold will be associated with pyrite, although it would not be surprising to find it in the form of tellurides, in part at least. In value the ores hold out well, the first-class, hand-sorted lots being worth several hundred dollars to the ton. Three small, light mills have been erected near springs, but water is not sufficiently abundant to run full time. The camp is in its infancy, but, thus far, has come up to expectations.

Panamint is somewhat more advanced than Randsburg in certain respects and bids fair to prove of considerable importance in despite of its distance from the railroad.

All of these camps, both placer and quartz, are but the modest beginning of a mine-development which will open an entirely new section of country. Even a cursory glance at the mountain ranges which form part of the Desert cannot fail to show that the rocks are highly mineralized, while their colors, sometimes intensely brilliant, are mainly due to compounds of iron, yet experience has shown that the formations here predominating rarely show such extensive mineral impregnation without carrying the precious metals in one form or another. Large quartz veins setting across the trend of the country rock are noticeable for long distances, and their utilization is only a question of time, although they are reported to be of low grade.

With the advent of water the prosperity of this section is assured unless all signs fail. While a supply could be obtained by boring in the valley, it is very alkaline, brackish, or strongly saline. A large quantity, however, amply sufficient for purposes of hydraulicking, milling, concentrating and irrigation can be obtained from several points, 45 to 90 miles distant. That this will eventually be done hardly admits of question, because the profits will be enormous, as compared with the outlay and the demand for the water has been created. As a result we may see in time, the dreaded Mojave Desert dotted with mining camps in flourishing operation, with cattle ranches and truck farms skirting the mountains.

Aug. 5, 1896

**MINING ACTIVITY IN CALIFORNIA.**

The State Mining Bureau for a number of years past has been accustomed, through its agents, to prepare a table of mines in operation in the State, together with the number of men employed in each mine. The report for the current year has just been completed and affords the most convincing evidence of the revival of the mining industry on a large scale.

The remarkable activity noted is confined to no particular mining section of the State, but everywhere, whenever a chance exists that money is to be made by the extraction of the precious metals, men are found who are willing to stake their time, money and labor against the chances of a rich discovery; mines that have been abandoned or were, under the old system of mining, unprofitable, are being drained, retimbered and put in order for a renewed activity; placers that were thought to be exhausted are to be worked again, and hydraulic mining, under the new laws, has returned to life again.

In quartz mining, however, the largest development is anticipated. Ore can be reduced so cheaply under present processes that mines producing low-grade ore are in active demand owing to the fact that so much development has usually been accomplished on these mines that only small capital is required in order to place them in working order again. The following shows the number of miners employed and registered mines in the ore-producing counties of the State in the year 1895:

Number of men, 9,404. Number of mines, 1,661.

For the year 1896 a most remarkable change appears. The total number of men employed is increased by 9,006, or almost double, while the number of recorded mines increased in 1-96 over that of the year 1895 by 750. The greatest increase of the men employed is apparently in those districts where the great producing mines are located, though the increase in the new mines is distributed through the State.

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## THE RANDSBURG MINING DISTRICT, CALIFORNIA.

Written for the Engineering and Mining Journal by F. M. Endlich.

The Randsburg Mining District, located in Kern County, Cal., about 45 miles northwest of Mohave Station on the Southern Pacific Railway, and 26 miles north of Kramer Station, on the Atlantic & Pacific Railroad, has attracted marked attention of late. In two respects this new camp materially differs from many others. It has paid its own way thus far without the assistance of outside capital, and it has made no appreciable efforts to place its mines and prospects upon the market, nor has it sought to induce investments therein. Yet, to-day the town of Randsburg, with its suburbs of Johannesburg, Dutch Flat, Jerusalem Flat, Fiddlers' Gulch and other euphoniously named settlements, contain upward of 3,500 people, without counting about 1,200 more located in the neighborhood. Of this entire population of 3,300 not more than about 350 men are under pay at the various mines. From the very beginning, however, work upon the veins has paid and the camp has largely been developed by the immediate proceeds therefrom.

It is too early, as yet, considering the somewhat meager underground developments, to advance any definite opinion as to the detailed geologic and mineralogic characteristics of the metal-bearing formations and their valuable inclusions. It can only be said that the former, apart from the schistose rock which forms the bulk of the mountains, represent a highly metamorphosed series, more or less altered by thorough decomposition and by the intercalation or transverse irruption of porphyritic intrusions and dikes. Although the greatest depth thus far attained upon any vein is 150 ft., enough can be seen to show that marks of persistency and reasonable regularity of veins are not wanting.

Naturally the ores near the surface are decomposed—free milling—and it seems probable that this condition will persist to a depth of 200 to 250 ft. It can, however, even now be established that the main gold-bearer (silver occurs only in small quantities) has been and will be pyrite, although chalcopyrite will probably partly replace this lower down. There is also reason to expect the occurrence of tellurides at greater depths. It is not likely that the quartzitic character of the ore will change nor that very heavy bodies of ferriferous or cupriferous ores will be encountered. Down to the levels at present reached the gold is almost entirely free, but with continued work the ores will require concentration in addition to amalgamation and suitable treatment of the concentrates, if not, indeed, some leaching process for the entire output from certain veins. Meanwhile there are many thousands of tons amenable to treatment in the old-fashioned gold mill.

A brief synopsis of the leading properties now in operation, many of which were located less than a year ago, shows as follows:

*The Rand Mining Company*, composed of Messrs. Burcham, Moors, Singleton and Reddy, takes the lead, at present, in showing up quantities of ore. Its principal claims are the Olympus, Rand, Yellow Aster and Trilby, although the company owns 10 or 12 claims, partly placers, in addition thereto. It can truthfully be said that these four claims constitute a "mountain of gold-ore," reaching an elevation of 700 ft. (4,500 ft.) above the upper part of the camp (3,775 ft.). In value the ore ranges from \$5 per ton to several thousands. Well defined veins have determined the main locations, but the country-rock lying between them is literally impregnated with gold for thousands of feet. It would be foolish, with present exploitation, to ascribe any definite value to this rock, but all tests thus far made, seem to indicate that with a reasonably cheap method of treatment the entire mass could be profitably worked.

About 1,400 ft. of work has been done by the company, including a shaft about 150 ft. in depth. Ore shipments to mills and smelters have yielded returns as high as \$180 per ton, although the average grade of milling ore ranges from \$12 to \$30. About \$15,000 in shipments are credited to these mines. At present 10 claims of the group are under option, a three-quarter interest therein having been bonded for \$150,000.

*The Butte Mining and Milling Company*.—Messrs. Tate, Ramey, Summers and Stanton are the owners. Three of the company's claims have been systematically worked since last June, employing an average force of 25 to 30 men. At first the main vein was worked by means of an open cut, but now the company has five shafts ranging from 65 to 145 ft. in depth. The horizontal distance over which work extends on the same vein (reaching beyond the limits of this company's property) is but little short of 2,000 ft. The veins in this locality dip rather steeply in a northerly direction, but offer admirable facilities for exploitation by both tunnel and shaft.

Nearly all of the ores from these mines contain from 2 to 7 oz. of silver per ton. First-class ore runs, in gold, from \$120 to \$200; second-class

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from \$20 to \$35 and the waste from \$8 to \$15 per ton. This classification will be considerably modified with the advent of suitable facilities for reduction. Thus far this group of mines has yielded, since June, 1896, between \$50,000 and \$60,000.

*The Wedge Claim* is a small fraction lying west of the Butte. Although it covers but a little more than 40 lin. ft. of the vein, it was sold for \$4,000 in October last and is said since then to have recouped its purchase price several times over. It is evidently on a pay chute of the vein and the ore is very rich besides forming a vein varying from 6 in. to 5 ft. in thickness.

*The Good Hope and 400* (ordinarily known as the Kenyon) adjoins the Wedge and seems to contain the major portion of the rich chute. Mr. Kenyon and his son are working this unusually rich mine in a very leisurely manner. From the grass-roots down the ore has been rich, until now, at a depth of 103 ft. on the incline, the vein shows 12 feet of ore which averages \$90 per ton. Within the first 12 ft. down from the surface the shaft yielded 6 tons of ore which returned \$3,800 from the mill. Mr. Kenyon is not stopping, but resting tranquilly in the agreeable assurance that he can break down plenty of rich ore during any calendar-week in which he may elect so to do. The sorted ores from this mine readily run \$400, the first-class \$200 to \$250, the second-class \$60 to \$110, the ordinary milling-ore \$30 to \$50 and the waste \$10 to \$18 per ton. It is estimated that Mr. Kenyon has shipped about \$17,000 from his mine during the past six months.

Beyond the Kenyon this same vein runs into the Little Butte, but has not yet been properly opened on this claim.

*The Black Hawk Mining Company* comprises Messrs. Wilson and Kuffel, the Richards Estate and some quite recent owners. About 500 ft. of work has been done by the company on its group of 17 claims, and a number of shipments have been made, ranging in value from \$60 to \$120 per ton. About 1,600 tons of milling ore is broken, awaiting the erection of an efficient plant.

*The Yucca Mine* has recently come to the front as a prolific and rich producer. The ores run exceptionally high, even for Randsburg, and are milled by the owner, Mr. Koehn, at his mill on the Dry Lake, about 20 miles distant.

*The Solomon Mine* is one of a large number owned by Mr. Bull and the Ashford Brothers, three enterprising young Englishmen, whose patience, good judgment and strict attention to their own business have made them the possessors of a number of producing claims. Their deepest workings are down about 150 ft. and show neither a diminution of ores nor of values.

*The Hawkeye*, owned by Messrs. Fifield and Price, shows about 100 ft. of workings, with good ore of the usual grades.

*The Napoleon*, owned by Mr. Garlock, who operates an 8-stamp mill at Cow Wells, 10 miles distant from Randsburg, has been shipping ore worth from \$90 to \$140 per ton. Work on this claim has been so arranged as to admit of a heavy output at any time.

Messrs. Kelley & Richardson recently made a strike near the Olympus which netted them \$7,000 per ton in ton-lots. They have completed nearly 300 ft. of work with eminently satisfactory results. Their ordinary first-class ore runs \$600 to \$700, their average shipping ore about \$150 per ton.

*The St. Elmo*, owned by Messrs. Drouillard, Pyle and Burgwartt principally, is a somewhat unusual occurrence. In the open desert, about 6 miles east of Randsburg, one of the gentlemen was seated on a boulder, when he discovered that it contained innumerable cavities filled with gold. Systematic search uncovered a strong vein beneath sage-brush, sand and clay. The first 730 lbs. of ore shipped therefrom netted about \$1,400. Since then the first-class ore runs about \$600, the lowest grade about \$120 per ton. The ore is not decomposed, nor is it free-milling. The vein was evidently in the course of a glacier; the disintegrated rock was gradually scored off, and eventually the planed-off outcrop was covered with the typical products of the desert.

*The Stine Gold Mining Company*, consisting mainly of Los Angeles capitalists, Messrs. Lindenfeld, Ebinger, Ehrhardt, Stine and others, has utilized the abraiding, glacial action, and are working a series of placer mines immediately adjoining the St. Elmo mine. The gravel and dirt near the surface contain about \$2.60 gold per ton, and near bedrock show the amazing amount of \$16 per ton. Chances are now being found which exceed even this latter figure. The company's expert, Mr. Gould, has made a new departure in working this ground. With a 15-H. P. gasoline engine he runs a rock-breaker of suitable construction, an appliance for separating boulders and a gang of dry washers. When in full operation this plant has a daily capacity of about 250 tons. Some slight difficulties had to be overcome, but the ultimate success of this novel arrangement is beyond question.

In and near Randsburg about 4,000 claims have been located. Of these 450 have been recorded and somewhat less than 150 are being worked with more or less vigor.

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Randsburg suffers from lack of water and milling facilities. The nearest are 10 miles distant. It is expected, however, that during within a short time the Mojave Land, Water and Mining Company will develop water within 2 or 3 miles of the camp and promptly erect a mill of suitable construction. A conservative estimate places the net returns on Randsburg ores, from smelters and mills, since March, 1896, at about \$240,000, the ores on dumps at about \$300,000, and the ores ready to stope at about \$800,000 to \$1,000,000. Much of the ore is, of course, entirely worthless at present, but with proper milling facilities the camp could, to-day, easily furnish a supply of not less than 350 to 400 tons per day. Mining and other work is gradually assuming proper shape under the guidance of competent men, among whom may be prominently mentioned Mr. J. S. MacNeish, the well-known engineer of Colorado and Idaho. It will not be many months before the attention of capitalists will be drawn to this singularly self-reliant camp and then its progress will take care of itself as well as of those who cause it.

It is not too much to say that if a discovery like that of Randsburg had been made in Colorado, the district would now have 15,000 inhabitants, ample water-supply, mills, leaching works and all appurtenances of a flourishing "El Dorado."

Nevertheless, and in spite of the never-absent croaker, it is safe to say: "Randsburg has come to stay!"

March 20, 1897

**A California Electric Company.**—A corporation to be known as the Southern California Power Company was recently organized at San Bernardino, Cal., with a capital stock of \$1,000,000. The principal stockholders are Henry Fisher, of Pittsburg, Pa., and H. H. Sinclair, president and manager of the Redlands Electric Light & Power Company. The purpose of the company is to develop power from the Santa Ana River, by taking water at junction of Bear Creek and Santa Ana River and carrying it in a cement ditch and tunnels about four miles, thus securing a fall of 1,000 to 1,100 ft. The power will be transmitted by pole line 75 miles to Los Angeles. It will be the longest line and the highest voltage (30,000 volts) in use in the world. The line will run through San Bernardino, Pomona, Ontario and Pasadena and will supply power to these towns. It is proposed to deliver power into Los Angeles by January, 1898.

May 1, 1897

The State Mineralogist of California has just completed his summary of the production of the State in the year 1896. The value of all the products now reported for the year, added to those figures previously sent you, estimated at current market prices at the place of production, reached a total of \$21,567,561. From this is excepted clay and clay products, the returns from which are not yet complete. Making allowance for these, there was a considerable increase shown in the total, notwithstanding lower values of some products.

The items of production in 1896 as thus reported to us by telegraph, and which we are therefore able to present simultaneously with their publication in San Francisco, were as follows:

MINERAL PRODUCTION OF CALIFORNIA, 1896.		
Gold.....	831,251 fine oz.	\$17,181,962
Silver.....(Coinage value, \$122,463)	Commercial value	219,123
Chrome iron.....	785 tons	7,775
Mineral paint.....	395 "	5,500
Antimony.....	55 "	2,300
Manganese.....	318 "	3,400
Magnesite.....	1,500 "	11,000
Asphaltum.....	19,000 "	62,000
Marble.....	7,829 cu. ft.	32,500
Sandstone.....	58,000 "	28,300
Granite.....	185,000 "	278,000
Lime.....	20,275 bbls.	152,000
Quicksilver.....	30,000 flks.	1,020,000
Copper.....	1,992,287 lbs.	208,190
Lead.....	1,283,500 lbs.	33,571
Platinum.....	150 oz.	2,250
Borax.....	13,606,890 lbs.	680,345
Coal.....	69,419 tons	158,135
Gypsum.....	1,300 "	13,000
Petroleum.....	1,242,860 bbls.	1,242,860
Slate.....	500 squares	3,500
Cement.....	9,500 bbls.	28,500
Bituminous rock.....	37,000 tons	101,750
Salt.....	45,300 "	80,600
<b>Total value.....</b>		<b>\$21,567,561</b>

The first and most important item, gold, shows a gain over 1895 of \$1,847,644, or 12%. Silver showed a decrease of 29.5%, large relatively but small actually, the total output being inconsiderable. Copper increased very largely, but there was a decrease in the lead. In some of the minor products there were decreases, but not of much importance.

The materials of construction generally show increases over 1895, indicating a growth in the building industries.

July 9, 1898

San Bernadino County.

Barstow Mill.—The reduction works at Bar-

stow are in full swing, with ore enough ready to keep the 50 stamps busy for a long time.

Desert Queen.—Jackson Steele of this mine has bought the cyanide tanks of the Old Virginia mine and will cyanide the tailings of the Queen.

Rose.—The 10-stamp mill at this gold mine is running to its full capacity. Superintendent Harrison says he is going to run a new shaft to connect the underground works.

July 16, 1898 p75

Inyo County.

(From Our Special Correspondent.)

Charles Anthony's Mill.—This mill, in the Panamint Mountains, is running on ore from his mine and the Ratcliff mine. Enough ore is in sight in this district to run the mill steadily for a long time.

Kern County.

Yellow Aster Mining Company.—This company has closed the Visalia mill at Garlock and is sending all its ore to the new mill at Barstow.

San Bernardino County.

A 10-ton copper smelter is to be erected at Copper Camp.

July 30, 1898 p135

Kern County.

Wedge.—Two 25-ton mill runs of ore from this mine at Randsburg, have been made at the Eureka and the Johannesburg mills. According to the Los Angeles "Review," the 50 tons yielded \$5,038.

Riverside County.

(From Our Special Correspondent.)

Desert Queen.—It is reported that this mine, 28 miles north of Indio, which has been in litigation for a long time, is about to be opened up again. Arrangements are being made to sink a new shaft and put in a cyanide plant. The property produced a large amount of bullion when worked by the McHaney Brothers.

San Bernardino County.

(From Our Special Correspondent.)

A large bed of fuller's earth is reported to have been found near the Santa Fe Railroad by S. S. Simon, a well known prospector. The exact location has not been given out yet, but tests are being made, and some chemists pronounce it the genuine article.

August 6, 1898 p165

Kern County.

Eureka Mill.—It is said that Quin & Pridham, the managers of this Randsburg mill, will add a cyanide plant to their equipment.

Little Butte.—According to the Los Angeles "Review" the main shaft of the gasoline engine used for hoisting and running the mill at this Randsburg mine, broke recently, necessitating a shut down. The ledge in the bottom of the shaft 500 ft. deep is 4 ft. wide. It is bluish quartz, carrying good gold values. The company is preparing to put in a concentrator.

Yellow Aster.—This company is shipping about 50 tons of ore daily to the Barstow Mill.

August 13, 1898 p195

Kern County.

(From Our Special Correspondent.)

The stage line between Ballarat and Johannesburg is to be extended through Shepherd's Canyon to Keeler, in Inyo County.

Little Butte.—At this mine, one mile north-east of Randsburg, an important strike has been reported at the 500 ft. level. The vein cut is said to be 5 ft. in width, milling \$15 per ton free gold, besides \$38 per ton sulphurets.

Aug, 20, 1898

Kern County.

(From Our Special Correspondent.)

Yellow Aster.—Ore from this mine, at Randsburg, is being milled at the Barstow Reduction Works. Shipments will be made to other mills. The ore continues very high grade.

Riverside County.

Good Hope.—At this mine, between Riverside and Elsinore, recently, the miners ran into a body of low grade ore nearly 50 ft. wide, at a depth of 600 ft. The mine has quite a history of contentions and suits, but these are thought to be ended.

Aug. 27, 1898 p255

Kern County.

The output of gold from the Rand District, in July, was about \$90,000. For the seven months ending July 31st the estimated amount of gold produced is \$490,000.

Eureka.—At this company's mill, near Randsburg, the foundation is being laid for the erection of a cyanide plant. There will be three tanks, with a capacity of 10 tons each, to receive the tailings; just above them will be the tanks holding the cyanide solution, and below will be settling tanks containing zinc chips. Usually tailings require four or five days' submersion in the cyanide solution, but it has been found that 60 hours' submersion is sufficient for the ores of this district. From Kinyon and Wedge tailings over 90% of the gold can be extracted. From the average ore of the district from 85 to 90% is recovered.

Nashville Gold Mining Company.—This company has been incorporated to reopen and work the old mine formerly known as the Havilah or Nashville mine. The office is in San Francisco, and the officers are: J. T. Parks, president; Mark B. Kerr, vice-president and manager; Charles W. Howard, Jr., secretary; F. F. Thomas; E. C. Voorhees, John Ross, Jr., directors.

San Diego County.

(From Our Special Correspondent.)

Golden Cross.—This group of mines, at Hedges, is said to be doing better than ever, the clean-up for July being \$50,000. The indebtedness has been reduced to about \$150,000, and the receiver will probably pay this amount within another year. Under the present manner of working this property, the net proceeds per month will probably be from \$15,000 to \$20,000. About 250 men are employed.

Sept. 3, 1898 p285

## Kern County.

**Radmacher.**—The Union Iron Works of San Francisco have completed a three-stamp mill, to be erected at Walker's wells, in the Radmacher district.

**Windy.**—Day and night shifts are being worked at this mine, near Johannesburg. Shaft No. 1 has been enlarged and made a double compartment shaft, and has been well timbered. Another shaft is being sunk a short distance from No. 1, but on an entirely different ledge, and is down about 20 ft.

Sept. 10, 1898

## Kern County.

(From Our Special Correspondent.)

**Juniata.**—At this mine, near Johannesburg, the main shaft is down 90 ft., and as soon as the 100-ft. level is reached a drift will be run.

**Rebecca.**—At the Daly camp, about eight miles south of Johannesburg, James Daly and partner have opened up a vein from 12 to 14 ft. wide in

the Rebecca mine, the main shaft being down about 20 ft. The ore horns well and shows free gold. All the ore being taken out will be placed on the dump, as it is the owners' intention to erect a stamp mill on the property in the fall.

## Los Angeles County.

**Oil Industry.**—The trustees of the Oil Producers' Association of Los Angeles have completed their report for the month of July, and it is very gratifying to those interested in the oil industry in California. There has been such a demand for oil that it has been necessary to draw from some of the reserve storage tanks. On July 1st there were 92,141 barrels of oil in storage. On August 1st there were only 87,996 barrels, a decrease of 4,145 barrels during the month. There were received by the trustees 25,187 barrels in July, and there were sold 29,329 barrels. The average price received at the wells was 67.32c. per barrel, an increase of about 3c. on the price received in June. The cost of production was also a quarter of a cent per barrel less.

Sept. 17, 1898 p345

## Kern County.

(From Our Special Correspondent.)

**Little Butte Mining Company.**—H. C. Oakley, Percy E. Doolittle, J. C. Wood and William Friend, some of the principal stockholders of this company, have been inspecting their property, one mile northeast of Randsburg. Sinking still continues, the main shaft being down over 500 ft., and a new air shaft being sunk 200 ft. to the west. The 2-stamp mill is said to mill \$5,000 per month. The ore averages \$16 free milling besides the sulphurets.

**Yellow Aster Mining and Milling Company.**—This company in August declared a dividend of \$35,000, making a total of \$85,000 since December. The property owned by the company is considered one of the most promising in the district. A fine milling plant has been contracted for, and a contract has also been made for a pipe line from the wells to the mine.

Oct. 1, 1898 p405

## Kern County.

(From Our Special Correspondent.)

**Butte Wedge.**—This mine, owned and operated by the Wedge Gold Mining, Milling and Water Supply Company, of Los Angeles, has, since it was incorporated in March, 1897, paid \$42,500 in dividends. The machinery and other improvements are valued at \$10,000. The actual cash invested in this property was only \$6,500.

Oct. 8, 1898 p435

## Kern County.

**Little Butte.**—The management has put on a night shift on shaft No. 3. This shaft is to be 4½ x 8 ft. in the clear, and will be used as a working shaft. At the 230-ft. level it will be connected with the western drift of shaft No. 1. The main shaft is now down 530 ft., and is reported to have a ledge of \$18 or \$19 ore, over 6 ft. wide.

**Wedge.**—The main shaft is down nearly 400 ft. and the ore is reported to be that taken from the little Butte below the 430-ft. level.

**Yellow Astor.**—This mine at Randsburg is now shipping about 75 tons of ore daily to Barstow. At the wells the big 130,000-gal. tank has been completed, and it is nearly full of water. Work on the pipe line is progressing and will be concluded by the middle of November.

(From Our Special Correspondent.)

**Merton.**—At this mine, 3 miles south of Randsburg, some very rich ore has been taken out during the past few weeks.

Oct. 15, 1898 p466

## Inyo County.

(From Our Special Correspondent.)

A Pittsburg company has been organized with a large capital to work gold and copper mines in the southern part of this county and in Lincoln County, Nevada. The California mines are situated about 80 miles north of the railroad, and the management is making arrangements to put in a large plant at an early date. Mr. C. C. McCarthy and W. W. Hammond, both connected with the Santa Fe Railroad, are said to be interested.

## Kern County.

**Wedge.**—A rich strike is reported in the Wedge at Randsburg, between the 350 and 400 ft. levels.

**Yellow Aster.**—According to the Los Angeles "Review," the company continues to ship from two to three carloads per day to the mill at Barstow. Most of this ore is from the Trilby tunnel, or cut. The whole body of the ore shoot has so far averaged \$30 per ton. The company is arranging details for the 40-stamp mill, which will be in operation by the end of

the year. The mill is of new design and have a capacity of five tons of ore or a total of 200 tons per day. A pump for the company is to be built by the Fulton Engine Works of Los Angeles.

Oct.

22, 1898 p495

## Kern County.

(From Our Special Correspondent.)

**Badger.**—Development work continues at this mine, in the Radamacher District, the shaft being down 200 ft., and drifts run on the 75, 140 and 200-ft. levels. The ledge is about 15 ft. wide.

**Gold Coin.**—The main shaft at this mine, in the Rand District, is down 90 ft., and drifts have been run east and west 40 and 150 ft. respectively. An upraise of 50 ft. has been made in the west drift, and a winze sunk 50 ft., 100 ft. from the shaft.

**Little Butte.**—The shaft at this mine, in the Randsburg District, is down 537 ft. in good ore. Two other shafts are being sunk, one down 235 ft. Six levels have been run, from which good ore is being stoped and crushed in the 2-stamp mill, and a 5-stamp mill at Johannesburg, besides about 20 tons per day sent to the mills at Barstow and Randsburg.

**McKinney.**—This mine, in the Radamacher District, is beginning to show up well. The shaft is down 150 ft., and crosscuts have been run showing the vein to be about 10 ft. wide.

**Wedge.**—The main shaft at this mine, at Randsburg, is down 400 ft., and levels have been run every 50 ft., commencing at the 100 ft. Rich ore is being stoped from the 350 ft., and cross-cutting is going on on the 400-ft. level.

Oct. 29, 1898 p525

## Inyo County.

(From Our Special Correspondent.)

**Panamint District.**—A half interest in the J. G. Carlisle, Grover Cleveland, Kentucky, Texas, Sunrise, Never Give Up and Joker mines, in this district, owned by the estate of W. H. Halbert, has been purchased by W. W. Godsmark for \$7,725.

In this district, and in the Argus and Slate Range, many prospects are being developed, and two mills are being erected.

## Los Angeles County.

(From Our Special Correspondent.)

**Red Rover.**—The incline shaft at this mine, 3 miles northwest of Acton, which had badly caved, has been repaired, and the mine put in working order. W. R. Shilling has been appointed superintendent.

## San Diego County.

(From Our Special Correspondent.)

**Bay Horse.**—A 6-in. pipe is to be run from this mine, in the Mesquite District, to the Colorado River, a distance of 20 miles. This line will supply ample water for the mill to be erected.

**Golden Cross.**—The receiver of this mine, at Hedges, reports the net output for September to be \$23,000.

**Jayne.**—At this group of mines, in the Pichacho District, 25 miles north of Yuma, it is reported that a dry roller process mill is crushing 100 tons of ore per day. This ore is being cyanided.

Nov. 5, 1898 p555

## Inyo County.

**Inyo Consolidated Mining Company.**—This Los Angeles company, which owns a group of 15 claims in Mountain Springs Canyon, in the Argus Range, has shipped to the property a 3-stamp mill.

Nov. 12, 1898 p585

## Kern County.

(From Our Special Correspondent.)

**Kenyon.**—On the 330-ft. level in this mine, near Randsburg, sulphuret ore has been found.

## Riverside County.

(From Our Special Correspondent.)

**Santa Rosa.**—The tailings at this mine, 5½ miles west of Ferris, are being worked by the cyanide process, and yield about \$400 a week. The property is owned by a Boston company.

## San Bernardino County.

**Jessie Lincoln.**—Mr. A. W. Warwick, of Martinez, Ariz., is developing this group of mines, near Danby. The ore is free milling and of moderate value, with values chiefly in gold. A stamp mill is about to be put up.

Nov. 19, 1898 p615

## Inyo County.

(From Our Special Correspondent.)

A prospecting tunnel 200 ft. long has been run by local parties to develop water and placer ground in Mazouka Canyon.

## Kern County.

**Hard Cash.**—A mill and dry concentrator has been erected at this property by T. J. Hampton of the Llewellyn Iron Works.

**Yellow Aster.**—The company, according to the Los Angeles "Review," has closed a contract with the Union Iron Works, of San Francisco, by the terms of which the new mill will be completed January 15th, 1899. The mill will have a capacity of 150 tons per day. The company's mines, at the lowest depths, show up a body of ore as large and as rich as any yet encountered. Work at the wells is being pushed, and reports indicate that sufficient water will be developed to leave a surplus after that required for milling.

## San Bernardino County.

**O. K.**—This company at Dale has a 2-stamp mill, stamps weighing 1,000 lbs. each, driven by a 20 H. P. White & Middleton gasoline engine. A 15-ton cyanide plant is being erected.

**Meachim Mill.**—This plant at Dale is a 2-stamp mill with a Frue vanner. Power is furnished by an 11 H. P. White & Middleton gasoline engine.

## San Diego County.

**American Girl.**—According to the Los Angeles "Review" the cyanide plant of this mine, near Yuma, consists of five wooden and four iron leaching tanks, holding each about 20 tons of ore, besides solution and other necessary tanks. The ore is pulverized to a No. 30 mesh by means of the Mystic ball pulverizer. After the ore is cyanided, the pulp is sluiced out over amalgamated plates which save sufficient coarse gold to pay well for the operation.

**Cargo Muchacho.**—The tailings of this old mine, near Yuma, are being worked in a 100-ton cyanide plant by D. B. Luce.

**Golden Cross Group.**—This group consists of the Crown, the Cross and the Queen. The larger part of the ore is now being taken out of the Cross, followed next by the Crown.

Nov. 26, 1898 p 645

**Kern County.**

(From Our Special Correspondent.)

**Red Dog Mill.**—This mill is now running on ore from the Butte and Wedge mines, and has ore enough engaged to keep it running day and night for some time.

**Yellow Aster.**—At this mine, near Randsburg, in excavating for the retaining walls of the 30-stamp mill, the 15 ft. vein of the Olympus claim was encountered. Previous to this three veins were struck in crosscutting from the Rand tunnel to the Tribby ledge. A shaft is to be sunk at the mill, and a 30 H. P. hoist put in. The electric plant at the mill will also furnish light for the mines.

**San Bernardino County.**

(From Our Special Correspondent.)

**Cajon Pass.**—A coal vein has been discovered about ½ mile south of Cajon Station. The vein is said to be 9 ft. in width at a depth of 6 ft. This is the second discovery of coal in this vicinity.

**California Borax Company.**—Large shipments of lumber and machinery are being received at the new plant of this company, which is located near the old Searles works. The management expects to turn out refined borax early in the spring.

**San Diego County.**

(From Our Special Correspondent.)

**Stonewall.**—At this mine, on the Cuyamaca Grant, 10 miles south of Julian, a large cyanide plant is in course of erection, the tank house being 160 by 50 ft. The tailings from the mill, amounting to about 200,000 tons, have been purchased by Shinn & Strauss, of San Francisco, who expect to have the plant in full operation, employing between 30 and 40 men, in a few weeks. A tramway is to be erected, running through the body of tailings, which cover 5 acres, and cars will be run to the tanks. Between 100 and 200 tons per day will be treated, from which they expect to realize from \$2 to \$7

per ton. A large amount of low grade ore on the dump will also be worked.

Dec 3, 1898

**Kern County.**

(From Our Special Correspondent.)

**Armstrong.**—The shaft at this mine, in the Greenhorn Mountains, has reached a depth of 125 ft. The 4-ft. vein is said to carry very high grade ore.

**Comet.**—This mine, on Greenhorn Mountains, is reported to have been sold to San Francisco parties, who will develop the property and put in a milling plant.

**Fullers Earth.**—S. S. Simon, who is developing a deposit of fullers earth near Bakersfield, has made the first shipment of two carloads to San Francisco. The supply for this section has heretofore been received from Chile.

**Randsburg Chemical Reduction Works.**—This company, of Los Angeles, has been incorporated with a capital of \$50,000. The company propose to work ore by a secret process. Directors are: A. Granville, E. Osborn, G. R. Wilton, E. W. Gilmore, J. A. Fairchild, C. H. Morris and J. McLachlan.

**Talc.**—At the bottom of the 80-ft. shaft in this mine, near Woody, an ore body has been encountered said to assay \$400 per ton. The property is owned by M. Forbes.

**San Diego County.**

(From Our Special Correspondent.)

**Helvetia.**—The large force of men at this mine, 1½ miles southeast of Julian, is to be increased. The two tunnels are down 200 and 180 ft. respectively, with a winze 80 ft. deep. This winze will be pumped out as soon as possible, the pumps are now running day and night.

Dec 3, 1898

## A REGISTER OF CALIFORNIA MINES.

The reports of the State Mineralogist of California have heretofore given a great deal of information about the mines of the State, which is nowhere else accessible. They constitute in this way valuable works of reference, which are appreciated by those who have occasion to use them.

In preparing his report for the present year, Mr. A. S. Cooper, the present State Mineralogist, has adopted a new plan, which will, he thinks, make the information about individual mines still more accessible, and permit its wider circulation. This plan consists in tabulating the information by counties, giving for each mine and mill the essential points necessary for a prompt estimation of its importance and standing. The register or sheet containing the tables will be accompanied by a map of the county.

The method adopted is to fill out prepared blanks from the information in the possession of the Bureau, and then forward them to the local agents, who are expected to make all necessary corrections and additions to bring the information up to date. This, of course, requires the co-operation of the mine-owners, and this has been very generally secured. Only in a very few cases has information been withheld from the representatives of the Bureau.

It is not, of course, the intention to estimate the value of the mines,

to guarantee or expert them in any way; but simply to give their record in condensed form. The maps prepared are on a scale large enough (1 in. = 2 miles) to show all the mineral locations.

We have before us an advance proof of the register for Nevada County. This gives the location of each mine and mill; the number, width, strike and dip of veins; character of ore, hanging and foot walls; development work done; mill, power and number of men employed; names of owner and manager. For the mills there are recorded separately the location; character of mill; number and weight of stamps, if a stamp mill; kind of concentrators used, if any; cyanide and chlorination plants, if in use.

The value of such a register will be generally appreciated. Under the arrangements made these county sheets will be issued separately, as in this way they can be more widely distributed and the Bureau will be able to supply a greater number of applicants than if each were to receive the register for the entire State.

We regret to learn that under the late State administration the work of the Mineralogist has been seriously delayed. The State printing office has been closed and no work could be done for the State Mineralogist. The Nevada County sheet, to which we have referred above, is being printed by Mr. Cooper at his individual expense. Under the new administration, however, it is expected that this short-sighted policy will be changed, and the other county registers will be brought out with little delay. We may add that economy as well as convenience will be served by the tabular form of the register.

Dec. 10, 1898

## Kern County.

Stamp Mills.—There are reported to be 109 stamps dropping in the Randsburg district, at the following places: Cuddaback, 10; Johannesburg, 10; Koehn's Springs, 10; Garlock, 45; Randsburg, 4, and Barstow, 30 stamps.

## Riverside County.

(From Our Special Correspondent.)

Iron Chief.—This gold quartz mine, 45 miles northeast of Walters, in the Eagle Mountains, has been successfully developed by the present owners, from a prospect. The vein trends east and west, and dips north; the ore is hematite. The main incline is now 150 ft. deep. In the lower levels the ore is from 4 to 12 ft. wide, and assays from \$10 to \$100 per ton. A 25 H. P. gasoline engine does the hoisting, and another 25 H. P. gasoline engine drives the mill plant, a dry roller and cyanide process. A 10-mile pipe line supplies the plant and the camp with water from Cottonwood Springs. About 60 tons of ore are reduced per day.

## San Bernardino County.

(From Our Special Correspondent.)

Morongo.—At this mine, northeast of Victor, at an elevation of 7,200 ft., a cyanide plant is being put in, and the ore will be worked by this process in the future.

## San Diego County.

(From Our Special Correspondent.)

Bay Horse.—At this mine, in the Mesquite District, the pipe line and a 20-stamp mill are nearing completion, with plenty of ore on the dump. The shaft is down 165 ft., and the ore is said to run from \$10 to \$100 per ton.

Dec. 17, 1898

## Kern County.

(From Our Special Correspondent.)

Black Hawk.—50 tons of ore from this mine, near Randsburg, are being shipped to the Cuddaback Mill. About 5 tons of ore per day are being taken out.

Hard Cash.—At this mine the new mill has been completed and has been started up. The shaft has reached a depth of 100 ft. and a drift run south about 100 ft. in good ore. Substantial buildings have been erected.

## San Bernardino County.

(From Our Special Correspondent.)

Copper City Camp.—The mines in this district 30 miles east of Johannesburg, are being developed by a New York syndicate, who have a large force of men employed.

Dec. 24, 1898 P765

## Kern County.

(From Our Special Correspondent.)

Windy.—The shaft at this mine, one-half mile north of Randsburg, is down 145 ft. in good ore. On the 40 ft. some rock was taken out assaying several hundred dollars per ton.

Yellow Aster.—The management at this mine at Randsburg intends to install power drills very soon, and is also making arrangements to light the mine and buildings by electricity. The 30-stamp mill will be running in a few weeks.

## Riverside County.

(From Our Special Correspondent.)

Gavilan.—Some very rich ore is being taken from the lower level, at a depth of 500 ft., at this mine, 20 miles south of Riverside.

Dec. 31, 1898 p795

## Kern County.

(From Our Special Correspondent.)

**Little Butte.**—The main shaft at this mine, 1 mile northeast of Randsburg, is down 540 ft., and drifts have been run both ways on the 300, 400 and 500-ft. levels, showing good ore in all the workings. On the east connection has been made with the Kenyon Mine, insuring good ventilation. A connection will also be made with the shaft on the west, for ventilation. The mill is kept running, and shipments are also made to the mill at Barstow.

**Yellow Aster.**—The big compound duplex plunger pump, built by the Jeanesville, Pa., works, to force the water from the wells to this mine, a distance of 6 miles, started work on December 16th. The water is conveyed through a 5-in. pipe and elevated 460 ft., at the rate of 10,000 gallons per hour.

Jan 1899?? p46

## San Diego County.

(From Our Special Correspondent.)

**Golden Cross.**—The litigation over this group of mines, at Hedges, has been brought to an end by the decision of Judge Ross, of the United States Circuit Court, sitting at Los Angeles. The title is now in the Free Gold Mining Company, of which Col. Isaac Trumbo is the principal owner. The litigation has lasted for 2 years, during which time the property has been in the hands of a receiver, who has paid off debts amounting to about \$300,000, besides meeting all the expenses. The property comprises 30 claims and has the largest mill under one roof in the State, 100 stamps, besides another mill of 40 stamps. Water is brought from the Colorado River, a distance of 14 miles, by pipe line, said to have cost \$130,000.

Jan 1899?? p76

## Kern County.

**Yellow Aster.**—This company has paid dividends as follows: May, \$15,000; June, \$5,000; July 10th, \$10,000. This brings the total amount paid up to date to \$233,789. The company's new mill is now running steadily and crushing 140 tons a day.

(From Our Special Correspondent.)

**Little Butte.**—This mine, at Fiddlers Gulch, 1 mile north of Randsburg, is yielding well. A clean-up of 8 days' run on ore milled at the Red Dog Mill, netted \$1,021. About the same amount has been cleaned up since.

## Riverside County.

(From Our Special Correspondent.)

**O. K.**—The shaft at this mine, in the Virginia Dale District, is down 230 ft. On the 200-ft. the vein shows 41 ins. for over 100 ft. A 130-oz. gold brick was recently shipped.

Jan 14, 1899

## Kern County.

(From Our Special Correspondent.)

**Black Hawk.**—At this mine several shafts have been sunk to a depth of 75 ft., and some ore shipped to the Cuddeback mills, yielded \$15 per ton. The new mill will be erected on the property near the main shaft. With a first-class milling and hoisting plant the mine will pay good dividends.

**O. K.**—The shaft at this mine, near Randsburg, is down 75 ft., at which depth a crosscut and drift developed a rich 2½-ft. of pay ore.

Jan 21, 1899 p72

## San Bernardino County.

(From Our Special Correspondent.)

**St. George.**—This property, comprising the Gold Bar, Gold Bar Extension and Oro del Fino claims, is now owned and being developed by A. G. Campbell of Salt Lake. The shaft, down 175 ft., shows a 10-ft. vein of base ore, assaying from \$20 to \$40 per ton.

Jan 28, 1899 p122

## Kern County.

(From Our Special Correspondent.)

**Hard Cash.**—At this mine, near Randsburg, the mill is crushing about 25 tons per day, which is concentrated to about one ton, which averages over \$240 per ton. Arrangements are being made to double the milling capacity.

**Red Dog Mill.**—The following runs were recently made at this mill, at Johannesburg: Wedge, 50 tons, yielding \$40 per ton; Big Butte, 75 tons, \$75 per ton; Windy, 100 tons, \$60 per ton, and the Minnehaha, 15 tons, at \$25 per ton.

Feb. 4, 1899 p151

## Kern County.

(From Our Special Correspondent.)

**Black Hawk.**—This property, which adjoins the O. K. Mine, has been purchased by A. W. Collins & Company, the owners of the latter property. Price said to be \$12,000. The new owners will put a large force of men at development work. The mine is located 3 miles southeast of Randsburg.

**Ruby.**—The bond on this mine has been extended by Vanbrieson, Green & Hafford to February 10th. Since the shipment of 600 tons of ore to the mill at Barstow, Koehn & Wilson, the lessees, have been sinking, leaving the ore on the dump.

Feb. 11, 1899

## Los Angeles County.

(From Our Special Correspondent.)

**Red Rover.**—This mine, 3 miles northwest of Acton, owned by a syndicate headed by Gov. Gage, of California, is being developed with good results. The last run of 125 tons of ore produced about \$1,500. The main shaft is now down 370 ft., and levels are run every 100 ft. This shaft will be continued down to the 1,000, and the 18-stamp mill will be enlarged to a 25-stamp. Some very rich specimens have been taken from the first and third levels.

## San Bernardino County.

(From Our Special Correspondent.)

**Black Lead.**—This claim, in the Holcomb Valley Mining District, about 40 miles east of Victor, adjoining the Black Hawk, is said to be one of the richest finds in the Valley. A large force of men are to commence sinking at once. The property is owned by McKinney, Parazette & Ferguson.

Feb. 25, 1899 p242

## Inyo County.

(From Our Special Correspondent.)

**Blue Bell.**—This mine, in Snow's Canyon, 14 miles southeast of Darwin, at an elevation of 5,000 ft., is worked through a tunnel on the vein. At present water is conveyed from the spring in the canyon up the hill 1,200 ft. to the mine by a windlass. John C. Cress is the owner and operator.

**Goodmark & Harrison.**—This firm is erecting a 10-stamp mill, building a tramway and developing water near Ballerat. The machinery, supplies, etc., are hauled in by way of Johannesburg.

## Riverside County.

(From Our Special Correspondent.)

Gold-bearing ledges are said to have been discovered in the Mountain Beauty Mining District, which skirts the foothills of the Chihuahua Mountains. The district is partly in San Diego County, about 40 miles from Hemet, near Oak-

wood P. O. The first location was made by Johnson & Savage in 1896, who quit work, believing the vein had pinched out. The 2 tunnels on the Mountain Beauty claim are in ore and the crosscut is said to show 20 ft. of ore running over \$10 per ton, while specimens go much higher. The claims recently located in the district are the Helen, Progress, Annex, Lizzie, Valley View, Jessie L., Maria, North Extension, South Extension, Alturas, Golden Link, and Virginia. Timber and water in the vicinity are abundant.

## San Bernardino County.

**Rose Gold Mining and Milling Company.**—This company, at Victor, has almost completed an 80-ton cyanide mill. It is expected that the plant will be in operation about March 10th.

## San Diego County.

(From Our Special Correspondent.)

**Helvetia.**—E. Moore, of Denver, Colo., and associates have an option on this property, 1½ miles southeast of Julian, and the water is being pumped out and portions of the main shaft re-timbered. The mine is to be put in condition for an expert examination. A large force is employed. This property is said to be a rich free milling proposition.

March 18, 1899 p327

## Kern County.

**Yellow Aster.**—The new 30-stamp mill is running smoothly. All the stamps will not be used until the pumping plant to pump the water from the settling tanks back to the mill is working. The mill is intended to handle 150 tons of ore in 24 hours.

March 25, 1899 p358

## Kern County.

(From Our Special Correspondent.)

**St. Elmo.**—This mine at Randsburg, which has been idle for some time, has been leased by the Johannesburg Reduction Works for one year, and work has begun under the new management. Wythe Walker is superintendent. Under the lease the company is required to sink a certain number of feet each month, besides running drifts and stopping out ore.

April 1, 1899 p387

## Inyo County.

(From Our Special Correspondent.)

**Coso Cyanide Company.**—This company has purchased the mill site and water right formerly owned by Reddy & Company, and the San Jose Mine in the same district, about 8 miles southwest of Darwin, besides 3,000 tons of tailings, near Darwin. The first run of 200 tons is said to have averaged over \$12 per ton.

## Los Angeles County.

(From Our Special Correspondent.)

**Red Rover.**—Extensive improvements are contemplated at this mine, 3 miles northwest of Acton. A new hoisting plant will be erected, the mill enlarged to 25 stamps, and a large reservoir constructed above the mill. High grade ore has been milled from the 300 ft. level, the last cleanup of 125 tons yielding \$1,500. W. R. Shilling is Superintendent. The shaft is to be sunk to the 1,000 ft. level.

April 8, 1899 p417

## Kern County.

**Little Butte.**—J. H. Underhill, principal owner of this mine at Randsburg, has sold all of his interest in the property to William H. McEwen, of Los Angeles. About a year ago Frank H. Wilson of Montana took a lease and bond on the property. Up to the present time the mine has produced in all about \$130,000.

(From Our Special Correspondent.)

**Kenyon.**—At this mine, 1 mile northeast of Randsburg, 100 tons of ore from the dump, which was considered worthless, yielded a handsome profit, and the owners are to purchase a mill to work the entire dump.

**Yellow Aster.**—The new mill at this mine, just east of Randsburg, is running day and night, crushing about 130 tons per 24 hours. About 100 men are employed under ground, only 22 stopping ore, the balance being on development work.

## San Diego County.

(From Our Special Correspondent.)

**Elevado.**—At this mine, 1½ miles south of Banner, owned by the Smoky City Mining Company, the development work consists of a tunnel 350 ft. below the main shaft, now in 200 ft. This tunnel will be continued about 500 ft., and as soon as it is finished the 10-stamp mill will be enlarged. The ore is said to average \$20 per ton.

**Stonewall.**—The cyanide plant at this mine, on Cuyamaca Grant, 10 miles south of Julian, has been completed. It will have a capacity of 300 tons of tailings per day and 20 men are employed. Strauss & Shin will operate the plant.

April 15, 1899 p 448

San Bernardino County.  
(From Our Special Correspondent.)

St. George.—At this group of mines at Vanderbilt, comprising the Gold Bar, Gold Bar Extension and the Oro del Fino claims, the owner, A. G. Campbell, has uncovered a 10 ft. vein of refractory ore at a depth of 175 ft. which yielded from \$20 to \$40 per ton.

April 22, 1899 p 478

Kern County.  
(From Our Special Correspondent.)

Eureka Mill.—The Kinyon Brothers have purchased this mill at Randsburg.

April 29, 1899 p 507

Kern County.  
(From Our Special Correspondent.)

Yellow Aster Company.—The dividend for March just declared by this company amounted to \$10,000. The total cost of the mill was \$53,000, and the water plant and buildings, including the pipe line and pumping-back plant, about \$72,000. Machinery for the machine shop has been ordered. The mill runs continuously, crushing about 140 tons of ore per day, yielding an average of \$20 per ton.

May 6, 1899 p 538

Inyo County.

Mameva Mining and Milling Company.—This company's employees at the claims near Pah-rump, Nev., have formed a new mining district in California to be known as Mameva District. The company has its headquarters in Pittsburg, Pa.

Kern County.

Yellow Aster Mining Company.—This Randsburg company is about to build a machine shop, which when completed will be one of the most complete of its kind in Kern County. The contract for this plant has been secured by Messrs. John Wigmore & Sons, of Los Angeles.

Riverside County.

(From Our Special Correspondent.)

Good Hope.—This mine, at Ferris, is being worked by lessees at a handsome profit. George & Johnson are credited with cleaning up over \$2,000 in 6 weeks after paying royalty and mining and living expenses. The cyanide plant working the tailings is said to be yielding very large profits.

May 6, 1899 p 537

The Union Carbide Company is erecting on the grounds of the Niagara Falls Power Company, at Niagara Falls, 2 buildings, each 364 ft. by 80 ft., for its new carbide plant. The structural steel work will be furnished by the Berlin Iron Bridge Company, and the Penn Bridge Company, while the elevating and conveying plant will be furnished by the Jeffrey Manufacturing Company. The plant will have an estimated output of over 100 tons of carbide daily, and in full operation will use 25,000 electrical horse power. To utilize this energy the Wagner Electric Manufacturing Company will furnish 7 static transformers of 2,000 H.P. each and 2 of 500 H.P., a total of 1,500 H.P., while the Westinghouse Electric and Manufacturing Company will supply 7 transformers of 2,500 H.P. each, involving the largest units ever built. The transformers will step-up the 2-phase, 2,200-volt current from the generators to the 3-phase, 4,400-volt current for the carbide works.

May 13, 1899 p 567

Kern County.  
(From Our Special Correspondent.)

Buckboard.—At this mine in Randsburg, the shaft is down 135 ft. and drifts have been run both ways. The ledge is said to be 15 ft. wide. There is considerable good milling ore on the dump and the erection of a mill at an early date is contemplated.

May 20, 1899 p 598

Kern County.  
(From Our Special Correspondent.)

Kinyon.—This mine at Randsburg continues to produce handsomely, and is considered one of the best in the district. Three mill runs re-  
7 from 71½ tons of ore yielded a little over \$5,000.

San Bernardino County.  
(From Our Special Correspondent.)

Duncan, Clark & Goldsberry report the discovery of a rich ledge about 10 miles southeast of Kramer Station. A shaft has been sunk about 60 ft. Three men are at work. A new camp is springing up at this point on the desert.

May 27, 1899 p 628

Riverside County.  
(From Our Special Correspondent.)

O. K.—The development work at this mine, about 50 miles northeast of Walter's Station, continues. One of the owners recently brought out a gold brick weighing 168 oz. fine gold, the result of a run of the 2-stamp mill and the 10-ton cyanide plant. The dry placers in the neighborhood are said to pay from \$8 to \$10 per man per day.

June 12, 1899 p 687

Kern County.  
(From Our Special Correspondent.)

Butte.—This claim, 1 mile north of Ransburg, which has produced about \$140,000, is reported sold to the Little Butte Mining Company for \$50,000.

June 17, 1899 p 717

Kern County.  
(From Our Special Correspondent.)

Yellow Aster.—The main shaft of the Trinity Claim, at Randsburg, is to be sunk to 1,500 ft. A large hoisting plant has been ordered and will be at work by August 1st.

Los Angeles County.  
(From Our Special Correspondent.)

King of the West Copper Mining Company.—This company recently has been incorporated with a capital of \$600,000 to work a group of mines near Acton. The incorporators are: W. J. Woodside, W. W. Robinson, W. D. Alexander, Jr., A. Woodside and Theodore Frolch.

June 24, 1899 p 747

Inyo County.  
(From Our Special Correspondent.)

Surething.—A shipment of ore is going to the smelter. Assays are said to run very high.

Copper Queen.—The shaft at this mine, near Citrus, is down 30 ft., with encouraging results.

July 1, 1899

## Kern County.

(From Our Special Correspondent.)

The Randsburg Railway is to be continued from Randsburg north a distance of 65 miles, to tap the Ballarat District. Large shipments of ore have been guaranteed by mine owners.

## San Diego County.

(From Our Special Correspondent.)

El Dorado Group.—This property, which comprises 11 claims, besides several mill sites, located in the foothills of the San Jacinto Mountains, in the Grapevine Mining District, is to be developed on a large scale by the Great California Company. This company has been incorporated with a capital stock of \$3,000,000. The officers are C. H. Atkins, president; G. M. Atkins, vice-president; G. W. Ingils, second vice-president; A. C. Meyer, secretary, and W. L. Rose, treasurer. All are Eastern men except the secretary. The property is said to be rich in gold.

July 22, 1899

## Inyo County.

(From Our Special Correspondent.)

Horseshoe.—This mine, in the Argus District, is being developed by C. A. Burcham & Co., the owners. The shaft is now down 80 ft. and the ore at the bottom is said to assay \$100 per ton. The ore body is well defined between walls of granite and porphyry. The working force is to be increased.

Squires Brothers.—The gravel claims owned by these gentlemen in Mazourka Canyon are to be developed by a tunnel 2,000 ft. in length, to reach the bottom of the canyon. The owners have ample means and will push work until bed rock is reached.

## Kern County.

(From Our Special Correspondent.)

Mr. F. H. Heald, of Elsinore, has developed a vein of coal about 15 miles west of Randsburg. Work has been going on for more than a year. The coal is of the quality known as lignite and is good steam and cooking fuel.

## San Bernardino County.

St. George.—This mine, in Vanderbilt District, which was once owned and worked by John W. Mackey, James L. Flood and W. S. Lyle, and was afterwards abandoned by them and bought last year by A. G. Campbell, of Salt Lake City, has shown much improvement. Over 20 tons of ore per day are now being taken out, and the report has been confirmed that Campbell was lately offered \$300,000 for the property.

## San Diego County.

Golden Cross.—The long litigation over the ownership of this mine has been settled by a compromise. By this agreement the title of the Free Gold Company to the entire property is confirmed and quieted and the \$1,000,000 purchase money lien of the Golden Cross Company is established, payable out of a percentage of the net profits of the mines; and the Credits Commutation Company's claim is settled for \$85,000, payable out of the net profits of the mines, and a joint board of managers is provided for until such time as the entire purchase money lien of \$1,000,000 has been paid and discharged. On this board the seller and the buyer are equally represented, the Golden Cross Company being represented by D. T. Hedges and T. S. Fuller, and the Free Gold Company by Jefferson Chandler and Col. Isaac Trumbo. The fifth member of the board is D. M. Delmas, of San Francisco, who is supposed to be the arbitrator on the board and not a partisan of either of the companies represented. This board was organized at a meeting held in San Francisco, at which D. M. Delmas was elected president; Colonel Isaac Trumbo, vice-president and general manager; and T. S. Fuller, secretary. So far the owners have only opened up three of their 30 claims. There are in the tailings now upon the dumps in the mines a large amount, 90% of which can, it is claimed, be saved by the cyanide process of treatment at a low cost.

July 29, 1899 p135

## Kern County.

(From Our Special Correspondent.)

Randsburg District.—Work has been resumed on the Pinmore Mine near Johannesburg, and a large vein of low grade ore is being developed. The Yellow Aster is milling about 130 tons per day. Work on the Kenyon has been suspended temporarily. The Wedge is working 8 men and the Butte is taking out good ore.

Aug. 9, 1899 p165

## Inyo County.

(From Our Special Correspondent.)

Ratcliff Consolidated Gold Mines, Limited.—This company has been incorporated under the laws of Michigan, with a capital stock of \$1,000,000. The company is a close corporation, the shares being held by 7 shareholders. The managers are O. O. Howard, Jr., president of the Mount Shasta Gold Mines, Limited, chairman; H. A. Ladd, secretary, both of San Francisco, and W. W. Durant of Battle Creek, Mich., treasurer. Robert F. Harrison, who is one of the shareholders, has been appointed superintendent and is now in charge. The property comprises a group of 12 claims in Pleasant Canyon, Paintmint Mountains, in the South Park Mining District, about 6 miles from Ballarat. The mines are equipped with a 10-stamp mill, and a 50-ton cyanide plant, with a tramway 4,000 ft. long for conveying the ore from the mine to the mill. The mines are said to produce about \$15,000 per month and employ 25 men. The management of the new company intends to double the capacity of the plant and to prosecute development of the mines. The ore body in places is said to be 30 ft. wide, with no hanging wall exposed, milling about \$20 per ton in gold.

Aug 19, 1899 p226

## Inyo County.

(From Our Special Correspondent.)

Mazourka Canyon Placer.—These mines, on the western slope of the Inyo Mountain, 7 miles east of Independence, are to be developed by a tunnel 200 ft. long, which will reach bedrock on the bottom of the canyon. The owners have ample means to put the property on a paying basis.

Oh, Be Joyful.—It is reported that this mine in Tabor Canyon, has been sold and that a plant consisting of a set of rolls and a Bryan mill, with a capacity of 40 tons, are on the way to the mine.

Saline Valley District.—A Montana company has purchased properties in this district and is opening them with 20 men, but as soon as cooler weather sets in 100 men will be put on. The selling price was \$200,000, \$35,000 down.

World Beater.—The Bryan mill, belonging to this mine in Pleasant Canyon, has been removed to the mine, and will be in running order in a few weeks. A cyanide plant is to be erected.

## Los Angeles County.

(From Our Special Correspondent.)

Copper King & Copper Queen.—These copper claims near Ravena, 3 miles south from Acton, are being developed by the owner, J. J. Moore. The shaft in the Copper King is down 40 ft. with a 30 ft. cut. The ore is said to assay 17% copper, \$6.21 gold and 2.7 oz. silver.

## Riverside County.

(From Our Special Correspondent.)

Large ledges of fine mica are reported located near San Jacinto, and arrangements are being made to develop them.

Cont...

Aug 19, 1899 p226  
...Cont.

Kern County.

(From Our Special Correspondent.)

**Butte Lode Mining Company.**—This company has been incorporated to work the Butte Mine in Fiddler's Gulch, 1 mile north of Randsburg. Arrangements are being made to develop the property on a large scale. The directors are: J. H. Underhill of Bakersfield, president; E. S. Pettigrew, A. H. Thomas, Charles Howland, C. B. Dickinson, Herbert Smith, A. E. Madison, Abraham Jacoby and Robert Wankowski.

**Golden.**—This mine, 3 miles from Caliente, is being opened up by J. B. Ferris, the owner. The ledge is said to be very wide, with a 2 ft. pay streak that is very rich, the balance of the rock in the vein being low grade free milling, a large amount of which is in sight. A large mill is to be erected.

**Yellow Aster.**—The mill at this mine, at Randsburg, is running full time. A new ore body has been uncovered in the Hercules level, at a depth of about 900 ft. Most of the men are employed on development work. A new hoisting plant is to be put in, consisting of a 130 H. P. gasoline engine and hoist, made by the Union Gas Engine Company of San Francisco, which will have a capacity of raising 6,000 lbs. 100 ft. every 3 minutes, and is good for 1,500 ft. in depth. The management intends to sink at the rate of 100 ft. per month. The late clean-ups have been better than usual.

Aug. 26, '99 p 256

Kern County

(From Our Special Correspondent.)

**Black Hawk.**—The tailings at this group of mines, about 3 miles southeast from Randsburg, are to be worked by the cyanide process. The plant at Cuddyback Lake will be removed to the mines and tailings from the other mines in the vicinity will also be treated.

Riverside County.

(From Our Special Correspondent.)

**Leon.**—At this mine, 14 miles southeast Perris, 2 ore chutes have been developed shafts about 500 ft. apart. No crosscutting been done, but this will begin soon. The ore said to be high grade.

San Diego County.

(From Our Special Correspondent.)

**American Girl Mining Company.**—This company has been organized to work the American Girl and other mines at Hedges. Arrangements are being made to erect an extensive mill plant. The officers of the company are: E. Markham, president; Thomas Johnson, president; G. H. Coffin, secretary; F. H. Gett, treasurer.

**Elevado.**—This mine, 1½ miles south Banner, together with the Agua Jita Mine in same district, has been purchased by N. D. J. of Pittsburg, Pa. The price is reported at \$300,000. Considerable development work has been done on the property. The original was given in July, 1898.

**Golden Cross Mine.**—The 600 ton cyanide plant at Hedges will be rushed to completion. The ore in the present workings is said to average \$8 per ton.

Sept. 2, 1899 p286

Kern County.

(From Our Special Correspondent.)

**Butte.**—The shaft at this mine in Fiddler's Gulch, 1 mile north of Randsburg, is down 165 ft. on the east end, with a drift both east and west and a winze east and west of the main shaft. The ore in the drift is low grade, while in the winzes it runs as high as \$75 per ton.

**Yellow Aster.**—The July dividend of this company amounted to \$20,000, making a total of \$250,000 paid to date. Men are at work at the wells to develop more water, which will be needed if more stamps are added, as is contemplated in the near future. The machine shops are in course of erection, and the mill is working smoothly.

Sept. 9, 1899 p315

Inyo County.

(From Our Special Correspondent.)

**Ballarat District.**—Considerable mining is being done, most of the properties being base ore propositions, the plants including cyanide works. The want of necessary capital is the main drawback in development.

Kern County.

(From Our Special Correspondent.)

**Little Angel.**—This property, 1 mile west from Havilah, an old gold producer, is equipped with a new plant consisting of a 10-stamp mill, cyanide works, steam hoists, pumps, etc. Fifty men are employed under R. C. Shaw, of the Ophir Mine, the same parties working both mines. The ledge is said to be 7 ft. wide, carrying \$33 rock.

**New World.**—A large force of men have been put at work at this old mine, 1 mile west from Havilah. The vein is reported to be 20 ft. wide. A new plant is being put in position.

**Ophir.**—Twenty-five men are employed at this mine, 1 mile southwest from Havilah. The mill has been in operation for several months. The property, which produced largely about 30 years ago, is worked by Eastern parties. R. C. Shaw is superintendent.

Riverside County.

(From Our Special Correspondent.)

**O. K.**—This group of mines in the Virginia Dale District has been opened by over 1,200 ft. of development work, which consists of one 250 ft. shaft with levels at the 50, 100, 150 and 200 ft., and one just started on the 250 ft., with winzes connecting all the levels. All the ore to run the mill has been taken from the dead work; this ore paying working expenses. Assays range from \$7 to \$86 per ton in gold; milling about \$20 per ton.

Sept. 23, 1899 p 576

Riverside County.

(From Our Special Correspondent.)

Pasadena.—This property, at Oak Grove, is to be developed by the Pasadena & Klondyke Mining Company, which will put a force of men at work driving a tunnel on the vein, about 4 ft. wide.

Virginia Dale District.—Most of the mines in this district are improving with depth, and new bodies of ore are being discovered. The O. K. has cut a 4-ft. ledge which assays very rich. In the Star King rich ore has been encountered, and at the Ivanhoe every clean-up shows better results.

San Diego County.

(From Our Special Correspondent.)

El Cajon Mountain.—A large body of kaolin was discovered on this mountain by Charles String, who located about 7 claims, 20 miles east from San Diego. Samples sent to Japan and the Eastern States were pronounced to be of superior quality by porcelain manufacturers, and the owner is considering an offer from a representative of Eastern parties.

Sept. 23, 1899 p 375

Kern County.

(From Our Special Correspondent.)

Heald Coal Mines.—These mines, at Garlock, have been developed to quite an extent, and contracts have been made to deliver several thousand tons of coal.

Kenyon.—The shaft at this mine at Randsburg is now down 332 ft. About \$135,000 worth of ore has been taken from this property up to date. The shipping ore never milled less than \$100 per ton. A 2-stamp mill is on the ground. Five men are at work.

Wedge.—The last mill run of 35 tons of ore from this mine at Randsburg, returned \$1,557. Development work is being pushed with a good balance in the treasury.

Sept. 30, 1899 p 406

Inyo County.

(From Our Special Correspondent.)

Ratcliff.—The final payment of \$50,000 on the purchase price of this group of mines, in Pleasant Canyon, Panimint Mountain, about 6 miles from Ballarat, was made to Henry C. Ratcliff, the former owner of the property, by O. O. Howard, Jr., president of the Ratcliff Consolidated Gold Mines, Limited, on September 12th, at Los Angeles. The company has completed a systematic survey of the claims and workings. The 10-stamp mill is being doubled and the 50-ton cyanide plant will be increased to 100 tons capacity. Five tunnels are being run. The lower is developing an exceedingly promising ore body, the last sampling showing an assay value of \$11.60 per ton on the average for 25 ft. of ore. The stopes above Tunnel No. 1 show a breast of ore fully 40 ft. wide, carrying an assay value of nearly \$30 per ton. The fact that the nearest developed mine is at Randsburg, 75 miles away, and that there are no precedents as to what the ore bodies will do in depth, lends strong interest to developments. From present indications there is promise of one of the largest gold ore bodies ever developed in the State.

Kern County.

(From Our Special Correspondent.)

Wedge.—The main shaft, at Randsburg, is down over 500 ft. and ore is being stoped from the 200, 350 and 450 ft. levels. The average mill run is said to yield \$75 per ton.

Sept. 30, 1899 p 406

Riverside County.

(From Our Special Correspondent.)

Chuckwalla Mining, Milling and Water Company.—This company has been organized to develop a group of mining claims in the Chuckwalla Mountains. About 1,000 ft. of development work has been done and an ore body about 15 ft. wide, with a pay streak of 6 ft., has been exposed. Assays average \$18 in gold, besides some copper. A mill is being erected. The Stephens process will be used.

Oct. 7, 1899 p 435

Kern County.

(From Our Special Correspondent.)

Randsburg District.—The following is the record of some of the stamp mills in this district: Red Dog Mill, 7,793 tons, \$280,000; Black Hawk Mill, 4,080 tons, \$173,600; Eureka Mill, \$162,000. The Yellow Aster is crushing about 150 tons per day, yielding about \$90,000 per month. Several mills in the vicinity are kept busy.

Oct. 14, 1899 p 465

San Diego County.

(From Our Special Correspondent.)

Dewey Mining and Milling Company.—This company has been incorporated with a capital stock of \$1,000,000, par value \$10 per share. The directors are: J. A. Heath, S. G. Ingle, W. R. Farnsworth, F. P. Frary, Geo. Putenbaugh, J. S. Ackerman and F. L. Doolittle, all of Los Angeles. The company proposes to develop the Little Charlie, Dewey and Bonanza claims in Grapevine District.

Oct. 21, 1899 p 495

Riverside County.

Mountain Beauty Mining Company.—The Fulton Iron Works of Los Angeles is to supply a 5 stamp mill and other machinery. The mine is 23 miles from Temecula and 10 men are at work there.

San Diego County.

(From Our Special Correspondent.)

Great California Mining Company.—This company owns and is working the Mercury, Old Pick and General Grant claims in Grapevine District. In the former a tunnel is now in 35 ft., 8 ft. of which is in ore assaying over \$14 per ton. In the Old Pick a tunnel is in 30 ft., 12 ft. of which is in low grade ore. The shaft on the General Grant is down 30 ft.

Oct. 28, 1899 7526

Nov. 18, 1899 7616

Inyo County.

(From Our Special Correspondent.)

Panamint District.—Parties in Los Angeles are opening the World Beater group in Pleasant Canyon, and the Mammoth in Tuber Canyon, under the supervision of Mr. Stebbins. Bryan mills are used. The Anthony property in Pleasant Canyon about 3 miles below the Ratcliff property has been examined by experts said to represent San Francisco parties. The Anthony is said to carry values of about \$20 per ton, with an average of 3 ft. of ore. The California Borax Company is putting in some quartz mills at its works for custom milling. A 2-stamp mill has been erected on the Knowles property in the Slate Range on the road from Johannesburg to Ballarat. It is reported that the Searies Borax Works will start up January 1st.

Ratcliff Consolidated Gold Mines, Limited.—This company is opening the Ratcliff Mines in Pleasant Canyon, Panamint Mountains. Six tunnels are in process of being driven, the lowest tunnel having about 1,500 ft. of backs on the dip of the ledge. The 10-stamp mill was running throughout September, and saved on the plates nearly \$9 per ton for the month, while the cyanide plant saved \$6.29, or a total saving on the ore milled of about \$15 per ton. These values are from a ledge that is 6 to 30 ft. wide. The frame for an additional 10 stamps is on the ground. A new tramway of 200 tons daily capacity is to be erected. Thirty-five men are employed, principally on development work. O. O. Howard, Jr., of San Francisco, is chairman.

Yellow Rose of Texas.—This claim, 6 miles southwest from Nash's Store, on Union Creek, has developed a ledge from 18 in. to 9 ft. wide. The only part which has been milled is a ribbon through the vein from 3 to 11 in. wide. Some of this ore packed 16 miles to a wagon road and sent to a smelter, went from \$700 to \$1,800 per ton. The returns not only paid expenses, but gave a dividend. Ten men are employed. G. L. Carr has purchased the 1/2 interest owned by Amos Hill.

Nov. 4, 1899

San Bernardino County.

(From Our Special Correspondent.)

Gold Mountain.—This group of gold claims, about 40 miles east of Victor and 5 miles northeast of Bear Valley, is being developed by Eastern men who own the adjoining claims. A large body of low grade cyaniding ore has been blocked out.

Nov. 18, 1899 7616

Inyo County.

(From Our Special Correspondent.)

Ratcliff.—At this mine in the Panamint District, about 6 miles from Ballarat, the tramway has broken down, necessitating closing down the mill for about 60 days, but development work will continue with a full force of men. A contract has been made with the Vulcan Iron Works of San Francisco for a new plant.

Kern County.

(From Our Special Correspondent.)

Pinmore.—This low grade proposition, one of the Ashford group of mines about 1 1/2 miles east of Randsburg, is reported to have been sold to Harrison & Godsmark for \$1,500. The ledge is from 3 to 9 ft. wide, carrying rich bunches of ore.

Yellow Aster Mining Company.—The 30-stamp mill is running day and night with a good supply of water. One hundred and thirty men are employed, some developing claims south of the main workings. A contract to sink 400 ft. on the Nancy Hanks has been let.

San Diego County.

Lepidolite Mining.—It is stated that W. J. Schieffelin of New York has bought the privilege of mining lepidolite from 4 claims near Panamint from Rosalind O. Butterfield of Los Angeles and Nelson G. Douglass of Cape May Court House, N. J. Mr. Schieffelin agrees to take, beginning with 1900, such amount of lepidolite ore, not exceeding 2,000 tons a year, as he may order, of a quality not inferior to that heretofore supplied. The price to be paid for the ore is \$25 a ton f. o. b. cars Temecula, or \$40 per ton f. o. b. or boat at New York. The owners agree that as long as Mr. Schieffelin shall order from the minimum of 400 tons of lepidolite in each calendar year beginning with year 1900, no lepidolite ore from the mines shall be sold or disposed of to any other corporation or person, so sold, the owners shall pay Mr. Schieffelin a sum of \$400 a ton for each ton.

Nov. 25, 1899 7616

Inyo County.

(From Our Special Correspondent.)

Ratcliff Consolidated Gold Mining Company, Limited.—Within 10 days this company, whose mines are in Pleasant Canyon, about 6 miles from Ballarat, has cut the ore body in the No. 3 tunnel at 160 ft. in, and in No. 4 tunnel 223 ft. in. This gives a continuous ore body opened from No. 1 tunnel to No. 6 upward of 1,800 ft. on the dip of the ledge, which shows assays in No. 1, \$20; No. 2, \$15.40; No. 3, \$22.60; No. 4, \$37.40; No. 5, \$41.60 to \$61.20, and No. 6, \$18.40. Above No. 1 there is a breast of 40 ft. of ore, one-half of which runs \$20 and upward. At No. 2 there is about 23 ft. which assays \$15.40. At No. 3 the ore's width is unknown; the same is true of No. 4. At No. 5 the ore is upward of 30 ft. wide and averages about \$15 per ton, while the sulphide streak, the full width of the tunnel, carries the high values spoken of. In No. 6 the width is unknown. The company has purchased a carload of steel cable for the new double tramway, 8,000 ft. of which is 1 in. interlocked coil rope, made by the Trenton Iron Works of Trenton, N. J. The Vulcan Iron Works of San Francisco is building the terminals and conveying machinery. The tramway will have a capacity of 150 tons in 10 hours, and will be in use February 15th.

Reward.—Los Angeles parties have bonded this mine and mill, 10 miles southwest from Independence, near the Carson & Colorado Railroad. The tailings, estimated at 10,000 tons, valued at \$5 per ton, are being cyanided by Fritcham, Dineen & Quinn, who are operating a 50-ton plant. The results are said to be very satisfactory.

Kern County.

(From Our Special Correspondent.)

The Buckboard is showing up well, a large body of \$12 ore having been encountered on the 160 ft. level.

Work has been resumed on the Defender by Taylor & Company, who hold a bond at \$15,000.

Randsburg District.—The Annex Mine is producing good ore. The last shipment of 50 tons milled at the Johannesburg; mill yielded \$31 per ton.

San Diego County.

(From Our Special Correspondent.)

Grapevine District.—At the Marion Mine a rich ledge has been discovered. The shaft at the Dewey Mine is down 100 ft. in good ore, and work is progressing on a dozen more mines in the vicinity.

Dec. 2, 1899 p 626

Inyo County.

(From Our Special Correspondent.)

Blue Bell.—On this mine in Snow's Canyon, 14 miles southeast from Darwin, development work is being pushed. The ledge, which is from 13 to 40 in. wide, has been drifted on about 165 ft. It is estimated that 100 tons of ore are on the dump and that 1,500 more are in sight.

Kern County.

(From Our Special Correspondent.)

Orihano.—The shaft at this mine, 7 miles from Keene, is down over 200 ft., at which depth \$80 ore is being hoisted. The mine is owned by a company composed of Los Angeles and St. Louis men.

Los Angeles County.

(From Our Special Correspondent.)

King of the West.—The shaft at this mine at Acton is down 150 ft. Ten men are employed under W. J. Woodside, superintendent. The returns from a 20-ton shipment to the smelter averaged high in gold, silver and copper. The lot was probably selected ore.

San Bernardino County.

(From Our Special Correspondent.)

Copper World.—At this mine on the desert, 55 miles northwest from Vanderbilt, development

work is going on rapidly and ore is being shipped at the rate of a car-load every 3 or 4 days. The output is to be increased.

Dec. 9, 1899 p 707

Kern County.

(From Our Special Correspondent.)

Pacific Coast Borax Company.—The works at Borax Lake are being cleaned out and put in order preparatory to getting out borax on a large scale. A force of men have been engaged and 100 tons per month will be shipped.

Randsburg District.—Most of the mines in this district are being worked, and are said to pay well. The Blackhawk and Red Dog mills are running on ore from the Butte and other mines. The Wedge mills about 40 tons per day, the Irene, Napoleon, Hector and Jenny Lind mines have all made small runs of rich ore, and the Ruby has just cleaned up 120 tons.

San Diego County.

(From Our Special Correspondent.)

Kentuck S.—At this mine, 1/2 mile northwest from Banner, the main ledge has been found to be 2 ft. wide, carrying ore which is said to assay from \$200 to \$300 per ton. This property is being developed by the Bailey Brothers of San Diego, who also run a custom mill.

Roberts.—This gold property at Escondido is being prospected under bond by John Reid for Eastern parties. The shaft is now down 35 ft. and is to be continued to 150 ft.

Dec. 16, 1899 p 737

Riverside County.

(From Our Special Correspondent.)

Bulwer.—This mine, situated between the Washington and the Milkmaid mines, about 4 miles from French Gulch, is producing some extremely rich ore from a 16 in. vein.

Hillside.—The shaft at this mine southwest from Perris, is down 120 ft. Considerable ore is on the dump.

Pit River Iron Claims.—W. C. Bruson and others representing Eastern capitalists have located over 200 claims near the Pit River Iron mines, which are held under bond by the same parties.

Spread Eagle.—This group of 22 claims, between the Balakalala and Stowell groups, west from Copley, in Flat Creek District, is reported to be bonded to the Scotch American Development company for 1 year. Price, \$150,000. The property has been opened up by about 1,000 ft. of tunnels.

Washington.—The production of this mine, 4 miles northwest from French Gulch, is said to be \$3,000 per month. Twenty leasers are at work. Some of the ore is shipped to the Gelby and Kerwick smelters, and some is milled at the mine. The Niagara, 5 miles west from French Gulch, is also worked by leasers with good results.

Kern County.

(From Our Special Correspondent.)

Black Hawk.—Wells are being sunk near this mine, 3 miles southeast from Randsburg, and if enough water is obtained the milling plant will be increased to 10 stamps. The cyanide plant at Cuddaback Lake is being moved to the property. There are about 1,500 tons of tailings there now. The capacity of the plant is about 15 tons per day.

Dec. 30, 1899 p 796

Inyo County.

(From Our Special Correspondent.)

Kearsarge.—This old mine in Mazourka Canyon, is to be opened up. The old workings consist of about 5,000 ft. of tunnels and drifts which show large bodies of ore assaying from \$5 up which could not be worked at a profit in the '60s. There is estimated to be 10,000 tons of ore on the dump which could be profitably cyanided. A plant will probably be erected in the spring.

Kern County—Randsburg District.

(From Our Special Correspondent.)

Yellow Aster.—This company has just declared a dividend of \$20,000 for December; total to date, \$313,789. The output has been greatly increased since the instalment of the new hoist.

At the Blackhawk and O. K. mines water was encountered in the well at a depth of 40 ft. This new supply will enable the management to increase the milling capacity.

From the Buckboard shipments are being made to Barstow.

In the new diggings about 3 miles from Cuddaback Lake, water has been struck in the well at a depth of 123 ft. Sinking will be continued until the water stops the work.

Los Angeles County.

(From Our Special Correspondent.)

Anker Metallurgical & Furnace Company.—This company has been incorporated with a capital stock of \$500,000. A smelter is in course of erection in Los Angeles. The manager, Jos. Anker, is the inventor of the process which uses crude petroleum in smelting.

THE CYANIDE PLANT OF THE ROSE GOLD MINING COMPANY  
 AT VICTOR, CALIFORNIA.

Written for the Engineering and Mining Journal by Charles T. Arkins.

The mill which this article describes is, perhaps, as nearly automatic as one can be constructed, and this renders it possible to treat with profit a grade of ore hitherto considered outside the pale of cyanide operations. The writer is chemist in charge of the operations.

The mill is located over the mine shaft, from which the ore is hoisted. The skip is automatically tripped, as shown in the plans, allowing the ore to fall into a storage bin having a capacity of 75 tons. From this it is fed over grizzly bars, 1½ in. apart, to a Gates No. 1 crusher, where it is reduced to 1½-in. material and conducted to a hopper common to the rolls, the No. 1 crusher and Style "H" crusher, whence it drops into a Gates No. 3 elevator and is elevated to a 32-in. by 8-ft. revolving screw having apertures ¾ in. in diameter; the rejections from the screen are conducted to a Gates Style H crusher, which reduces the material

¾ in. or less. It passes thence to the elevator, which returns it to the revolving screen, the undersize of which passes over a single shaking screen of 3 holes to the inch. The undersize of the shaking screen is finished product and is conducted to a small storage bin, from which it is automatically fed on a 12-in. belt conveyor and carried to the leaching vat receiving the charge. The oversize of the shaking screen passes to a set of Gates 26" by 15-in. rolls, and leaving the rolls it is conducted to the elevator, which returns it to the revolving screen.

The dumping of the finished product from the conveyor into the leaching vat is effected by means of two false rollers, one set at an angle of 60°, over which the belt passes, thereby raising the belt from a horizontal to an inclined position, and the other roller set at an angle of 50°, under which the belt passes after having discharged its burden. The belt may be set so as to discharge at any one of three points in a vat. When a tank is charged, horizontal rollers are substituted for the false rollers, which are then removed and are put in position over the vat next to receive a charge.

The force needed to operate this mill consists of an engineer, a crusher feeder and a laborer in the vat to distribute the material as it is discharged by the belt conveyor.

Following is the cost of treating 33 tons of ore per shift of 11 hours, together with cost of mining, the figures being those of actual work in the mill:

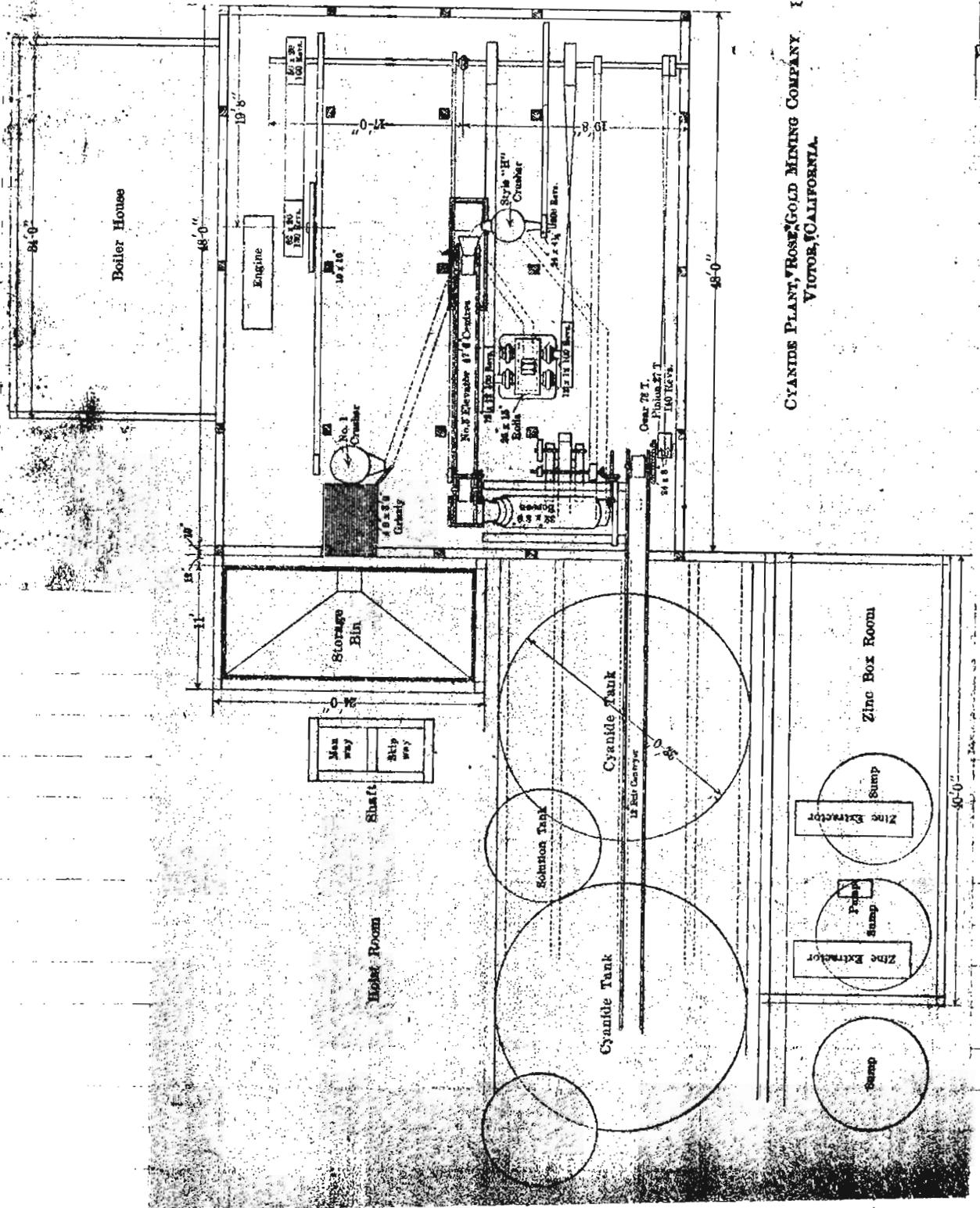
One engineer .....	\$3.33
One crusher feeder .....	3.00
One laborer in vat .....	2.50
One solution man .....	2.50
Oil .....	0.60
Fuel (wood) .....	3.00
<b>Total .....</b>	<b>\$14.93</b>
Cyanide of potassium, lime and zinc.....	21.38
<b>Cost of treating 33 tons.....</b>	<b>\$36.31</b>
Cost of treating 1 ton.....	1.09
Cost of discharging vats per ton.....	0.10
<b>Total per ton .....</b>	<b>\$1.19</b>
<b>Total cost per ton for mining.....</b>	<b>1.25</b>
<b>Total cost mining and treatment per ton.....</b>	<b>\$2.44</b>

Between 60 and 80c. in gold is left in the tailings, so it will readily be seen that ore as low as \$5 per ton, or even less, can be treated with profit at this mill. The above figures are exclusive of superintendence, insurance and cost of maintaining and operating a chemical laboratory.

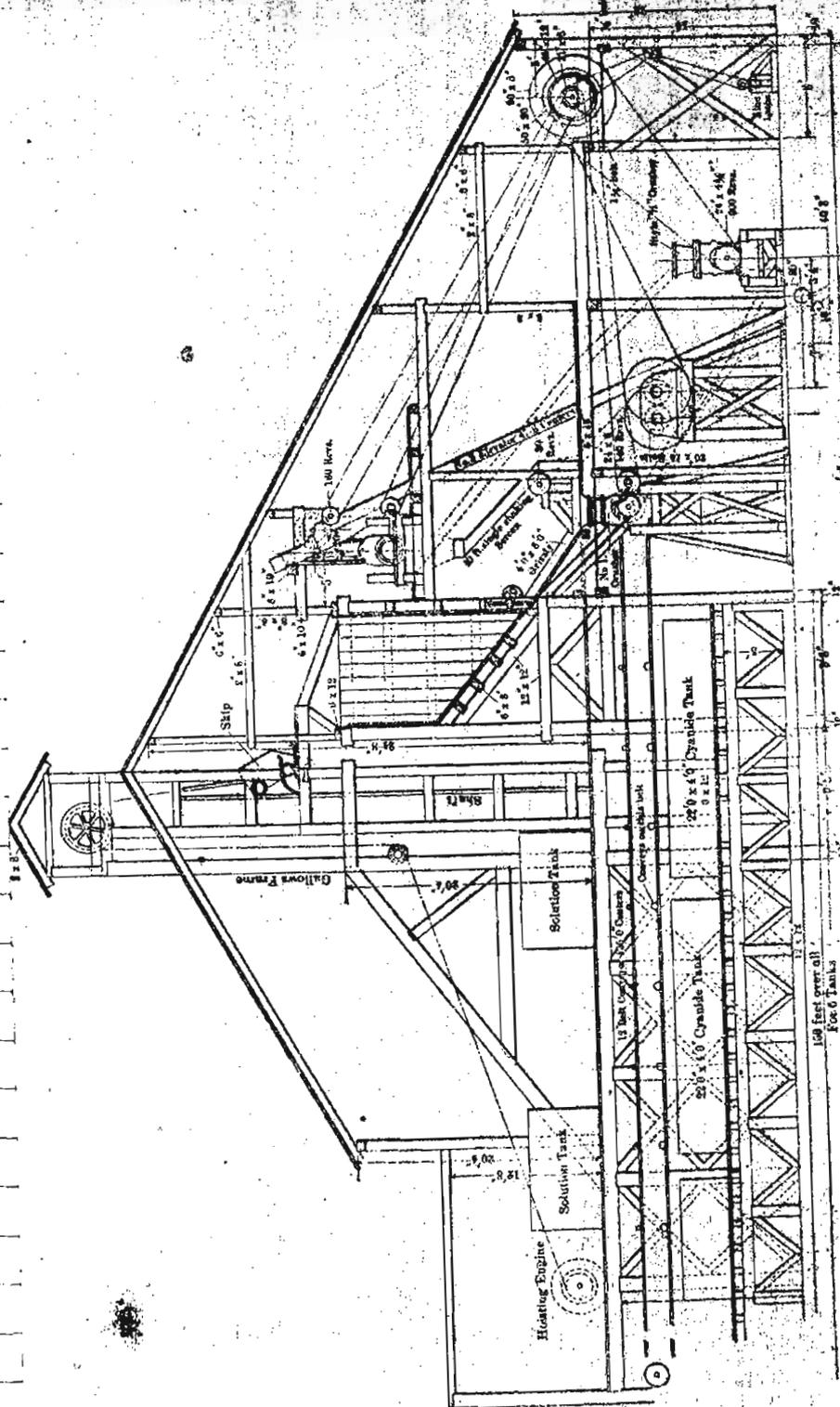
The ore is a difficult one to cyanide as it contains much clay and talc and quite a quantity of cupriferous mineral, mostly malachite and azurite. Much trouble is encountered with precipitation, but by the continual use of lead acetate on the zinc turnings, and strengthening the cyanide solution before it enters the boxes, satisfactory precipitation is generally maintained. The gold recovery ranges between 90 and 95 per cent. The mill was designed by and constructed under the direction of Mr. John Q. MacDonald of Cripple Creek, Colo., and is owned by the Rose Gold Mining and Milling Company of Saginaw, Michigan, a close corporation, composed of but four or five men. The mill operates only a product of the Rose Mine, which has an exceedingly large body of mill ore. The property is situated 45 miles from the nearest railroad station, Victor, California.

The officers of the company are: Jno. J. Rupp, president; F. Ewen, vice-president; Geo. Grant, treasurer, and R. S. Grant, gen. manager.

The Engineering and Mining Journal  
 Jan 13, 1900



CYANIDE PLANT, ROSE GOLD MINING COMPANY  
 VICTOR, CALIFORNIA.



CYANIDE PLANT OF ROSE GOLD MINING COMPANY, VICTOR, CALIFORNIA.

Dec. 30, 1899 p 796

## Riverside County.

(From Our Special Correspondent.)

**Pasadena & Klondike Mining Company.**—This company now owns 5 claims in the Mountain Beauty Mining District, near Oak Grove. The force having been increased 3 shifts will be worked running the tunnel at least 3,000 ft. The erection of a mill and a cyanide works is contemplated. F. J. Eddy is manager.

## San Diego County.

(From Our Special Correspondent.)

The zinc ore recently found on the San Vicente Ranch, 6 miles from the terminus of the Cuyamaca Railway, is said to assay as high as 5% zinc. T. J. Daley is owner.

**Owens.**—This mine at Julian, is worked by Superintendent J. N. Large. Good ore is in sight on the 200 and 250-ft. levels.

**Red Hill.**—This claim in the Vallecitos District, near Poway, owned by McIlheny & Honeycut, is developed by a 100-ft. tunnel and a crosscut of 20 ft. Several other claims in the district are being prospected. The Eucalyptus shaft is down 25 ft. showing \$16 ore, while on other claims base ore assaying from \$3.50 to \$7 is being developed.

Jan 18, 1900 p 58

## San Bernardino County.

(From Our Special Correspondent.)

**Columbia Borax & Chemical Company.**—It is reported that this company has recently purchased a group of borax claims in the vicinity of Daggett, and that men have been put at work. Also, that a factory is in course of erection for the purpose of manufacturing boracic acid.

(Inyo County)

## Riverside County.

**Death Valley.**—The Gold Hill Mine, in the Panamint Mountains, known as the Death Valley property, has been placed with New York parties at a reported price of \$207,000. A 40-stamp mill may be erected.

Jan 20, 1900 p 87

## San Bernardino County.

(From Our Special Correspondent.)

**Gold Mountain.**—This group of mines, 40 miles east of Victor and 5 miles northeast of Bear Valley Lake, is owned by Capt. J. R. De La Mar, who is constructing a 40-stamp mill preparatory to working the property on a large scale.

**John R. Gentry.**—It is reported that in this group of 8 claims, in the Buckeye District, 8 miles south from Ludlow, high grade gold and copper ore has been struck, and that several carloads have been shipped to the smelter for treatment.

**Warwick.**—The 10-stamp mill recently completed at this mine in Old Woman's Mountain District, has started. Other mines in the district are doing well, high grade ore carrying gold and silver having been struck in the Jack Pot, Stemwinder and Silver Wave mines.

## Kern County.

(From Our Special Correspondent.)

**Phoenix Mining Company.**—This company, composed of Los Angeles men, is developing some promising copper claims in Copper Basin, 16 miles northwest from Randsburg. Quite a force of men is at work. Several buildings are completed.

Jan 27, 1900 p 118

## Riverside County.

(From Our Special Correspondent.)

**Santa Rosa.**—This quartz claim, 5½ miles west from Perris, is being worked under bond by an English syndicate. The incline shaft is down 500 ft., following the ledge. The lowest depth vertically is only 174 ft. A 20-stamp mill is crushing steadily on good ore. The sale of the mine will undoubtedly go through.

## Inyo County.

(From Our Special Correspondent.)

**Ratcliff Consolidated Gold Mines, Limited.**—Developments at these mines in Pleasant Canon have caused quite an excitement in that section of the desert. The ore bodies are reported very large, and of high average value. Recent tests show that the values are not in chemical combination with the iron sulphides. Concentration tests showed that the concentrates from 13 tons of ore, weighing about one ton, assayed only \$5.50 per ton; from one that sample that the battery heads \$9.56 per ton, and that the values could be saved better by direct treatment with cyanide without concentration and at less expense. Working tests in No. 5 tunnel, where the exposed ore body is 40 ft. wide with 5% of sulphurets, showed nearly \$30 per ton and a saving of \$10 per ton by amalgamation and \$15 per ton in cyanide tanks. The expert of the Gold and Silver Extraction Company of America is testing the various ore bodies to determine plans and specifications for an additional 100-ton cyanide plant. Plans and specifications are being prepared for an electrical transmission plant about 12 miles from the mine.

The present 100-ton mill will start about January 20th. The milling tests have been made at the original 10-stamp mill. The company is putting in a long tramway, the rope being furnished by the Trenton Iron Works and stations by the Vulcan Works of San Francisco.

## Kern County.

(From Our Special Correspondent.)

**Little Butte.**—Work has been resumed on this mine in Randsburg, under the direction of Dr. P. E. Doolittle of Toronto, Canada, who is one of the largest stockholders and is said to be exploring work at his own expense. The claim is favorably located on the same belt as the Kinyon, Wedge and Butte mines.

Feb. 3, 1900 p 147

## Kern County.

(From Our Special Correspondent.)

**Ashford Mining Company.**—At the annual meeting of the stockholders of this company the following directors were elected: J. J. Miller, W. W. Godsmark, Clyde J. McDivill, Harold Ashford and M. L. Craig.

**Randsburg District.**—The Huckboard Mine is still shipping enough ore to the Barstow mill to keep 50 stamps busy crushing.

The last shipment of ore from the St. Elmo Mine (44 tons) yielded \$8 per ton net.

The Yellow Aster is developing water in the El Paso Hills, 8 miles northwest of Randsburg.

## San Diego County.

(From Our Special Correspondent.)

**Golden Cross.**—Isaac Trumbo, receiver of these mines in the Congo Muchacho Mountains, at Hedges, 6 miles northeast of Ogilby, has filed in the Superior Court his third report, covering the month of November, 1899. The receipts were: Cleanups, \$22,959; other sources, \$863; total, \$23,822. The cash on hand in the bank November 1st was \$29,273. Amount paid out during the month, \$25,012, leaving balance on December 1st, \$23,033. The court has ordered the receiver to make a preliminary survey of all the mining claims belonging to the Golden Cross Company, and to secure a patent to the property in the name of L. W. Blinn, presiding trustee.

The Engineering and Mining Journal  
May 9, 1900 p. 597

San Bernardino County.  
(From Our Special Correspondent.)

Gold Mountain.—A 40-stamp mill is in course of erection at this mine, 40 miles east from Victor, and 5 miles northeast from Bear Valley Lake. For several years nothing has been done in the way of development, although previously a number of open cuts have been made. The property is now owned by Capt. De La Mar.

Feb. 10, 1900 p177

## Kern County.

(From Our Special Correspondent.)

**Randsburg District.**—From the Ruby Mine, leased by T. McKinnon, about 70 tons of ore have been sent to the Red Dog mill.

At the Minnehaha Mine, owned by McGinnis, O'Leary & Harrison, a rich body of ore has been struck, which is being sent to the Red Dog Mill. This mill is running day and night on ore from the Buckboard, Butte, Wedge, Windy, Ruby, etc.

The Wasp Mine, under bond to Frank Rose & Company is being developed by 2 shafts.

Two cyanide plants have been erected, one at the Johannesburg Mill, and the other at the Black Hawk Mine. The combined capacity is 40 tons per day.

## Orange County.

(From Our Special Correspondent.)

At the junction of this county with Riverside and San Diego counties 150 locations have been made on the copper bearing belt which comprises about 1,400 acres. Twenty prospecting shafts have been sunk and several drifts run through the copper bearing lead. E. Lazenby, the discoverer, holds several of the best locations.

Feb 17, 1900 p207

## Kern County.

(From Our Special Correspondent.)

**King Solomon.**—The shaft on this property, which lies between Randsburg and Johannesburg, is down 500 ft. and good ore is being stopped.

**Rustler & San Diego.**—This group of mines  $\frac{3}{4}$  of a mile from Randsburg, near the Olympus Mine, has reached a depth of 100 ft. and shows ore resembling that from the Yellow Aster Mine.

**Val Verde.**—This mine, near Randsburg, has been leased to Wilson, Hammond & Company. There is some good ore on the dump. The last mill run averaged over \$15 per ton.

**Yellow Aster.**—In the new well being sunk, 8 miles northwest from Randsburg, water is coming so fast that new pumps will be put in in order to permit deeper sinking. The company will have water enough to run double the number of stamps.

## San Bernardino County.

(From Our Special Correspondent.)

It is reported that Monhan & Murphy have contracted for the erection of a smelter at The Needles. The capacity will be 120 tons.

**Desert Chemical Company.**—This company has made arrangements to erect a lixiviation plant with a capacity of 300 tons per day, at Copper City, to treat ore in that vicinity.

March 3, 1900 p267

## Kern County.

(From Our Special Correspondent.)

**Johannesburg Mill.**—This mill is running night and day on ore from the Buckboard, Butte, Wedge, Ruby, Wasp, Windy and other mines. James Montgomery is in charge.

**King Solomon.**—This group of mines, near Randsburg, has been purchased by W. H. Price, W. W. Godsmark and other capitalists of Los Angeles, who are to pay a portion of the price out of the mine, all to be paid within one year. The shaft is down 500 ft. in good ore. W. W. Godsmark is superintendent.

**Val Verde, Nos. 1 and 2.**—Some very fine ore is being sent to the mill from these mines at Johannesburg. New works have been opened showing veins from 2 to 4 ft. wide. Willard, Hammond & Hamell are operating them.

March 10, 1900 p277

## Inyo County.

(From Our Special Correspondent.)

**Kearsarge.**—These mines, 14 miles from Independence, are to be opened up under the superintendency of J. S. Johnson, for a San Francisco syndicate. A 1,500-ft. tunnel will be run to cross-cut 5 veins. A mill and a cyanide plant are to be erected.

**Mazourka.**—This placer property, 7 miles east from Independence, is being developed by a tunnel now in 1,000 ft., and the first air shaft has been completed. The main channel was struck at 900 ft., and the tunnel will be pushed to bed-rock.

## Kern County.

(From Our Special Correspondent.)

**Little Butte.**—The new drift being run at this mine at Randsburg, is in 115 ft. following the ore body which is left on the wall for the present. Prospects are good and work is pushed.

## Riverside County.

(From Our Special Correspondent.)

**Menifee.**—The test run of the new mill at this mine, 8 miles south from Perris, was satisfactory. The 10-ton cyanide plant has also been completed. The mine is to be pumped out and developed.

## San Bernardino County.

(From Our Special Correspondent.)

**Bagdad.**—Twelve men are employed at this mine, south of the Gentry group, in the Buckeye District; \$70 ore is being hoisted from the 20-ft. shaft. John Suter & Company are owners.

**John R. Gentry.**—At this group of claims in the Buckeye District 8 miles south from Ludlow, 8 men are working. Another carload of ore, rich in gold and copper, has been shipped to the smelter at Pueblo. About 3 more carloads are ready to ship, while a large amount of ore is in sight. 7 ft. of the vein averages \$24 per ton in gold.

**Rose Gold Mining Company.**—This company,

whose mines are at Victor, claims to mine, mill and cyanide the ores of its property at a cost of \$2.44. The mill is provided with a series of crushers, and 33 tons of ore per shift of 11 hours are treated with 1 engineer, 1 crusher feeder, 1 laborer in the vat and 1 solution man operating the plant. The cost per ton is as follows: Mining, \$1.25; milling, oil, fuel, cyanide of potassium, lime and zinc, \$1.09; discharging the vat, 10c.; total, \$2.44.

## San Diego, County.

(From Our Special Correspondent.)

**Barona Copper Mining and Smelting Company.**—This company has been organized with a capital stock of \$500,000 for the purpose of developing a large ledge of copper at San Vincente, which shows remarkable surface indications. One prospect shaft has been sunk 35 ft., showing a ledge of ore 23 ft. wide assaying from 8% to 20% copper. This shaft is to be sunk 200 or 300 ft.

March 17, 1900 p327

## Riverside County.

(From Our Special Correspondent.)

**Indian Queen.**—The shaft at this mine,  $\frac{1}{2}$  miles west from Perris, is now down 115 ft. and some high-grade ore has been taken out. Seven men are employed at present. A 5-stamp mill is on the property.

## San Bernardino County.

(From Our Special Correspondent.)

**Gold Crown Mining and Milling Company.**—This company has been organized to work 8 claims on the Colorado River, in the Pichaco Mining District. The directors are R. L. Craig, B. W. Lee, D. W. Field of Los Angeles, and W. H. Holcomb of San Bernardino. A. J. Smith,

who has been appointed general manager, will begin active work at once. Orders for machinery have been placed.

March 24, 1900 p357

## Kern County.

(From Our Special Correspondent.)

Buckboard.—A mill run of 200 tons of ore from the 10 ft. ledge of this mine at Randsburg is said to have averaged \$15 per ton. The 5-stamp mill is crushing day and night.

March 31, 1900 p387

## San Bernardino County.

(From Our Special Correspondent.)

Tecopa Smelting Company.—It is reported that this company is shipping from its property near Manvel an average of 2 tons of lead bullion to the smelter at Argentine, Kan. This bullion carries 100 oz. of silver and \$15 in gold per ton.

April 7, 1900 p417

## Inyo County.

(From Our Special Correspondent.)

Mineral Hills Mining Company.—This company, which has been developing claims 4 miles south from Ballard, reports that they have 9 prospect shafts, down from 20 to 50 ft. each, which show large bodies of ore which will average \$13 in gold. About 600 tons of this ore is on the dump. New machinery and a tramway have been put in and a cyanide plant is to be erected.

Reward Gold Mining Company.—This company has been incorporated for the purpose of developing the Hirsh Mine on the western slope of Inyo Mountains, 10 miles southeast from Independence. New machinery has arrived and when installed work will begin with a large force of men.

## San Diego County.

(From Our Special Correspondent.)

Elevado.—This property, 1½ miles south from Banner, is being developed by N. D. Jones of Pittsburg, who has also purchased the Elevado Extension.

Encinitas.—The shaft at this copper mine is down about 100 ft. The ledge has widened to 6 ft. and the ore is said to assay nearly 14% copper. Three shifts are being worked. New machinery has been ordered.

Golden Cross.—The big cyanide plant, with a capacity of 333 1/3 tons of tailings every 24 hours, started work at Hedges on March 24th. There are about 800,000 tons of tailings on the dump and nearly 350 tons are taken out daily. The 100-stamp mill is to be increased to 200 stamps, making in all 240 stamps on the property. Isaac Trumbo is in charge.

April 14, 1900 p447

## Riverside County.

(From Our Special Correspondent.)

Golden Eagle.—The shaft at West Riverside is down 50 ft.; at the 75 ft. a crosscut will be run to test the ledge.

O. K.—The mill at Dale City belonging to Esler & Ingersoll, who own this mine, in the Monte Negras District, 50 miles northeast from Walters Station, has been moved 8 miles to the mine, doing away with the expense of hauling ore.

## San Bernardino County.

(From Our Special Correspondent.)

Barstow Mill.—J. R. Lane is now superintendent of this mill, which is running continuously on ore mostly from the Randsburg District.

Gannon Gold and Copper Mining and Milling Company.—This company has been organized by W. A. Baker, T. A. Gannon, I. N. Inskeep, J. J. Shay and C. H. Baker, all of Los Angeles, incorporators, to operate 14 mining claims in the Arrow mining district. About 1,500 ft. of development work in shafts, tunnels and drifts has already been done. The veins are said to be large and well defined, carrying both gold and copper.

April 21, 1900 p. 477

## Kern County.

(From Our Special Correspondent.)

Frank Heald, who has been prospecting all winter on his coal property at Garlock, has encountered at a depth of 110 ft. a third seam of coal 4 ft. thick, which he claims to be superior to those already found.

Yellow Aster.—The management of this mine at Randsburg is making great efforts to increase the water supply. The dividend declared for March was \$20,000.

April 28, 1900 p507

## San Bernardino County.

(From Our Special Correspondent.)

Bagdad.—This mine in the Buckeye District is being worked under bond by W. R. Woodward. It is said that the superintendent, C. Grant, has uncovered a large vein of high grade ore.

J. R. Gentry.—This claim, owned by Sutter, Meade and associates, is being developed by a 2-compartment incline shaft, now 45 ft. deep, and 2 levels 18 and 25 ft. long. So far the ore shipped is said to have yielded about \$10,000. W. Allen, the superintendent, works 9 men. The property is in the Buckeye District, 8 miles south from Ludlow.

## Kern County.

(From Our Special Correspondent.)

Slate Range Mining Company.—This company is milling \$12 rock in a Lane slow speed roller mill lately erected. G. I. Bradford is superintendent.

May 5, 1900 p537

## Kern County.

(From Our Special Correspondent.)

Johannesburg Mill.—The last clean-up at this mill yielded about \$10,000. Most of the ore came from the Butte and Gold Coin mines.

Val Verde No. 2.—In the east drift of this mine at Johannesburg, a 5 ft. body of ore has been opened up and in the west drift a new ledge 9 ft. wide is being developed. The 10 stamp mill can run for months on the ore in sight.

May 12, 1900 p567

## Inyo County.

(From Our Special Correspondent.)

Mineral Hill.—A 6-stamp mill, triple discharge, with a capacity of 60 tons per day, has been installed and will start as soon as the tramway from the mine to the mill is ready.

## Kern County.

(From Our Special Correspondent.)

Alpine Milling Company.—At the works, 2 miles north from the Seales Borax Works, on the Ballarat Road, cyanide and milling tests are being made on ores in the vicinity.

Big Blue.—The rumor that this group of 18 claims one mile north from Kernville has been purchased by ex-United States Marshal Long of Los Angeles, is unfounded. The property has been practically idle for years, but is regarded as promising if worked on a large scale with ample capital.

Randsburg District.—The Butte Lode Company's run of 45 tons of ore yielded \$1,300.

On account of the high charges for water, the owners of the Kenyon Mine have shut down their 2-stamp mill, and have leased an 8-stamp mill at Garlock to which they haul all their ore.

The Yellow Aster Company having had a disagreement with the owners of the Benson Well, have purchased pipe and will lay a line from the new well near Goler, to the mine. The company has removed its headquarters from Randsburg to Los Angeles, Cal.

May 12, 1900 p 567

Riverside County.

(From Our Special Correspondent.)

O. K.—Eight men are at work at this mine taking out ore from the 250-ft. level. The mill has been moved from Virginia Dale to the mine. The last cleanup yielded a \$1,000 brick.

San Diego County.

(From Our Special Correspondent.)

Encinitas.—The shaft in this copper mine is being sunk rapidly, day and night shifts being worked.

Green Mountain.—This mine, being worked by C. A. Ford & Company, has been opened up by several drifts developing a ledge about 30 ft. wide, which carries gold in paying quantities. The greatest depth reached is 70 ft. The property is located south from Whiskeytown.

May 19, 1900 p 587

Kern County.

(From Our Special Correspondent.)

The claims being developed by Wettel & Miller in Studhorse Canyon, 10 miles east of the railroad, and 1 mile south from Caliente, are shipping some very rich ore. The croppings of the low-grade main ore body are said to be 200 ft. wide.

Caliente Mining Company.—This company, developing the Barossa Beauty Mine, 7 miles northeast of Keene Station, reports an 18-ft. ledge of \$15 ore, the principal values being in the sulphurets. Arrangements are being made to put in machinery. Several other mines in the vicinity with veins running from 2 to 20 ft. are having assessment work done. The ledges are well defined and carry free gold near the surface.

Riverside County.

(From Our Special Correspondent.)

Red Cloud Mining Company.—This company has shipped a large lot of machinery to its group of 16 mining claims located in the Chuckawalla Mining District. The shipment consisted of engines, boilers, roller mill and concentrator. On arrival, work will commence on a large scale.

San Bernardino County.

(From Our Special Correspondent.)

Black Nugget Camp.—The dry placers in this district, 20 miles north of Barstow, continues to produce from \$5 to \$20 per day to the man. The pay dirt is from 6 in. to 3 ft. in depth.

Copper World.—At this mine, 55 miles northwest from Vanderbilt, near Valley Wells, a rich ledge of copper 6 ft. wide is reported to be uncovered, and arrangements are being made to develop the property. Shipments of high-grade ore were made before the works were closed down on account of litigation.

Orange Blossom.—This group of mines located about 9 miles north of Bagdad, is being developed by the Desert Prospecting and Development Company of Needles. The property is said to be very rich in free gold.

May 26, 1900 p 627

Kern County.

(From Our Special Correspondent.)

Val Verde.—A run of 200 tons of ore from this mine, milled at the Red Dog Mill, yielded over \$13.75 per ton. The Red Dog people, who now hold an option on the property, will probably purchase.

Riverside County.

(From Our Special Correspondent.)

Golden Eagle.—The shaft at this claim in the West Riverside District is 71 ft. deep, and the ledge has been cut through to the hanging-wall, showing it to be 48 ft. wide. It is reported that assays average \$40 per ton. Hayt & White are the owners.

June 2, 1900 p 657

Inyo County.

(From Our Special Correspondent.)

It is reported that the antimony deposit owned by Frank Kennedy at Wild Rose has been sold to Montgomery & Dineen, and that the first payment of \$1,000 has been made.

Mineral Hill.—The tramway in course of construction at this mine, 4 miles south from Balarat, will be completed in a few days, when the new mill will start up. The cyanide plant has been completed.

Kern County.

(From Our Special Correspondent.)

Randsburg District.—A half interest in the Meteor Mine, near Randsburg, has been sold, and development work will be pushed. About 800 ft. of work has already been done, exposing a large body of low-grade ore. A hoisting plant is to be installed at once.

The W. J. Bryan Mine is producing some very rich ore, which is being milled in the Kenyon Mill, leased by the company.

Yellow Aster.—At the last annual meeting of the stockholders of the Yellow Aster Mining Company, the old board of directors was elected for the ensuing year. The output of the mine has been about 140 tons per day. The camp now has plenty of water to keep all the mills in the district running day and night. The flow from the company's wells at Mountain Wells is said to be 40,000 gals. per days.

San Bernardino County.

(From Our Special Correspondent.)

Copper Camp.—This camp, 25 miles west of Manvel, is producing high-grade copper ore, which is shipped to the El Paso smelter. A group of copper claims just south of Copper Camp is under bond to A. E. Heighway, who is getting out high grade ore.

Copper World.—There are about 1,200 tons of ore blocked out for extraction. Two tunnels are now being pushed to find the ore body at greater depth. One of these tunnels is to be 800 ft. long and the other about 400 ft.

During the life of this mine, with a total production of about 11,000 tons, the ore has averaged 13.5 per cent copper, and a ton of ore has been extracted per man per day. A 20 mule-team hauls 35 tons on an average at each load from the mine to the smelter, a distance of 5 miles. Unless the development work reaches more ore than is now in sight the smelter will be compelled to close down within perhaps 6 weeks. This company has been greatly handicapped in its mining by a most harassing law suit, preventing many improvements and much development work.

Turquoise mining is being pushed by several operators and fine gem material is produced. The mines are tributary to Manvel.

San Diego County.

(From Our Special Correspondent.)

Live Oak.—This group of mines near Fallbrook is to be developed by the Santa Margarita Mining Company, which has been organized with a capital stock of \$2,000,000. The incorporators and directors are: C. E. Armstrong, D. W. Shepard, C. W. Baldrige, John Baird, B. T. Shepard, H. V. M. Armstrong, A. O. B. Baldrige.

June 9, 1900 p 687

Riverside County.

(From Our Special Correspondent.)

Ophir.—This property, 6 miles southwest from Ferris, is being developed by the new owner, James Sigafus, who has already struck a good body of fair grade ore. A new hoist and a 20 H. P. engine have been put in.

San Bernardino County.

(From Our Special Correspondent.)

Rich placer ground has been discovered about 20 miles northwest from Barstow. A great many locations have been made and several dry washers are on the ground. The great drawback will be water supply, as even the drinking water will have to be brought in.

Copper world? see 7/16/98

June 16, 1900 p717

## Kern County.

(From Our Special Correspondent.)

Randsburg District.—A run of 100 tons of ore from the Baltic Mine netted \$20 per ton. The Big Butte is working 15 men. The ledge in new ground now being worked assays \$40 per ton. The last clean-up at the Little Butte, from a run of 24 tons of ore taken from the west drift on the 200-ft. level, yielded over \$42 per ton.

The Yellow Aster Mining Company has contracted for a water plant at Goler, which will have a capacity of 200,000 gals. per day, to cost \$75,000. From Goler the water will be pumped 1,400 ft. higher to the company's mines. At the last meeting of the stockholders of the company the following officers were elected: John Singleton, president and general manager; C. A. Burcham, vice-president and secretary, and the National Bank of California, treasurer.

June 23, 1900 p747

## Kern County.

(From Our Special Correspondent.)

Napoleon.—This mine at Randsburg, has been opened up to 150 ft., and about \$75,000 in gold taken out. The officers of the new company are F. L. Clayton, president; F. Griffith, vice-president; J. W. Montgomery, secretary, and H. S. Hicks, treasurer.

## San Bernardino County.

(From Our Special Correspondent.)

California Portland Cement Works.—The shipments from the works of this company near Colton average 4,300 bbls. per month. Seventy-five men are employed.

Needles.—The foundations for an 80 ton custom smelter to be erected on the Colorado River at Needles are being laid, and several carloads of machinery are waiting on the side tracks. This smelter expects to obtain its ores from the many mining districts along the Colorado River above and below Needles and those camps tributary to the Atchison, Topeka & Santa Fe Railroad throughout the Mojave desert. Mr. Corning, of Chicago, is directing the enterprise.

## San Diego County.

(From Our Special Correspondent.)

National City Reduction Works.—The plant was completely destroyed by fire on June 10th. The buildings containing the mill and other machinery were erected about 9 years ago, but have been idle for some time. The cyanide plant erected by S. H. Lucas for working the tailings was also destroyed.

June 30, 1900 p777

## Riverside County.

(From Our Special Correspondent.)

Red Cloud Mining Company.—This company is developing a group of 16 claims in the Chuckawalla Mountains, which are said to be rich in gold, copper, lead and silver. A large milling and cyanide plant is in course of construction, and the main tunnel now in 200 ft. is to be continued 900 ft. further through the mountain. A wire rope tramway 7,500 ft. long connects the mouth of the tunnel with the mill. The machinery already installed consists of a 100-H. P. engine, 2 60-H. P. boilers, with a surface condenser. A large set of Cornish rolls is to be put in. E. H. Gould is Superintendent.

## San Bernardino County.

(From Our Special Correspondent.)

Ludlow Station on the Santa Fe line is shipping carloads of extremely rich gold ore at frequent intervals from the Gentry and Buckeye properties. An average of 15 shipments in carload lots to the Pueblo smelters shows a value of about \$150 per ton in gold. Milling ore of about \$40 value in gold is shipped to the Barstow Mill.

July 14, 1900 p47

## Kern County.

Randsburg Coal Field.—Work is progressing actively and a good quality of coal has been uncovered. The bed lies in the Black Mountain country, 15 miles west of Randsburg. At a depth of 50 ft. the coal was soft and rather poor, but on working further down a better quality was found.

Aug. 4, 1900 p136

## Kern County.

(From Our Special Correspondent.)

Randsburg District.—The Buckboard Mine will have a 10-stamp mill and a pipe line from Cuddeback Lake to the mine. The drift on the 300-ft. has opened up a good ore body.

Aug. 11, 1900 p167

## Inyo - Kern County.

(From Our Special Correspondent.)

Mascot Group.—At this group of 3 gold claims in the Argus Mountains, north from Johannesburg, Crowell & Cook, who represent the owners, are making arrangements to erect a 10-stamp mill. The ledge is said to carry very rich free milling ore.

Randsburg District.—The report that only 1 mipe is producing in this district has been contradicted by people on the ground who should

know. They report that the Yellow Aster Mine employs between 150 and 200 men, producing about \$60,000 per month, while the Pinmore, Val Verde, Buckboard, Napoleon, Baltic, Gold Coin, Stanford, Butte and Little Butte, are producing \$50,000 per month. One hundred tons of \$40 rock from the Butte Mine is being milled at the Johannesburg Mill.

## San Bernardino County.

(From Our Special Correspondent.)

A cyanide plant is being established by Karns & Eckis of Manvel, Cal., to work the tailings of the Campbell Mill at Vanderbilt, of which there are 10,000 or more tons. These are supposed to carry about \$8 in gold per ton.

In anticipation of the extension of the railroad from Blake to Manvel, thence to Good Springs, several mines are pushing their development work. Among them the Green Monster Mine at Sandy, Lincoln County, Nevada.

Morgan, Johnson & Evans, operating at Sandy, have just shipped in a car-load of high-grade copper ore.

The 100-ton custom smelter at the Needles is now nearly ready for business, and only awaiting an assured 1,000 tons of ore upon which to begin operations. This smelter hopes to obtain ores now being sent to El Paso, Texas, and Pueblo, Colorado. The inducements as to prices are as yet not very encouraging.

(From an Occasional Correspondent.)

De La Mar's Gold Mountain Mine.—Joseph Diederich, who has the contract for the 40-stamp mill, left for Salt Lake City a few days since to see Capt. De La Mar before he returns to Europe. This plant is all but completed and will be in commission by September 1st. Exploration progresses favorably and a mill of 5 times the capacity could be easily supplied with ore. The plant will be enlarged as soon as it is seen to fill the bill.

Aug. 18, 1900 p197

## Inyo County.

(From Our Special Correspondent.)

The conveyances of about 2,700 acres located on the nitrate beds on the Armagosa Wash, along the boundary line between this and San Bernardino counties, were recorded on August 1st.

## Riverside County.

(From Our Special Correspondent.)

O. K.—This mine has been developed to a depth of 300 ft. with levels every 50 ft., and winzes connecting the levels. It is estimated that 10,000 tons of \$10 free milling ore are in sight. Three hundred tons taken from the different levels milled \$3,600, while the tailings (which can be cyanided) averaged \$9 more. Water is hauled  $9\frac{1}{2}$  miles at a cost of  $2\frac{1}{4}$  c. per gal. The capacity of the mill is to be increased from 2 to 7 stamps, and a cyanide plant will be erected. Jos. Ingersoll is superintendent. The claims are in the Monte Negras District.

## San Bernardino County.

(From Our Special Correspondent.)

The whole country is said to be located from Coolgardie to Lanes' Mill, both west and south of Camp Vera.

Copper ledges are reported to have been discovered north of the Calico Hills, and 40 claims located through a belt about 6 miles long and 2 miles wide. The surface ore is high grade, and some veins are said to assay 10% copper with a little gold and silver.

Gold Mountain.—At Bear Lake, about 2 miles from this mine, a valuable flow of water has been tapped by well at a depth of 150 ft., and piping to the mine has begun. The supply will be ample for a 100-stamp mill. The 40-stamp mill will start up soon.

Duncan & Clark.—Ten men are at work on the claims owned by these parties, operating 2 dry

placer machines, which are said to clean up \$200 per day. Water is very scarce, most of it being hauled about 12 miles. The camp is called "Black Nugget," and is located about 20 miles north from Barstow, a station on the Santa Fe Railroad.

Macready.—The new gasoline hoists at this mine at Searchlight are working nicely. An inclined shaft is being sunk to the 400 ft. level. The ore, it is stated, continues to improve and averages from 15 to 18 ft. wide, value supposed to be \$8 to \$15 gold.

Aug. 25, 1900 p227

## Kern County.

(From Our Special Correspondent.)

Pinafore.—A new body of ore has been uncovered at this mine east from Randsburg, while pushing the main tunnel. The 10-stamp mill is running day and night, milling about 35 tons every 24 hours. The ore, which is stoped out by 3 men, is said to average \$7.50 per ton.

## San Bernardino County.

(From Our Special Correspondent.)

Copper World.—Work at this mine has resumed and is confined to blocking out new ore bodies, to insure plenty of ore for starting the smelter. The property located near Manvel is owned by the Ivanpah Smelting Company.

Sept. 1, 1900 p245

## THE YELLOW ASTER MINE, CALIFORNIA.

The Yellow Aster Mine is the largest and best-known of the group of mines in the Randsburg District in the desert section of Southern California. This district is comparatively a new one, its exploitation dating back only a few years. The district is in Kern County, about 45 miles northwest of Mohave Station on the Southern Pacific and 25 miles north of Kramer, on the Atlantic & Pacific. A description of this district in its earlier days—written by the late F. M. Endlich, one of the first mining engineers who examined it—was published in the "Engineering and Mining Journal" February 27th, 1897. Since that time there have been, of course, many changes, but much that was then said about the district still applies.

The Yellow Aster and the adjoining claims now owned by the Yellow Aster Mining Company were located in 1895 by John Singleton, F. M. Mooers and C. A. Burcham, who are still the chief owners. The property is much more developed and better provided with machinery than any other in the district; and we understand that this work has been paid for by the mine itself. The principal claims owned by the company are the Rand, the Yellow Aster, the Trilby and the Olympus, all of which really form one mine; and in addition there are several outlying claims.

The property has from the first been carefully and systematically developed, the object being to bring out its full capacity and put it in condition to be a steady producer. There are a number of shafts, the two

principal ones being the Hercules and the Vertical, the latter being so placed as to connect with every part of the mine. Owing to the nature of the country, much work has been done by tunnels. The main tunnel, which strikes the principal vein on the 750-ft. level below the upper workings, is utilized to haul ore from the mine. The ore mined is now all delivered to the mill by cars, at an average cost of 4c. a ton for tramming.

Owing to the location of the district fuel is very costly, and the managers of the Yellow Aster early recognized the advantages of the gas or oil engine. Several engines of this type are in use, and recently the company added the largest oil engine ever built in California to its plant. This engine is placed at a point 350 ft. in from the mouth of the main tunnel, at the head of an inclined double-compartment shaft. It has sufficient capacity to work down to 2,000 ft. if required. It was built by the Union Gas Engine Company of San Francisco; is of the four-cylinder vertical type, and can work up to 130 H. P. The hoisting drum is double. It is arranged to start the big engine with a small auxiliary engine, the latter being used also for running the blower for ventilating the mine. Both engines run on distillate, which is about one-half the cost of gasoline when delivered at the mine; but they can be run on naphtha, benzine or any grade of gasoline. The levers are all brought to one platform, enabling the engineer to have full control over both hoist and engine, as in modern steam practice.

At first the ore from this mine was hauled 12 miles to Garlock, and later shipped to Barstow. At that time only the high grade ore could be shipped, owing to the cost of transportation. As the mine was developed the company decided to build its own mill, and one of 30 stamps was erected, being completed in February, 1899. Since that time the ore has not been graded, but has all been passed through the mill and the 30 stamps are now running steadily, with an average output of \$50,000 in

gold per month. At the same time the mine has been a steady dividend payer, having distributed up to July, 1900, a total of \$419,416, on the capital stock of \$1,000,000. These payments have been made in addition to the large amount which has been spent on the mine and mill.

The accompanying photograph of the exterior of the mill illustrates the desolate nature of the surrounding country. The view of the interior shows the arrangement of stamps and concentrators. The mill is so built that it can readily be enlarged to 100 stamps, and it is probable that the addition will be made before long.

The ores of the district, to a depth of 200 to 300 ft., are decomposed and entirely free milling. At greater depth pyrite will probably be the chief gold bearer. Besides the main vein or ore body in the Yellow Aster the tunnels have cut many small veins, some of them exceedingly rich. As mentioned above, the company has conducted its development work with the main object of providing a steady supply of average ore for the mill, rather than breaking or selecting high grade ore. There is no doubt that this has been the true policy, and there is now in sight a very large quantity of ore which will pay to work.

Water is a very important consideration in this district, and the supply of this necessity has received much careful consideration. After trying several sources the company has finally secured a supply, the total cost of the property, pumping works, pipe line, etc., being about \$60,000. The supply now available is sufficient for 100 stamps.

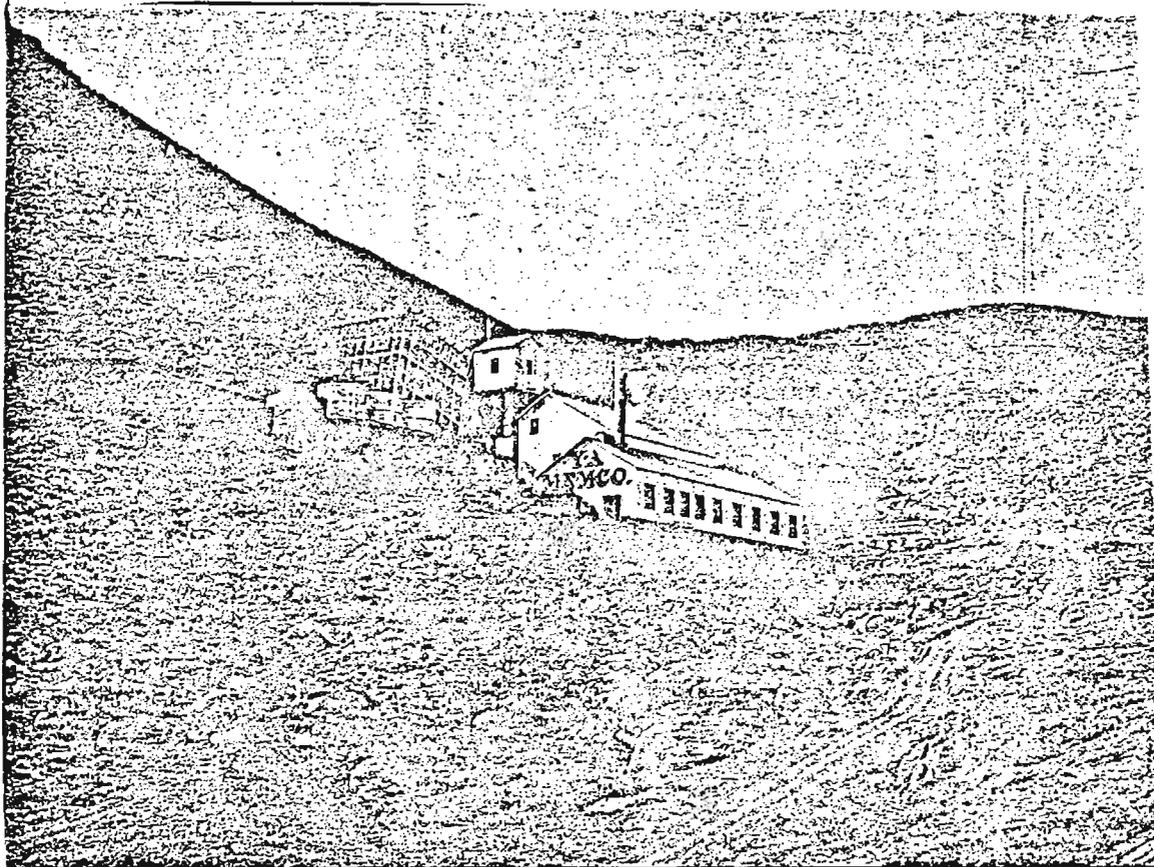
The company has passed through the vicissitudes usual in new camps, including the inevitable litigation. The title is now firmly established.

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..cont.

and the property is still in the hands of the original locators. They deserve much credit for their perseverance and their good judgment in the management and development of the mines.

The present directors of the company are C. A. Burcham, R. L. Burcham, F. M. Mooers, John M. Miller and John Singleton. The officers are: John Singleton, president and manager; C. A. Burcham, vice-president; Dr. R. L. Burcham, secretary. We are indebted to Mr. Singleton for the accompanying photographs and for the facts given above.



YELLOW ASTER MILL, RANDBURG, CALIFORNIA.

Sept. 1, 1900 p 256

Inyo County.

(From Our Special Correspondent.)

**Tuba Group.**—These claims near Ballarat are being developed, the main being down 200 ft. and a quantity of ore blocked out. The mill is crushing about 40 tons per day of 24 hours. Most of the ore is free milling.

Kern County.

(From Our Special Correspondent.)

**Winnie.**—The shaft is down 100 ft. at this mine, in the Stringer District. From the drifts on this level about \$3,000 in gold has been taken out by the leasers during the past 3 months. The owner, C. Koehn, is now sinking again. Some \$60,000 has been taken from the mine and the shaft is still in good ore.

Riverside County.

(From Our Special Correspondent.)

**Gavilan.**—Nine men are employed underground at this mine, on the San Jacinto Estate, 8½ miles northwest from Perris. The mill is running full capacity. The lessors cleared over \$1,600 from the July clean-up.

**Ivanhoe.**—This mine, in the Virginia Dale District, is reported to have been sold to a Los Angeles syndicate for \$20,000. The property has been worked for 10 years, 4 shafts having been sunk, one 200 ft. and the others about 130 ft. each. The ore is said to assay \$25 per ton.

San Diego County.

(From Our Special Correspondent.)

**Stonewall.**—About twenty men are employed at the cyanide plant at Julian, which is working the tailings hauled from this mine located 10 miles south. The results are said to be encouraging.

Sept. 8, 1900 p287

## Kern County.

(From Our Special Correspondent.)

**Butte Lode Mining Company.**—This company is still successfully working its property in Fidler's Gulch, 1 mile north from Randsburg. The last run of 82 tons of ore milled at the Red Dog Mill in Johannesburg yielded about \$4,000. High-grade ore is still stoped and shipped.

**Randsburg District.**—Some of the mills have shut down on account of the lack of water, also the cyanide plant at the Blackhawk Mine. As soon as the new pump is in place, and pumping begins on the Yellow Aster wells at Garlock, they will start up again. The Santa Ana Mine is working 5 men on a 3-ft. ledge which is said to mill \$50 per ton. Several thousand dollars' worth of ore is taken from the Napoleon Mine per month.

Sept. 14, 1900 p106

## Kern County.

(From an Occasional Correspondent.)

**Johannesburg Mill.**—A run of about 20 tons of ore from the Little Butte Mine, which is being worked under bond by McMahon & Doolittle, returned almost \$2,500.

The last run on Napoleon Mine ore at this mill averaged \$240 per ton.

**Yellow Aster.**—A most successful well has been sunk 400 ft. for water at Gosler, 7 miles from the mine and at 1,500 ft. lower elevation a 6-in. steel pipe is now nearly completed the entire distance and foundations for the pumping plant waiting for the 175 H. P. Corliss engine and Cornish pump for the well and Dean pump at the surface. It is said the company proposes to increase the number of stamps from 30 to 100, having an ample supply of ore in sight, without further development. Oil is used for fuel. As nearly as I can find, the company recovers about \$8.50 on the plates and mills everything. About \$1.50 are left in tailings. The mill handles 130 tons per day and seldom has any delay.

## San Bernardino County.

(From Our Special Correspondent.)

**Philip H. Sags,** of Kansas City, Mo., who is interested in dredging lands on the Arizona side of the Colorado River, is now in the placer district north of Barstow, Cal., prospecting claims located by some of the officials of the Santa Fe Railroad. Some of the ground in the vicinity worked by dry washers is said to yield as high as \$50 per day to the man. At present the weather is intensely hot.

**Bagdad.**—At this mine, south from Ludlow, development work is to be started. Buildings are going up, and a 25-H. P. gasoline is in place. The ore is said to yield good returns. C. Grant is superintendent.

**Gold Mountain.**—This property, located at the head of Bear Valley, 40 miles east from Victor, now owned by Capt. De La Mar, is being reopened and the new 40-stamp mill will soon be crushing. It is said that the old open cuts show large amounts of ore carrying free gold.

## San Diego County.

(From Our Special Correspondent.)

**Cincinnati Belle and Kentucky S.**—An effort is being made to consolidate these mines located about 1½ miles from Banner. A 938 ft. tunnel driven into the Kentucky S. has unwatered both mines. The Kentucky shaft will strike the tunnel at a depth of 190 ft. and the Cincinnati Belle at a depth of 225 ft.

Sept. 29, 1900 p317

## Inyo - Kern County.

**Antimony Ore.**—The first car-load of antimony from the Wild Rose Mine was shipped from Johannesburg on September 20th.

Oct. 6, 1900 p406

## Kern County.

(From Our Special Correspondent.)

**Randsburg District.**—Fifty tons of high-grade ore from the Butte Mine are being milled at the Red Dog Mill. The clean-up at the same mill from ore from the Santa Ana Mine averaged almost \$50 per ton; 40 tons from the Annex Mine is also being milled at the Red Dog. From the Buckboard Mine 30 tons of medium-grade ore has been sent to the mill. The Val Verde people have sent 100 tons to the mill.

## San Bernardino County.

(From Our Special Correspondent.)

**Desert Prospecting, Exploration and Development Company.**—This company has been incorporated with a capital stock of \$500,000. The officers are John Denair, president; W. J. Chapman, vice-president; N. E. Rich, treasurer, and L. V. Root, secretary. This company owns the Orange Blossom group of mines in the Hykorum District, near Bengal, which it intends to develop under the management of W. B. Combs.

Oct. 13, 1900 p436

## Kern County.

(From Our Special Correspondent.)

A new vein, said to be 80 ft. wide, has been uncovered on the 900-ft. level. Average assays are said to be over \$10 per ton.

**Yellow Aster.**—The management of this company has decided to increase the milling plant at Randsburg to 130 stamps.

## San Bernardino County.

(From Our Special Correspondent.)

**Parker Mining Company.**—This company has contracted for a 25-stamp mill, to be erected on its property, 60 miles below the Needles, on the Colorado River. A force of men at the mine, 3 miles from the river, is getting out ore. Development work has been in progress for 2 years under the superintendency of T. M. Drennan, of Park City, Ariz., in the interests of his Chicago company. The ore is good grade.

Oct. 20, 1900 p466-467

## Inyo County.

(From Our Special Correspondent.)

**Barnes & Anderson.**—The 5-stamp mill for Willow Springs, 2 miles from the mine, which is 6 miles from Citrus Station, is on its way to the property. There is enough high grade ore on the dump to run for a great while.

**Mazourka Canyon.**—A large force of men are working on this placer property located on the western slope of the Inyo Mountains, 7 miles east from Independence. It is estimated that 600 ft. more will complete the tunnel to bed-rock, a total of 2,400 ft.

## San Bernardino County.

(From Our Special Correspondent.)

**Copper Peak Mining and Milling Company.**—This company, organized to work copper claims in the Black Hawk District, has the following officers and directors: Wm. Carpenter, president; H. J. Rodman, vice-president and general manager; Wm. Dodge, secretary and treasurer; C. H. Frost, Wm. Wakefield, P. Bigelow and T. C. Paxton. The property comprises 11 claims located about 30 miles east from Victor. Considerable development work by shafts and tunnels has been done, exposing a large body of ore said to assay high in copper and gold besides carrying several ounces of silver. Several thousand tons of ore are on the dump.

Oct. 27, 1900 p496

## Kern County.

(From Our Special Correspondent.)

Kenyon.—The mill at this mine, 1 mile north-east from Randsburg, is running steadily. Swartout & Jones have made 2 clean-ups, the first of 14 tons yielding 50 oz. of gold and the other of 29 tons about the same.

## San Bernardino County.

(From Our Special Correspondent.)

Gold Mountain.—Arrangements have been made to increase the milling plant at this group of mines, 5 miles northeast from Bear Valley Lake and 40 miles east of Victor, to 100 stamps. A large force is at work. New claims have been located in this district and old ones are being reopened.

Nov. 10, 1900 p557

## Riverside County.

(From Our Special Correspondent.)

Iron Chief.—A large ledge carrying \$15 in gold is reported to have been found on this property in Eagle Mountains.

Nov. 24, 1900 p618

## Kern County.

(From Our Special Correspondent.)

Yellow Aster Mining Company.—This company has closed a contract with a San Francisco firm for a 100-stamp mill, to be erected at once.

## San Bernardino County.

(From Our Special Correspondent.)

Gold Mountain.—There are 75 men employed in the mine and mill on this property. The mill is run day and night, crushing about 140 tons every 24 hours. The ore is said to average \$5.50 per ton in gold. The mine is 5 miles northeast from Bear Lake. J. D. Spargo is superintendent.

Leoti.—Five tons of ore milled from this mine in the Dale District, yielded, it is said, about \$92 per ton in gold. The amount of ore on the dump is stated to be 800 tons. It is a cyanide proposition and the owners intend to erect a plant to treat the dump and the future output.

Dec. 1, 1900 p647

## Riverside County.

(From Our Special Correspondent.)

O. K.—This mine in the Monte Negras District, 50 miles northeast from Walter's Station, will start in a few days. The old workings comprise a 300-ft. shaft, with levels every 50 ft. both north and south. There are said to be 10,000 tons of ore in sight. A 2-stamp mill is on the property.

Dec. 8, 1900 p676

## Kern County.

(From Our Special Correspondent.)

Yellow Aster Mining and Milling Company.—In the United State Circuit Court, on November 28th, Judge Ross rendered a decision in favor of plaintiffs in the case of the Yellow Aster vs. O. B. Stanton, E. J. Baldwin, R. H. Lloyd, et al. The suit was brought to quiet title to mines in Kern County, and the decision establishes the company's title beyond question.

Dec. 8, 1900 p676

## Riverside County.

(From Our Special Correspondent.)

Grand Canyon Mining and Dredging Company.—This company has been organized with the following officers and directors: W. G. Riffenburg, Jno. Wolfskill, R. H. Variel, E. E. Maillette and A. Gassell. The company will develop the Gold Standard and other mines in the vicinity. A 70-H. P. engine, crusher, etc., including a cyanide plant, will be put in.

## San Bernardino County.

(From Our Special Correspondent.)

Parker Mining Company.—Sixty-five miles south of the Needles, a large force of men is working on the property of this company. The mine is located 4 miles from the river. Good ore is being stoped out and sent to the mill, which is on the river. The road to the mill is being improved.

Dec. 15, 1900 p707

## Inyo County.

(From Our Special Correspondent.)

Emily Enid and Bonanza Jim.—These mines, 5 miles southeast from Bishop, have been bonded to Ashford & Inman, of Randsburg, for 6 months from January 1st, work to start within 30 days. There is a large body of low-grade ore, with plenty of water for power.

## Riverside County.

(From Our Special Correspondent.)

Pinon.—This property in the Pinon District, 25 miles north from Indio, has been purchased by Ertel & Glove, of Los Angeles, who intend to install machinery and work the large body of tailings before continuing development. The old works consist of 2 shafts, one 75 ft. and the other 100 ft. deep, besides about 400 ft. of tunnels. C. B. Fischer will be superintendent.

## San Diego County.

(From Our Special Correspondent.)

American Girl.—A 100-ton cyanide plant is being installed at this mine near Hedges and other improvements are being made. H. H. Markham is owner.

Picacho.—It is stated that a large cyanide mill is to be erected for this gold mine on the Colorado River. Among the owners of the mine who recently visited the mine with a view to arranging for the placing of the plant are Senator J. P. Jones, of Nevada; ex-Senator Stephen W. Dorsey, J. Harry Carpenter, of Arizona, and others. The plan includes building a railroad from the mine to the mill.

Dec. 22, 1900 p737

## San Diego County.

(From Our Special Correspondent.)

Near Warner's Ranch a rich find has been reported. The ledge, which is 6 in. wide, is said to have been traced 3,000 ft.

Picacho.—It is reported that S. W. Dorsey and associates intend to erect a 1,000-ton cyanide plant at this group of mines on the Colorado River, about 40 miles north from Yuma. A railroad from the mines to the mill on the river is part of the plan.

## Kern County.

(From Our Special Correspondent.)

Big Blue.—This old mine, 1 mile north of Kernville, comprising 11 claims on the Big Blue vein and 7 claims on smaller veins, is to be reopened and a small force is now clearing away the old flume and the debris. A ditch is to be constructed which will be used to develop power for an electric plant. Forty stamps of the old mill are to be put in order.

Dec. 29, 1900 p 767

## Kern County.

(From Our Special Correspondent.)

Butte Lode Mining Company.—This company has realized over \$6,000 in gold from a mill run of 72 tons of ore from the Butte mine. Twenty men are employed. All the ore now taken out is said to be rich.

## San Bernardino County.

(From Our Special Correspondent.)

Needles Smelter.—This smelter, with a capacity of from 80 to 100 tons per 24 hours, has started up. T. H. Barclay is in charge.

Jan 5, 1901 p 11

## California Mines in 1900.

(By Our Special Correspondent.)

Mining as a whole was prosperous in California during 1900. This condition is not due to any support from the wealthier classes who are indebted to the mines for their fortune, but to the confidence shown by prospectors and local merchants scattered throughout the interior of the State. So far as any aid to legitimate mining from the mercantile or moneyed people of San Francisco is concerned, it would be waste of time to seek it. Neither the merchants nor brokers are inclined to invest in any mines, except, perhaps, in some with speculative possibilities, such as existed in years gone by in Pioche or on the Comstock. They will extend no financial aid to the development of the mineral resources of the State.

No better illustration of this policy could be adduced than the history of the Copper Mountain property, which went begging here for many years. When presented to local capitalists the only response was a query regarding copper, which implied an absolute lack of confidence in the future for the metal. However, a foreign company eventually supplied the necessary funds to exploit the property and determine its value, which proved to be far beyond the original calculations. It is now a thoroughly established fact that some large deposits of copper ore are to be found in California, covering an area extending from San Bernardino County on the south to Del Norte County on the north, yet none of these mines have been developed by home capital, excepting what has been done by individual miners working in their own behalf. The Copper King of Fresno County, offering inducements to a British company, was taken in hand and the developments were of such a character as to justify the erection of large and expensive smelting works on San Francisco Bay.

In the north Captain J. R. De La Mar, another wealthy and enterprising outsider, is opening up extensive mines in Shasta County which promise to equal, if not surpass in point of production, the Copper Mountain property. In Calaveras County the Williams Brothers are developing with their own money the old Napoleon, near Copperopolis, backed by experience gained in their former successful venture, the Copper Queen, which made a fortune for them after it had been dropped by some San Francisco men who thought it had petered out. Boston capital is now backing some extensive work in the southern portion of the State opening up copper deposits, and smelting works are now in course of erection at Raymond, in Madera County. The prediction can be made with safety that in the future copper mining will be an important industry in California, but the indications are that the mines will pass into the hands of Eastern and foreign capitalists, as their value and the importance of the industry are evidently not appreciated at home.

During the period under review there has been no important gold development in California. Some small mines have opened out well in Siskiyou, Shasta and Trinity counties, a very large proportion of the ores from them finding a ready market at Keswick, where quartz has been in urgent demand for flux at the smelters. Elsewhere in the mining districts north and south, the old-time mines still in operation have simply held their own.

With the prospects for cheaper fuel as a result of the increased production of oil throughout the State, and the transmission of electrical power from the mountains, the cost of mining and milling will, for the future, be largely reduced and a marked increase in production of gold from quartz veins may be expected.

The success of dredging machines, not only on rivers but on the alluvial deposits found in flats and benches in proximity to dry river beds, has helped this year to keep the gold production up to the average, and from this time forward this branch of the mining industry will grow in importance. The annual yield of gold in California will increase year by year from this source, and if Federal legislation can be invoked which will permit the resumption of hydraulic mining while protecting the interests of both the farmer and miner, there is nothing to prevent California again taking the lead among the gold-producing States of the Union.

The promotor of mining schemes for outside markets has scored no successes in California of late, and outside of one or two reconstruction schemes in London, the State has not been represented during the year by any foreign flotations.

There has been a demand of late for quicksilver mines from the East,

Feb. 9, 1901 p 186

## Riverside County.

(From Our Special Correspondent.)

Golden Eagle.—Twelve tons of ore are to be shipped from this mine at West Riverside to the smelter as a test. Some of the ore assays very high.

## San Diego County.

(From Our Special Correspondent.)

American Girl.—The new milling plant at this mine near Ogilby, consisting of Cornish rolls, will have a capacity of 200 tons per day. The cyanide plant in course of erection will also have the same capacity. The ledge is very large and low grade. With improved machinery it is thought the ore can be worked at a large profit.

Ulie.—This dredge at the "Potholes," about 25 miles north of Yuma, on the California side of the Colorado River, is worked by a Colorado syndicate successfully, it is said. In this vicinity a large area of the river banks has been located on each side.

March 9, 1901 p 312

## San Bernardino County.

(From Our Special Correspondent.)

About 60 miles south from the Needles on the California side of the Colorado River, a valuable deposit of gold and copper ore has been found. The ledge is said to be from 4 to 14 ft. wide, assaying high in gold and copper.

Gold Mountain.—At this mine, near Holbrook Valley, 40 miles east from Victor, 5 miles north east of Bear Valley Lake, a 40-stamp mill is crushing about 130 tons of ore per day. The plant is to be increased to 140 stamps with a

## Kern County.

(From Our Special Correspondent.)

Yellow Aster.—The new 100-stamp mill will increase the capacity to about 550 tons of ore per day. The 3 parallel veins are all producing good milling ore. No dividends will be declared until all the new machinery is paid for. A new pump will be put in at the Goler Wells.

March 23, 1901 p368

## San Bernardino County.

(From Our Special Correspondent.)

**Hidden Hills.**—This group of 5 claims on the eastern slope of Providence Mountains, about 20 miles north of Fenner Station, at an altitude of 4,000 ft., will be reopened and operated by Dr. Reese and Monahan & Murphy, of Needles. The old workings consist of a 165-ft. shaft, which is said to have produced \$36,000 in gold.

**Peacock.**—These copper claims south of Lavick in the Old Mountain District, will be opened up by a St. Louis syndicate whose representative is on the ground. The deposit is said to be very large. The intention is to concentrate the ore and ship to the smelter.

**Roosevelt Mining and Milling Company.**—This company has been organized, with a capital stock of \$200,000, with the following officers and directors: Sherman Washburn, president; Jas. E. Parker, vice-president; E. E. Selph, secretary, and V. L. Carroll, C. R. Emery and P. H. Ehlers. The company will start development work at once on 2 silver-lead claims located about 11 miles from Ludlow. C. R. Emery is superintendent.

**Turquoise.**—This old mine, situated about 62 miles northeast of Manvel, has been purchased by Tannenbaum & Company, of New York. A small force of men is at work picking and sorting the turquoise.

March 30, 1901 p410

## Kern County.

(From Our Special Correspondent.)

**Johannesburg Reduction Works.**—Changes are being made to substitute oil fuel for wood and coal. Two tanks having a capacity of 3,500 gals. each have been placed on the hill back of the mill.

**Yellow Aster.**—A new ore body in a soft formation, assaying \$125 per ton, has been discovered at this mine in the Randsburg District. The new 100-stamp mill is now ready to receive ore at the rate of 600 tons per day. The working force has been increased.

## Riverside County.

(From Our Special Correspondent.)

**Golden Eagle.**—A wagon road has been constructed from the county road to the foot of the mountain, where a trail leads to the mine at an elevation of 500 ft. Down this trail the ore will be brought on sleds. Some 15 tons of ore have already been shipped to the smelter for a test run. Messrs. Hyatt & White are owners.

**O. K.**—About 12 tons of ore averaging \$20 per ton are milled daily at this mine in the Virginia Dale District, 50 miles northeast of Walters Station. If the pipe line to convey water proves satisfactory the Brooklyn, Supply and Ivanhoe will resume work.

## San Bernardino County.

(From Our Special Correspondent.)

It is reported that a Los Angeles syndicate has located 1,250 acres of salt marsh about 25 miles southeast of Danby and is preparing to start work on a large scale. This salt deposit is very extensive, and was formerly worked by the Crystal Salt Company.

It is reported that D. P. Doak, of Kansas City and St. Louis, will erect a 60-ton smelter in the Pass adjacent to the State Line Pass, between Ivanpah and Mesquite Springs. His intention is to treat copper ores from the Tecopah, Resting Springs and Polomac mines, which he controls. As custom ore will be taken this smelter will be of great benefit to mine owners in the vicinity.

**Columbia.**—The old mill on these claims in the Gold Belt District has been replaced by a new 10-stamp mill. On the dump are 500 tons of ore which will be concentrated.

April 6, 1901 p440

## Kern County.

(From Our Special Correspondent.)

A new water system is going in about 4 miles east from Johannesburg. The water comes out of the mountain, 275 ft. above the town.

**Big Blue.**—This group of quartz mines 1 mile north of Kernville, owned by J. P. Jones, is being developed. A new hoisting plant is being erected in place of those which burned down some years ago. A 10-stamp mill is to be installed.

**Hawkeye.**—Twenty tons of rich ore are on the dump at this mine 3 miles southeast from Randsburg. The property is being operated by Stently & Zandt, who are sinking with good prospects.

**Yellow Aster.**—Both water reservoirs have been completed and when dry will be filled with water. Men are covering the pipe line with earth before the hot weather sets in. The Goler well has been sunk 15 ft. deeper. The new gas engine installed in No. 2 shaft about 240 ft. lower than the present one will enable the company to sink to the 1,200-ft. level.

## San Bernardino County.

(From Our Special Correspondent.)

About 15 miles east from the Burcham Oil Camp the season is likely to be a good one for dry gold washers. Many miners have wintered there and many are expected to rush in this month.

**Old Woman's Mountain.**—In this district about 8 miles southeast, from Danby, a number of promising claims are being developed and some ore going as high as \$20 to the ton is being shipped to the smelter at Needles. Among other mines producing are the Davida, Hunter, Paymaster and Silverware.

April 13, 1901 p470

## Kern County.

(From Our Special Correspondent.)

The Randsburg Railway is building a sampling works at Johannesburg.

**Baltic.**—The last run of 70 tons of ore taken from this mine at Randsburg and milled at the Red Dog Mill averaged over \$15 per ton.

**Butte.**—About 23 men are working at this mine 1 mile north of Randsburg. New machinery is being installed; 75 tons of ore recently milled at the Red Dog Mill averaged \$125 per ton. This ore was taken from a depth of 260 ft. The same grade ore has been encountered on the next level 63 ft. below. The main shaft is being sunk another 100 ft.

**Kinyon.**—At this mine at Randsburg a 4-ft. ledge has been developed by William Inman, which assays \$30 per ton. Arrangements are being made to put in a mill.

**War Eagle Mining Company.**—This company has been organized with the following directors: J. R. Clark, E. P. Clark, O. C. Bryant, A. L. Stewart and A. T. Stewart. The company intends to work a large low-grade property west of the Yellow Aster mines.

## San Bernardino County. (Riverside)

(From Our Special Correspondent.)

**Red Cloud.**—A 100-ton smelter has been erected at this mine, 30 miles from Salton. About 50 men are employed. In this district 2 10-stamp mills, which have a daily capacity of 300 tons per day, have been completed. Enough ore is said to be in sight to keep them busy for a year.

## San Diego County.

(From Our Special Correspondent.)

**Helvetia.**—Considerable development work has been done on this property this winter, and machinery is now being taken in for the mill and plant. The property is located in the Julian District, about 1½ miles southeast from Julian.

April 20, 1901 p496

Inyo County.

(From Our Special Correspondent.)

Mazourka Mining and Water Company.—This company has been working a bar at 1,700 ft. and sluicing the gravel with good results. Work continues on the main tunnel and water has been struck at 2,470 ft. This tunnel was started 2 years ago. The company is composed of Los Angeles men, with A. M. Squires as superintendent.

Reward Mining Company.—A full force of men is employed on the property of this company, 10 miles southwest of Independence. High-grade ore is being hoisted. The erection of a 10-stamp mill is contemplated.

Eclipse.—This mine, near the Reward, is sinking a new shaft which is down 150 ft. Geo. Montgomery is superintendent.

Kern County.

(From Our Special Correspondent.)

The contract for grading the railway from Gosford, on the McKittrick branch line of the Southern Pacific, to Summit, has been let and the construction camp established. Proposals will be asked for during the coming week for laying rails, and work will be rushed to completion before fall. J. T. Williams has been appointed chief engineer of the road. This road will tap the Sunset Oil District and then run in a northerly direction toward the McKittrick, taking in all the large producing wells.

Croesus Company.—This company, which is working the Primrose Mine, has contracted for a 50-ton cyanide plant, which is to be in operation in about 2 months. About 8,000 tons of tailings have accumulated on the dump.

San Diego County.

Lepidolite Mines.—Suit has been brought in the Superior Court against Wade Chance, of New York City by R. G. Douglass and Mrs. R. O. Butterfield, owners of 2 lepidolite mines at Pala. It is alleged that the New Yorkers secured an option on the property and carried on development work for some time. The representatives of the company, it is charged, ran tunnels and shafts and then covered them up with waste to conceal the value of the property. A lien was given to the firm upon 1,000 tons of ore to secure the payment of money advanced, but now the firm claims a lien upon the whole property and is seeking to foreclose it.

April 27, 1901 p538

Inyo County.

(From Our Special Correspondent.)

Barnes & Anderson.—The new concentrators have been installed, and the 2-stamp mill is running full time on \$50 ore, plenty of which is said to be blocked out. A mule train hauls the ore to the mill.

Kern County.

(From Our Special Correspondent.)

Butte Lode.—About 75 tons of ore from this mine on the 5th level, 262 ft. from the surface, milled over \$125 per ton. On the lowest level the same character of ore is found. The property is north of Randsburg.

Winnie.—This claim in the Stringer District is being developed under bond by Goldsmith & Robb, who have put the property in good shape. There are 2 shafts down about 120 ft. each, while a winze has been sunk 50 ft. at the end of the drift. The last mill run at the Red Dog milled \$40 per ton, and it is said that there is plenty of high-grade ore in sight.

San Bernardino County.

(From Our Special Correspondent.)

Dean & Jones.—The output of this mine in the Slate Range is reported to be about \$25,000 per month.

May 4, 1901 p568

San Bernardino County.

(From Our Special Correspondent.)

Buckeye.—This group of mines, located 8½ miles south of Ludlow Station, consisting of 6 claims on which considerable development work has been done, has been sold to a New York syndicate which holds large interests in the Randsburg Railway and the Santa Fe Reduction Works at Barstow. One shaft has been sunk 300 ft., and several drifts show, it is said, large bodies of \$12 ore. A well is to be sunk, and if water is found a milling plant will be installed. About 10 men are now working under E. H. Stagg.

May 11, 1901

Kern County.

(From Our Special Correspondent.)

Bobtail.—This mine at Mojave has been purchased by Woods, Stag and Congdon, who are getting in supplies and tools preparatory to starting men at work. Two car-loads of ore recently milled at the Red Dog Mill yielded well in free gold.

May 18, 1901 p628

Kern County.

(From Our Special Correspondent.)

Angus Butte.—This property in the Angus Range has produced some rich smelting ore which has been shipped to the smelter at a heavy expense. Although there is a mill on the property, the ore is too base to mill at a profit. San Francisco people are the owners.

Butte Lode.—The last run of ore from this mine, north of Randsburg, was 34 tons at the Red Dog Mill. Average returns are over \$116 per-ton. The new hoist is in place and works satisfactorily. Among the improvements are new ore bins, track and buildings to enclose the engines and hoist. These improvements will be completed in a few days, when stoping and hoisting will be resumed.

Yellow Aster.—This mine works about 180 men and 130 stamps are dropping. On the Trilby Claim the deepest workings are 800 ft. from the top of the hill, and the ledge so far as known is over 80 ft. wide. In the deepest shaft of the Olympus, a gasoline hoist has been installed,

and sinking will be resumed to reach the lowest level of the Trilby about 250 ft. A shaft 70 ft. deep has been sunk on the California which shows a 6-ft. ledge in the bottom. The company owns 20 other claims.

San Bernardino County.

(From Our Special Correspondent.)

Santa Fe Reduction Company.—The mines in the Buckeye Mining District, 8 miles south of Ludlow, recently acquired by this company, are looking well. On the Bagdad Claim the shaft is down 300 ft., crossing a 7-ft. ledge of good ore. It is the intention of the management to sink 200 ft. more before doing any drifting or stoping. Ten men are employed. An effort will be made to develop water near the mine.

May 25, 1901 p 670

## Kern County.

(From Our Special Correspondent.)

War Eagle.—The new ledge uncovered at this mine adjoining the Yellow Aster Mine has been found to be 11 ft. wide, and in the incline shaft the vein is 6 ft. A large force of men is working day and night.

## San Bernardino County.

(From Our Special Correspondent.)

Old Woman's Mountain District.—At the Silver Wave Mine a mill is going up. The Stemwinder and other mines in the vicinity are shipping ore.

June 1, 1901 p 700

## Kern County.

(From Our Special Correspondent.)

Plute Chief.—This mine in the Plute Mountains, being developed by R. E. Doan and associates, is said to be looking well. The 4-stamp mill is crushing high-grade ore. The concentrates are shipped to the smelter.

Yellow Aster.—The deepest workings in this mine at Randsburg are 1,100 ft. Sinking still continues and drifts are being run while about one-half of the force of 200 men is engaged in stopping, hoisting and milling the ore.

## San Diego County.

(From Our Special Correspondent.)

Advance Dredging Company.—The large Urlic gold dredge belonging to this company located at the Pot Holes on the Colorado River, which has been aground for several months, has been floated by the recent rise in the river and will now work on the bars and banks of the river.

June 8, 1901 p 724

## THE GYPSUM AND CEMENT PLASTER INDUSTRY IN CALIFORNIA.

Written for the Engineering and Mining Journal by G. P. Grimsley.

The grinding of gypsum rock into land plaster for fertilizing purposes has been carried on at a number of places in California, where deposits of varying thickness and quality have been opened. In 1892 and for some years afterward land plaster was made at Coalinga from a 10-ft. stratum and used to a considerable extent in the rich fruit belt of Tulare and Fresno counties. In various parts of Los Angeles, Riverside and Santa Barbara counties gypsum deposits in tertiary clays have been used for land plaster.

The manufacture of plaster of paris in the State seems in several cases to have resulted in failure of the companies engaged in the work, partly on account of the selection of a poor quality of rock, and partly on account of the lack of skilled calciners. While there are large deposits of gypsum rock found at numerous places north and south, through the Sierra Nevada and Coast Range, most of the material so far tested seems to be too impure for plaster of paris and forms a dark plaster.

The pioneer in the plaster of paris industry in California was Mr. John Lucas, who came to the State in 1865 after a number of years' experience as calciner for the Phoenix Plaster Company, of New York City, one of the leading old-time companies. Mr. Lucas experimented with various deposits of gypsum and finally selected a deposit near San Luis Obispo, the rock from which was brought to San Francisco and burned in an ordinary gypsum kettle into the "Golden Gate" plaster of paris, which is still one of the most popular brands on the Coast. The business is continued by the sons of the founder of this industry, on the original site, which is now in the business portion of the city surrounded by prominent foundries and machine shops. For some years the company has secured its supply of rock from San Marcos Island in the Gulf of California, nearly 1,500 miles away. This island is 7 miles long and 3 miles wide, with 280 ft. of gypsum exposed over a large part of its area. The rock is a cream-white in color, very compact, and of a high degree of purity, making an excellent plaster.

The gypsum cement wall plaster industry is now passing through the fire of adverse criticism on the Coast that it suffered years ago in the Mississippi Valley, and it is strange to find this section nearly 10 years behind the Eastern in recognizing the value of hard plasters. In the leading cities of the East its advantages are no longer disputed and the industry has made rapid progress. From my experience in Mississippi Valley gypsum investigation, I believe this Western region is especially favorable for the hard wall plaster industry on account of its oil fuels and good quality of gypsum for this work, and the facilities for water as well as by rail transportation.

Gypsum cement plaster is now made at only one place in the State, at Palmdale, 62 miles from Los Angeles on the Southern Pacific Railroad, where the Alpine Plaster Company, of Los Angeles, has been engaged in this work for the past 10 years. This company is incorporated with \$100,000 capital and owns a gypsum deposit of 240 acres, which has been worked to a depth of 10 and 20 ft., and averages about 95 per cent. gypsum. This rock is transported to the works at Los Angeles, crushed in rock crushers, ground in a buhr-mill, and burned in two 8-ft. kettles with oil fuel. The mill is now in process of removal to the quarry at Palmdale, and the company plans to increase the business at various places along the Coast. The finished product is faster setting than the Eastern plasters, reaching its set in 45 minutes, and it has been used with success in a number of large buildings in Los Angeles, San Francisco, and other places.

On account of the mild climate of California, gypsum plasters can be used for outside work as well as on interior walls. Some of the earlier attempts at manufacture of hard plasters proved to be failures, and this has retarded the introduction of good plasters, and there appears to be a prejudice against the use of cement plasters on account of the firm hold ordinary lime plasters acquired through their long use. This has worked against the introduction of the product and has forced other companies engaged in this work to cease operations. The business of the Alpine Company has steadily increased, and cement plaster manufacture is bound to be one of the important industries in this State.

June 8, 1901

## Inyo County.

(From Our Special Correspondent.)

Montezuma.—This gold mine near Big Pine is being developed with 16 men, who also are preparing for the erection of a 5-stamp mill. No more ore will be shipped to San Francisco, as arrangements are contemplated for water for the mill.

## San Bernardino County.

(From Our Special Correspondent.)

Barstow Mill.—This mill is running 40 stamps on ore received from mines in the vicinity of Randsburg, Ludlow and Mojave.

June 15, 1901 p 761

Inyo County.

(From Our Special Correspondent.)

O Be Joyful.—It is reported that this group of mines near Ballarat, in the Panamint District, has been sold to Mrs. E. B. Flint, of Los Angeles, for \$30,000.

Kern County.

(From Our Special Correspondent.)

The Sunset Railroad will be completed by the end of July. The grading is now 8 miles from Gosford, where the road branches off from the McKlitricks Division of the Southern Pacific, and the rails are laid for 4 miles.

Butte Lode Mining and Milling Company.—Sixty-four tons of ore from the mines of this company at Randsburg, milled at the Red Dog Mill, yielded \$5,500 in bullion, most of the ore averaging over \$100 per ton. The company has an up-to-date hoisting plant.

King Solomon.—This group of mines, comprising the King Solomon, Hector, Magpie, Kootenai and Desert Queen, has been bonded to L. R. Garrett of Los Angeles, for one year. Work is to be carried on continuously and at the end of 4 months the first payment of \$1,000 is to be made. Percy McMahon is superintendent.

King Solomon Mining Company.—This company has started work at the eastern base of Mount Breckenridge, 4 miles south of Havilah, in a low range of hills. Men are grading a road 1½ miles from the stage road to the camp, and a 10-stamp mill is to be erected, the machinery and lumber for which have already been ordered. The company also owns the old Haight Mine, about 4 miles east of Havilah.

Merton Mining Company.—This company's shaft, 2 miles south of Randsburg, is down 400

ft. and is still sinking. A contract will be awarded soon for a 10-stamp mill. This company has completed plans for a 3-mile pipe line from Cuddaback Lake to its holdings near Randsburg. The company will put in a pump at the lake and will supply a number of mines as well as their new mill.

Occidental Water Company.—This company, which is laying a pipe line to Sunset to supply that district with water, has begun suit against C. Cohn and the Sunrise Oil and Mining Company to condemn right of way for the line. The company has almost completed the line, and if this suit is settled will be able to furnish water inside of a few weeks. The water rate is now very high, some of the companies having to pay \$500 a month.

San Joaquin Oil and Development Company.—This company's well No. 16 is called the greatest gusher in the Kern River fields. The well spouted at least 2,000 bbls. a day. The company now has 6 producing wells.

Yellow Aster Mining Company.—At the regular meeting of the stockholders the following officers were re-elected: John Singleton, president; Austin Burcham, vice-president, and Rose L. Burcham, secretary.

June 22, 1901 p 791

Riverside County.

(From Our Special Correspondent.)

Brooklyn Mining Company.—The 8-mile pipe line from the pumping plant to the mill is completed and working satisfactorily. It can supply not only water for the Brooklyn and Los Angeles groups, but also for the O. K. Mill and Supply Mill. The line runs in a southeast direction over the Gold Range and Jackson Mines, up past the Supply Mill, around the Leota Mill Hill, up the O. K. wash and over the grade to the O. K. Mine, and then to the Brooklyn Mill.

San Bernardino County.

(From Our Special Correspondent.)

Black Nugget Camp.—Duncan & Clark, who worked their dry placers at this camp so successfully last season, are preparing to start up again. They have the richest group of claims in the district. It is said that this district will be worked very extensively this season.

June 29, 1901 p 832

Kern County.

(From Our Special Correspondent.)

Blackhawk.—Ore is still being taken out of this mine 3 miles southeast of Randsburg. During the last 5 months the mill has produced in bullion \$4,450 from its own ore, besides earning almost \$1,500 by crushing custom ore, which netted the owners about \$3,000.

San Diego County.

(From Our Special Correspondent.)

Helvetia.—A pipe line has been laid from the San Diego Mine, 1 mile northeast from Julian, to this mine 1½ miles southeast from Julian. It is proposed to pump the water out of the former mine and pipe it to the Helvetia Mill, as there is not sufficient water to keep the mill running day and night.

July 20, 1901 p 71

THE PORTLAND CEMENT INDUSTRY IN CALIFORNIA.

Written for the Engineering and Mining Journal by G. P. Grimsley.

Nearly 650,000 barrels of portland cement were imported from England, Germany and Belgium into the port of San Francisco during the year 1900, on which the import duty was about \$206,000; and from the present outlook even more will be imported during the year 1901. Portland cement is constantly coming into greater demand through its use for exterior masonry construction as well as for interior work, and most of the material used by California contractors bears a foreign stamp.

In looking for causes of the lack of local mills on the coast, one finds the same objections urged as were given some years ago in the East, and which the perseverance of the Pennsylvania and New York companies has to a large extent overcome; namely, that foreign cements are superior to the American product, and that it is much safer and cheaper in the long run to use a standard foreign cement.

It has been clearly demonstrated in the Eastern and Central States that American cements can be made equal to the best foreign brands, and why this cannot be done on the Pacific Coast is an important problem. Limestones, shales and clays exist in large quantity in various parts of California, and experiments show that some of these at least are suitable for making cement, both natural and portland.

Twenty-five years ago natural cement was made by the Benicia Cement Company under the direction of Philip Caduc at Benicia, on Suisun

Bay, a few miles from the city of San Francisco. The rock used was a soft nodular limestone imbedded in a harder rock, and these nodules were broken out and hauled to the mill at a cost of \$5 per ton. About 200 bbls. of cement were made a day in rough egg-shell kilns, and it was used in San Francisco in sewer construction, in the foundations of the City Hall and in the Palace Hotel, where it stands to-day in good condition. After seven years of successful operation, which yielded a small fortune to the owners, the plant was sold to a new company for \$40,000, and failed through poor management.

A second attempt was made some years later at Benicia to manufacture portland cement by a combination of limestone from Contra Costa and Colano counties. About 100 bbls. were made, and the tensile strength in 28 days was 440 lbs. per square inch. The cement was of chocolate color, due to some manganese in the limestone.

About this same time a former ship captain attempted to make portland cement at Santa Cruz by using a soft concretionary limestone containing about 90 per cent. of lime, and a clay with 85½ per cent. silica and alumina hauled 18 miles to the mill where the mixture was burned in open brick kilns with wood fuel. Some of the cement reached a tensile strength of 400 to 450 lbs. in seven days, but in the poor kilns and with poor fuel, the product was uneven and the venture soon proved to be a financial failure.

Some years ago at Jamai, near San Diego, cement was made by moulding the raw material into bricks which were burned in a dome kiln with Australian coke for fuel, then grinding the clinker in French buhr stone mills. The expensive fuel and labor brought this work to an end.

These failures have always been quoted as an argument against the manufacture of cement in California, and new cement companies have been looked upon with more suspicion than almost any other line of investment.

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In the Santa Cruz locality there is a large quantity of limestone and shale which have been tested and proved to make a good quality of cement. Near Suisun Bay, just northeast of San Francisco, there is a large deposit of limestone estimated as over 150 ft. thick containing about 97 per cent. of lime and low in magnesia, and in the marshes are deposits of blue clay with 87 per cent. silica and alumina and some alkalis. Cement has been made from these materials in the laboratory which would break at 525 lbs. per square inch in seven days. Near Niles a magnesian limestone was found and burned and the cement is stated to have broken at 1,040 lbs. in 28 days. These localities have the advantage of water and rail transportation and with cheap oil fuel would seem to justify careful examination.

Last February the California Cement and Lime Company was incorporated for the purpose of starting cement works in San Joaquin County not far from Stockton. The company claims to own an unlimited quantity of limestone which runs 93 per cent. lime and clay containing 78½ per cent. silica and alumina, without any injurious impurities. The plans of this company call for a plant of 500 bbls. daily capacity requiring a capital of \$150,000. Tests by expert chemists show briquettes breaking at 390 lbs. in seven days. Another company is being organized to work the deposits at Suisun Bay near Benicia.

The Eureka Slate Company, near Placerville, owned by Dingee & Winsboro, of San Francisco, has purchased land with limestone and shale suitable for cement and is now experimenting with the product. The success these men have already won in the slate business gives promise of the starting of a successful cement mill.

The only cement plant now in operation in California is in the southern part of the State at Colton, on the Southern Pacific Railroad. The mill of the California Portland Cement Company was started in 1893 and produced 60,000 bbls. in 1900. The lime quarries are located on the side of Slover Mountain, where the stone is loaded into cars and hauled through a 400-ft. tunnel where it is dumped into a chute 370 ft. long, which delivers the rock to the jaw crusher in the upper part of the mill. The limestone contains 93 per cent. lime and about 1 per cent. alumina and iron, and there are three ledges in the mountain, 50, 75 and 150 ft. thick, dipping 70° south.

The clay is brought from Perris, 30 miles away on the Santa Fe Railroad, and it contains 84.6 per cent. silica and alumina with about 4 per cent. of lime. It is dried by exposure to the air. The clay and crushed limestone are weighed and dumped into an elevator boot which discharges the mixture into hoppers above the four Griffin mills. After the grinding, the material is delivered to screw mixing conveyors that discharge into large storage rooms. The mixture is then fed by a screw conveyor to the two rotary kilns 75 ft. long, of special design, and heated by petroleum gas with blast from fan blowers. All of this machinery has been invented and patented by the company's chemist, Mr. E. Duryee, who is in charge of the mill.

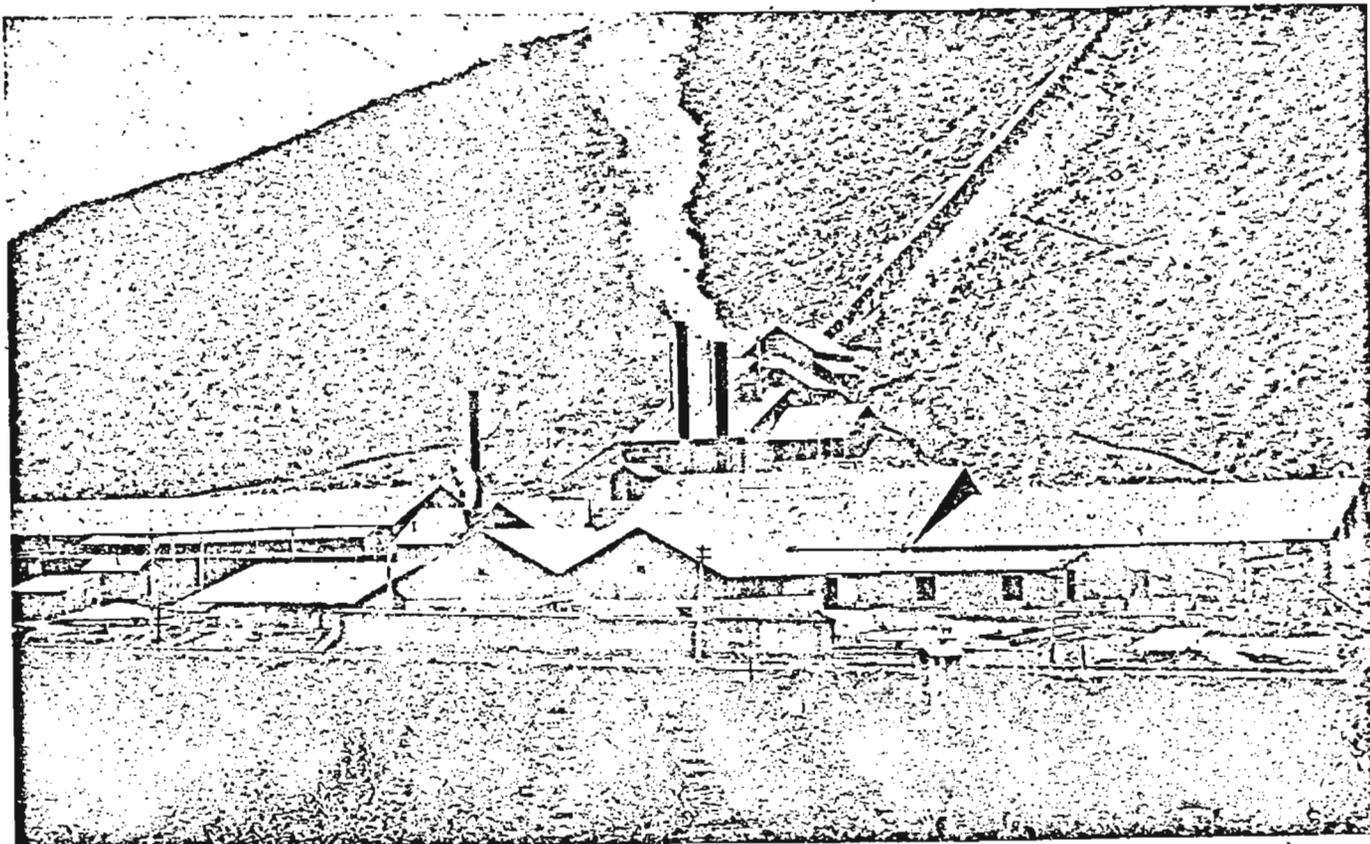
The clinker, after cooling, is reduced to a flour in Krupp ball and tube mills, and the cement is carried by a screw conveyor to the warehouse. Colton portland cement has a tensile strength of 418 lbs. in seven days, and 586 lbs. in 28 days. The capacity of the plant is 375 bbls. per day, and the total cost of construction has been \$160,000; over 150,000 bbls. have been sold on the Pacific Coast.

Both steam and electric power are used. The kilns and blowers are run by individual steam engines, while the crushers and Griffin mills are run by a 100 H. P. motor. The machinery of the clinker grinding

room is run either by engine or by a 175 H. P. dynamo, and the buildings are lighted by electricity.

This company is meeting with deserved success in the Southern California trade, and it would seem as though a plant could be operated in the northern part of the State, with proper management, skilled labor and the best modern methods and machinery. Without these conditions the past failures will be repeated, and even with them it will require a strong company and time to prove the value of an American product and to overcome the prejudice in favor of proved European cements which now have so firm hold on the California trade.

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CALIFORNIA PORTLAND CEMENT PLANT, COLTON, CAL.

July 13, 1901 p36

THE MINERAL PRODUCTION OF CALIFORNIA.

We have received from State Mineralogist Lewis E. Aubury an advance statement from the table prepared by him showing the mineral production of California for the year 1900. The statement is complete and shows a wide variety of products which contributed to the total values for the year.

The quantities and values of the metals and metallic ores reported for the year are as follows:

	Quantities.	Values.
Gold.....		\$15,863,356
Silver.....		1,510,344
Quicksilver, flasks.....	26,317	1,182,796
Copper, lbs.....	29,515,512	4,748,242
Lead, lbs.....	1,040,000	41,600
Antimony, tons.....	70	5,700
Chrome ore, tons.....	140	1,400
Manganese ore, tons.....	131	1,310
Mineral paint, tons.....	629	3,993

Total metals and ores..... \$23,358,730

The values and quantities of non-metallic mineral products in 1900 are given in the following table:

	Quantities.	Values.		Quantities.	Values.
Asbestos, tons.....	50	\$1,250	Mineral water, gals	2,456,115	\$268,607
Asphalt, tons.....	12,575	253,950	Natural gas, cub. ft.	40,565,500	34,578
Bituminous rock, tons	25,306	71,495	Paving blocks, M.	1,192	23,775
Borax, refined, tons..	1,602	165,036	Petroleum, bbls.....	4,329,950	4,152,928
Borax, crude, tons..	24,325	848,215	Pyrites, tons.....	3,642	21,133
Cement, bbls.....	52,000	121,000	Quartz, crystals.....		18,000
Clay-bricks, M.....	137,191	905,210	Rubble, tons.....	423,690	299,072
Clay, pottery, tons...	59,636	60,596	Salt, tons.....	89,338	204,754
Coal, tons.....	176,956	535,531	Sand, glass, tons...	2,000	2,000
Fullers' earth, tons.	500	3,750	Sand, quartz, tons..	200	200
Granite, cub. ft.....	311,803	295,772	Sandstone, cub. ft..	378,408	254,140
Gypsum, tons.....	2,522	10,058	Serpentine, cub. ft.	350	2,000
Lime, bbls.....	312,517	283,699	Soda, tons.....	1,000	50,000
Limestone, tons.....	32,791	21,532	Slate, squares.....	3,500	26,250
Lithia-mica, tons.....	440	11,000	Tourmaline.....		500
Macadam, tons.....	360,597	262,570	Turquoise, lbs.....	500	20,000
Magnesite, tons.....	2,252	19,333			
Marble, tons.....	4,103	5,891	Total non-metallic.....		\$9,264,215

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The total value of the mineral products of the State in 1900 was therefore: Metallic, \$23,358,730; non-metallic, \$9,264,215; total, \$32,622,945.

In the year 1899 the total product was valued at \$29,313,460, so that the increase for the year is \$3,309,485, or over 11 per cent. The total product of metallic substances for the year 1900 was \$23,358,730, an increase of \$2,053,707.

The total value of non-metallic substances was \$2,177,197, a decrease of \$268,873. This includes borax, coal, mineral waters, salt, asbestos, gypsum, magnesite, pyrites, lithia-mica, fuller's earth, quartz crystals, soda, tourmaline and turquoise.

The total values of hydrocarbons and gases was \$4,512,951, an increase of \$1,332,931, including asphaltum, bituminous rock, natural gas and petroleum. The total value of structural material was \$2,574,067, an increase of \$191,720. This includes brick and pottery clays, hydraulic cement, lime and limestone, macadam, rubble, and concrete rock, paving blocks, marble, granite, sandstone, serpentine, slate, quartz sand and glass sand.

The relative value of the principal mineral products of the State is as follows: First, gold; second, copper; third, petroleum; fourth, silver; fifth, quicksilver; sixth, borax.

There are 28,672 men employed in the industries represented in the above table.

The relative rank of the counties of the State in point of mineral production is given in the following table. In each case the value given includes that of all mineral substances combined or produced in the respective counties for the year. Some countries produce in addition to gold and silver, five, six or seven other substances, while other counties which produce little or no gold or silver, produce large quantities quicksilver, mineral oils, copper, lead, asphalt, structural materials, etc. The figures include aggregate value of all mineral products, including precious metals. The term "unapportioned" includes total value of such substances as are grouped to avoid disclosing private business, as in the case of single operations in a single county.

Counties.	Values.	Counties.	Values.	Counties.	Values.
1.—Shasta .....	\$5,574,028	18.—Santa Clara .....	\$497,286	37.—Humboldt .....	\$118,827
2.—Los Angeles .....	2,155,199	19.—Napa .....	493,190	38.—San Luis Obis-	
3.—San Bernar-		20.—Ventura .....	476,161	do .....	55,626
dino .....	1,945,143	21.—Inyo .....	430,589	39.—San Francisco .....	58,400
4.—Nevada .....	1,916,949	22.—El Dorado .....	426,420	40.—San Joaquin .....	39,862
5.—Calaveras .....	1,905,886	23.—San Diego .....	402,061	41.—Solano .....	24,700
6.—Kern .....	1,867,836	24.—Plumas .....	369,379	42.—Tulare .....	21,565
7.—Tuolumne .....	1,639,253	25.—Riverside .....	285,112	43.—Stanislaus .....	21,495
8.—Amador .....	1,429,009	26.—Yuba .....	284,631	44.—Lassen .....	20,453
9.—Placer .....	1,128,832	27.—Madera .....	268,467	45.—Monterey .....	19,175
10.—Siskiyou .....	1,010,353	28.—Sacramento .....	259,429	46.—San Mateo .....	16,500
11.—Mono .....	752,121	29.—Orange .....	259,174	47.—Colusa .....	13,530
12.—Trinity .....	695,639	30.—San Benito .....	245,650	48.—Mendocino .....	8,438
13.—Sierra .....	663,159	31.—Marin .....	242,599	49.—Kings .....	5,000
14.—Alameda .....	639,771	32.—Santa Cruz .....	191,091	50.—Del Norte .....	3,483
15.—Fresno .....	609,847	33.—Lake .....	172,745	51.—Tehama .....	2,250
16.—Santa Barba-		34.—Mariposa .....	171,516	52.—Yolo .....	1,760
ra .....	528,438	35.—Sonoma .....	157,155	Unapportioned .....	1,406,803
17.—Butte .....	509,786	36.—Contra Costa .....	146,500		
				Total .....	\$32,622,945

All the asbestos produced in California in 1900 was from Riverside County. Asphalt was produced in Kern, Los Angeles, Santa Barbara and Ventura counties. Bituminous rock came from San Luis Obispo and Santa Cruz. The borax yield was from Inyo and San Bernardino. Brick clays were utilized in Alameda, Fresno, Humboldt, Kern, Kings, Los Angeles, Madera, Marin, Mendocino, Monterey, Riverside, Sacramento, San Diego, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Shasta, Sonoma, Tehama, Tulare and Ventura counties. Pottery clay came from Amador, Placer, Los Angeles, Santa Clara and Riverside. All the hydraulic cement came from San Bernardino County.

Coal was produced in Alameda, Amador, Contra Costa, Orange and Riverside. The copper was mined in Amador, Calaveras, El Dorado, Kern, Madera, Nevada, San Bernardino and Shasta counties. The pyrites were from Calaveras and Nevada counties. Granite was quarried

in the counties of Madera, Placer, Riverside, Sacramento, San Bernardino, San Diego, Trinity, Santa Barbara, Tulare and Ventura.

All the fuller's earth came from Kern County. Gypsum was produced in Los Angeles and Tulare counties; the lead was from Inyo, Mono and San Bernardino counties. Lime and limestone were quarried in El Dorado, Kern, Mono, Monterey, Santa Barbara, San Benito, San Bernardino, Santa Clara, Santa Cruz, Shasta and Solano counties. San Diego was the only producer of lithia-mica.

The principal macadam quarries are in Alameda, Los Angeles, Sacramento, San Benito, San Bernardino, San Francisco, San Mateo, Santa Barbara and Solano counties. The magnesite came from Alameda, Tulare, Napa and Santa Clara counties, and the manganese from Alameda and Santa Clara. Marble was quarried in Amador County.

July 13, 1901 p 36

Mineral paint was mined in Calaveras and Stanislaus counties. The mineral springs, which utilized the waters commercially, are in Butte, Colusa, Contra, Costa, Fresno, Humboldt, Lake, Mendocino, Monterey, Napa, San Benito, San Diego, Santa Barbara, Santa Clara, Shasta Siskiyou, Sonoma and Solano counties. Natural gas was utilized in Sacramento, San Joaquin and Santa Barbara counties. Paving blocks or basalt were quarried in San Bernardino, Solano and Sonoma counties.

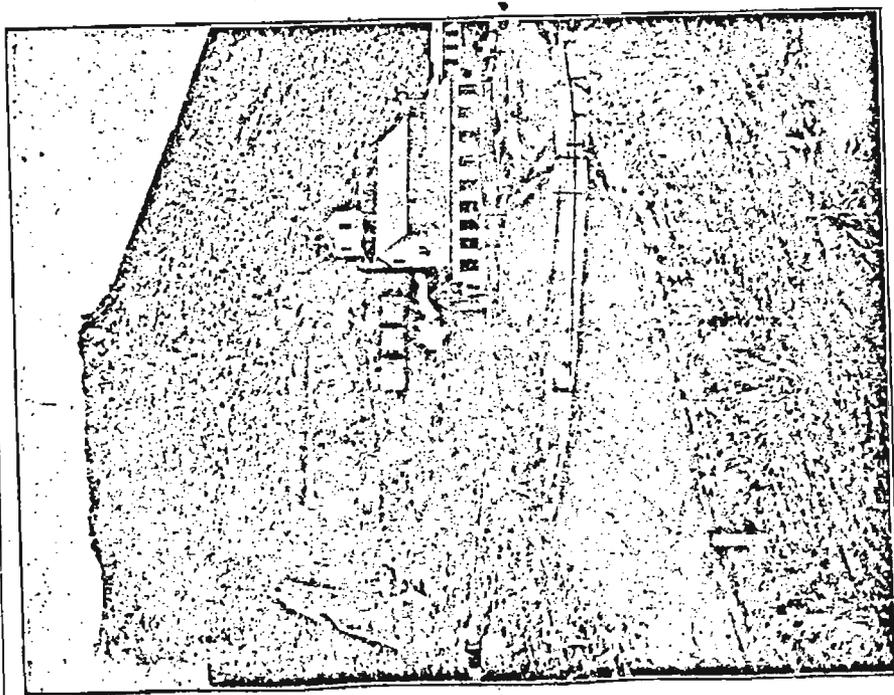
Petroleum was produced in Fresno, Kern, Los Angeles, Orange, Santa Barbara and Ventura counties. Quicksilver came from Colusa, Lake, Napa, San Benito, San Luis Obispo, Santa Clara, Sonoma and Trinity. Rubble was quarried in the counties of Los Angeles, Marin, Monterey, San Diego, San Francisco, Santa Barbara, San Luis Obispo, San Mateo, Solano and Ventura. The salt came from Alameda, Colusa, Riverside and San Diego counties. The quartz sand came from Riverside. Sandstone was from Los Angeles, Orange, Santa Barbara, Santa Clara, Ventura and Yolo counties. The serpentine was from Los Angeles; slate from El Dorado, and soda from Inyo County. Quartz crystals came from Calaveras, tourmaline from San Diego and turquoise from San Bernardino County.

As far as "banner" counties are concerned in the different mineral products, the following is the record for 1900, with the values of minerals from the county named:

Alameda leads in salt (\$158,674), coal (\$332,066), macadam (\$107,551), and manganese (\$1,300). Amador leads in marble (\$5,891). Calaveras in mineral paint (\$3,800), and quartz crystals (\$18,000). El Dorado in slate (\$26,250). Inyo in lead (\$38,840), antimony (700) and soda (\$50,000). Los Angeles in petroleum (\$1,722,877), brick (\$275,925), gypsum (\$10,000) and serpentine (\$2,000). Monterey in limestone (\$10,800). Napa in quicksilver (\$403,500), mineral waters (\$72,200) and magnesite (\$17,400).

Nevada leads in gold (\$1,812,036) and pyrites (\$17,550). Placer in granite (\$95,869). Riverside in pottery clay (\$18,000), asbestos (\$1,250) and quartz sand (\$200). The bulk of copper comes from Shasta County (\$4,166,735), as did also the most silver (\$635,640) and chrome (\$1,400). Sonoma County produced the most paving blocks (\$20,275). Santa Barbara leads in sandstone (\$117,260), rubble (\$80,000) and asphalt (\$105,000). San Bernardino has the most borax (\$999,350), cement (\$121,000) and turquoise (\$20,000). Santa Cruz produces the most bituminous rock (\$58,590) and lime (\$131,288). San Diego lithi-mica (\$11,000) and tourmalie (\$500). San Joaquin leads in natural gas (\$19,862).

Aug. 24, 1901 p 237



SMALL MILL AT YELLOW ASTER MINE, NEAR RANDSBURG, CAL., WITH RESERVOIR.

Jan. 4, 1902 p 8

Gold and silver are now produced in 32 counties of the State, the leading ones in the order of their productiveness being Nevada, Calaveras, Tuolumne, Amador and Shasta. Each of these produced over \$1,000,000 with the combined metals, Nevada exceeding \$2,000,000. In gold alone, the order of rank of those counties yielding over \$500,000 each is: Nevada, Calaveras, Tuolumne, Amador, Placer, Siskiyou, Kern, Shasta, Mono, Sierra and Trinity. Over one-third of the silver comes from Shasta County, being derived from ores treated at the copper smelters.

In drift mining no very special developments are to be noted. The center of activity in this line is on the Forest Hill Divide in Placer County, although it is carried on elsewhere. Some of the work in drift mining is of a very extensive nature, exceedingly long tunnels being run to develop the channels of the buried rivers where the gold is obtained. Considerable capital is necessary in prosecuting work of this nature, which is the main reason why more enterprises in drift mining are not carried on. In many cases it takes several years for the channel to be reached, during which time there is no chance for any income from the mine. However, in most cases where extensive drift operations have been carried on the outcome has been profitable.

California was the pioneer in gold mining of all the States and territories West of the Missouri River and for about 50 consecutive years held first rank in gold production until a few years since, Colorado took first place, and California dropped to second, which it now holds. For total gold output, however, California holds a record which it will take any other State many a year to equal. Since mining first commenced in California the State has yielded the gross sum of \$1,345,576,044 in gold alone without counting quicksilver, borax, copper, silver or any other substance. And the output still goes on at the rate of \$16,000,000 or \$17,000,000 a year, with good prospects of a marked increase for some time to come. Another record held by the State is not likely to be beaten. That is the largest single year's output of gold—\$81,294,700 in the year 1852. In fact it was not until 1837 that the annual yield of gold fell below \$50,000,000. Nearly all forms of gold mining are still carried on in California, as gold is obtained from quartz, pocket, seam, hydraulic, drift, ocean beach sand, dredging, wing damming, dry-washing, surface placers, etc.

While gold mining still holds first place as to value of annual yield there are now many other substances which go to make up the grand total. The relative rank of the principal products as to annual value are as follows: 1st, gold; 2nd, copper, 3rd, petroleum; 4th, silver; 5th, quicksilver; 6th, borax.

In the year 1900 when the total value of all mineral products was fixed at \$32,622,946, that of the metallic substances was \$23,358,730; of non-metallic substances \$2,177,197; of hydrocarbons and gases \$4,512,951; and structural materials \$2,574,067.

While mineral deposits of varied characters are scattered throughout the State there are many which, while known, have not as yet been developed and utilized. A good idea, however, may be had of the localities where work is being prosecuted by enumerating briefly the substances and source by county according to latest available statistics.

Asphalt is produced in Fresno, Kern, Los Angeles, Ventura and Santa Barbara counties, the latter yielding the bulk of it. While asbestos is known in several places, Riverside County is the only producer. Bituminous rock comes from San Luis Obispo and Santa Cruz counties, mainly from the latter. The borax comes largely from San Bernardino County, though some is derived from Inyo. Brick clays are utilized in nearly all the principal counties of the State. San Bernardino has thus far been the only producer of hydraulic cement, though new works are being put up in Solano County. Alameda is now the largest producer of coal, though it is mined also in Contra Costa, Amador, Orange and Riverside counties. The copper yield comes from Amador, Calaveras, El Dorado, Kern, Madera, Mariposa, Nevada, San Bernardino and Shasta counties, the latter, however, yielding far more than all the others combined.

Calaveras, Alameda and Nevada counties produce all the pyrites. Granite quarries are operated in Madera, Placer, Riverside, Sacramento, San Bernardino, San Diego, Trinity, Santa Barbara, Tulare and Ventura. The fuller's earth comes from Kern County; gypsum from Los Angeles and Tulare; and lead from Inyo, Mono and San Bernardino counties. Limestone is quarried in many counties both north and south, and this is the case with macadam. All the lithia-mica comes from San Diego, and the marble from the Amador County quarries. Magnesite is mined and calcined in Alameda, Tulare, Napa and Santa Clara counties, Napa being the leading one. Mineral paint is mined in Calaveras and Stanislaus counties, that from the latter being ocher. Mineral springs, the waters of which are utilized commercially, are found in 17 counties of the State. Natural gas is utilized in Sacramento, San Joaquin and Santa Barbara counties.

Aug 2, 1902

INYO COUNTY.

(From Our Special Correspondent.)

*Fish Springs District.*—At Big Pine G. B. Cometti has opened up a good body of ore. Antone Cunha is working over a tailings pile. The old Mairs Mine, owned by U. Tracy, is being opened by Peterson & Myers.

KERN COUNTY.

(From Our Special Correspondent.)

*Bright Star.*—This mine, long idle owing to litigation, is about to be bonded with 12 other claims, by a Cripple Creek, Colo., company that has a bond on the claim owned by J. B. Ferris. The ore is low grade but plentiful.

*Buena Piedra.*—At this mine, near Granite Station, 25 miles from Bakersfield, A. W. McCrae superintendent, a strike of high-grade ore is reported.

*Yellow Aster Milling and Mining Company.*—A mortgage for \$100,000 has been placed on this property, at Randsburg, in order to carry out extensive improvements. A large cyanide plant is to be put in, also an extensive pumping plant. This mine is the largest producer in Kern County. It has been paying dividends for some years.

Oct. 18, 1902 p 525

INYO COUNTY.

(From Our Special Correspondent.)

Death Valley.—Hundreds of prospectors are joining in a rush into this region, mainly to locate niter deposits, but also to search for gold ores. The region is a most desolate and difficult of access and almost impossible to live in. Water is very scarce and the heat in summer is excessive. Recent developments have attracted the prospectors.

KERN COUNTY.

(From Our Special Correspondent.)

River Bed Mining.—Frank, Frederick and Norman Sweet have located a number of continuous locations on Kern River between Bodfish Creek, near Havilah and the South Fork of the Kern River and will work the river bed and bars. The Huntington-Hellman Power Company will take about all the water from the river at this point and return it to the river below. Some of the bars prospect well.

St. John.—On this mine, 25 miles north of Mohave, W. F. Carpenter and F. E. Monaghan, of Santa Ana, have completed a 25-ton cyanide plant to work up about 20,000 tons of old tailings.

Yellow Aster.—A committee of miners and the superintendent of this mine at Randsburg have signed a statement that there is no trouble between the miners and that company, and that no strike is pending as reports have said. There is no dissatisfaction between the miners and the company either as to wages or treatment. Eugene H. Barton is superintendent and John Singleton is manager.

Oct 25, 1902 p 547

THE GREENBACK COPPER MINE, KERN COUNTY, CALIFORNIA.

By H. W. TURNER.

In California nearly all the copper deposits of commercial value are in schists or slates or in igneous rocks associated with rocks of sedimentary origin. The lode here described is essentially all in granite, or, more specifically, granodiorite.

The Greenback Copper Mine is located in Northern Kern County about 35 miles by wagon road from Bakersfield and about 18 miles nearly due east of Jasmin, on the Potterville branch of the Southern

Pacific Railroad. Jasmin would be the point for freighting inasmuch as it is the nearest railroad point and there is an easy grade between the mine and the station. The property of the Greenback Copper Company consists of Sections 1 and 3 and the southern part of Section 2, Township 26 south, Range 29 east, embracing in all 1,520 acres.

The mine lies on a slight elevation in a basin which drains to the northwest. The rock forming this basin is granodiorite, showing black mica, horn-

blende and minute crystals of titanite. Frequently this rock is foliated or gneissic as along the Greenback lode. The granite is intersected by a parallel system of joints or fractures which usually trend approximately east and west. The foliated or gneissic granite seems usually to contain little hornblende. It contains abundant black mica. There are blocks and slabs of a dark fine-grained micaceous rock often showing porphyritic feldspars in the granite. This rock on closer inspection appears to contain little or no quartz and is probably a diorite-porphry. This diorite-porphry is found as inclusions in the

granite at many places, and is therefore undoubtedly older than the granite.

In addition there are abundant dikes of a white, fine-grained granite (aplite) in the coarse granite or granodiorite. Frequently these dikes are intruded along the east-west fracture system, and hence have an east-west trend. At other points they trend in other directions. They are from a fraction of an inch to 10 feet in width. There are also white, coarse, pegmatic dikes or veins in the granite, and

some of these are developed sporadically as bunches of white quartz ("bull" quartz), which usually contains chunks of potash feldspar (orthoclase). Such bunches of bull quartz are found in many places in the great granite mass of the high Sierra, and it is not known that they ever contain gold and silver in commercial quantity.

Copper has been found at a number of points in the neighborhood, and the ledges are usually more or less parallel to the structure planes of the enclosing rocks, but this is not the case with the Greenback lode, the general trend of which is east of north, or across the east-west fracture system of the granodiorite.

About one mile southwest of the mine lies a high east-west ridge known as Iron Mountain. The upper part of this ridge is composed of a variety of rocks, some of which strongly resemble quartzite, but the slopes of the mountains are all of granitic rocks. There are several cuts and shafts on the top of the mountain in the hard quartzite-like rock, but no strong indications of copper appears to have been found except on the north slope just west of the line of Section 3 and on the south slope of the east end of the mountain, where some work is now being done on a copper lode. Several claims are located on this lode. Some of the shafts and cuts on top of Iron Mountain show no copper, but appear to have been sunk on garnet-quartz veins and veins of epidote, the green color of which may have deceived the prospector. One shaft on the highest part of the mountain follows down a nearly vertical streak of a dark, glassy rock resembling obsidian, but which proves to be an opalitic form of silica, perhaps hyalite, which is a water deposit and not of volcanic origin. There is no indication of any ore in this siliceous deposit. It is quite probable that in depth copper ore of commercial value will be found in Iron Mountain. Except some of the quartzite-like rock of Iron Mountain and a little of similar rock in the Greenback Mine, no rocks of sedimentary origin are found near the mines, so far as my examination went.

At most of the points where copper has been found the lode at the surface is composed of a gossan of rusty iron-stained material, often apparently rotten granite, generally somewhat gneissic and not always showing copper carbonate.

The croppings of the Greenback lode consist of altered granite decomposed and impregnated with iron oxide and at some points with copper carbonate, and there is more or less quartz mixed with it.

Oct. 25, 1902

The Greenback lode has been opened up by a shaft which inclines to the north about 60°, and from this shaft 3 levels have been run to the north, which are vertically below the croppings, respectively 95, 135 and 185 feet. The upper part of the main ore-shoot is composed of carbonate ore and has not been stoped out, but from a point about 65 feet below the croppings to a point 170 feet below this ore-shoot has afforded nearly all the ore that thus far has been shipped, the average content being 5.7 ounces of silver and 19.4 per cent. copper per ton of 2,000 pounds. As seen in the cross section, the ore-shoot is lenticular in form, with a maximum width of about 20 feet. On the surface vertically above the lode, at the point of the cross section, no definite croppings appear. Outside of this ore-shoot the granite is irregularly impregnated with copper pyrite, so that there is a much larger amount of lower grade ore in the mine than of shipping ore. The main ore-shoot has produced about 2,000 tons of ore of all grades. About 590 tons of selected ore had been shipped to the smelter up to September, 1901, and this had a gross value of about \$60 per ton.

While the chief rock of the lode is a gneissic granite containing black mica, there are also minor amounts of the diorite-porphry before referred to and of a quartzose rock which is possibly a true sedimentary quartzite or possibly a granite rock impregnated with secondary silica. This quartzose rock contains grains of chalcopyrite. A piece of the diorite-porphry was assayed and found to contain \$1.24

(Continued on Next Page)

Dec. 6, 1902

## INYO COUNTY.

(From Our Special Correspondent.)

**Golden Argus.**—In this mine, 22 miles from Ballarat, J. J. Crees superintendent, there are 15 men at work and the 5-stamp mill is running.

**Inyo Gold Company.**—At this mine in Tuba Canyon, J. P. Flint is putting in a cyanide plant.

**King Consolidated.**—These mines at Ballarat, near the Redlands Mill, has been bonded to New York men through W. W. Godsmark, of the Radcliff.

**Panamint Cyanide Plant.**—At Ballarat, T. N. Stebins is putting in a cyanide plant to work over the many old dumps.

**Radcliffe Consolidated.**—At this mine at Ballarat, W. W. Goosmark manager, 30 stamps are dropping regularly. There are 6 levels on the vein, and all the ore is handled by a gravity wire tram. There are 30 men employed.

**Reward Mining Company.**—This company, at Reward, H. C. Steele superintendent, is examining different watercourses with a view of establishing a station for electric power. It is reported that Philadelphia, Pa., men are negotiating for the mine.

**Tuba.**—At this mine at Ballarat contract has been let for a 50-ton cyanide plant to work the tailings.

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## KERN COUNTY.

(From Our Special Correspondent.)

**Lady Butte.**—In the shaft of this mine at Kernville good ore is reported. The drifts are now being cleaned out.

**Mammoth Coal Company.**—This company at Garlock has, at a depth of 145 ft., a 12-ft. vein of coal. The quality is said to be improving.

**Pacific Smelting Company.**—This company has been organized to build custom smelting works at Bakersfield to use oil fuel. The incorporators are A. W. McCrae, B. L. Brundage, A. Weill, H. P. Bender, G. W. Lupton, J. W. Scott, C. I. Claffin, G. T. Nugbert, C. Bickeroyke and C. W. Wickersham, all residents of Bakersfield. Mr. McCrae is the chief promoter. The plant is to start with a capacity of 100 tons per day.

**Woody District.**—A number of mines are being opened up near Woody. The claims around Rag Gulch paid high in early days.

Rec. 13, 1902 p 793

## INYO COUNTY.

(From Our Special Correspondent.)

**Argus Range.**—Several properties are now being worked in this range, near Ballarat. The Morton group in Snows' Canyon, and adjoining the Golden Argus property, has been sold to S. R. Phail and Mr. Thurman, who intend developing. On J. C. Cress' claim a 5-stamp mill is at work. At Arondo, in the same range, the Cornish rolls have been started up, and a water supply of good quantity has been developed. The Arondo Mining Company employs 20 men. The cyanide plant capacity is 50 tons daily. The average extraction from several thousand tons is \$5.77. G. L. Dean is president.

## SAN BERNARDINO COUNTY.

(From Our Special Correspondent.)

**Mountain Jewel Mining Company.**—This company, of which J. P. Hays is president, is planning a 10-stamp mill in the Old Woman Mountains, near Danby.

**Vanderbilt District.**—In this district around Manvel, considerable work is being done. The Santa Fe Railroad Company is about to build a 12-mile branch from Dry Lake to Vanderbilt. There are between 150 and 200 men at the camp at present. The St. George and Gold Bronze claims, under bond to the Federal Mining Company, L. C. Gillian superintendent, are worked, with 30 men, and shipments of ore have recently been made.

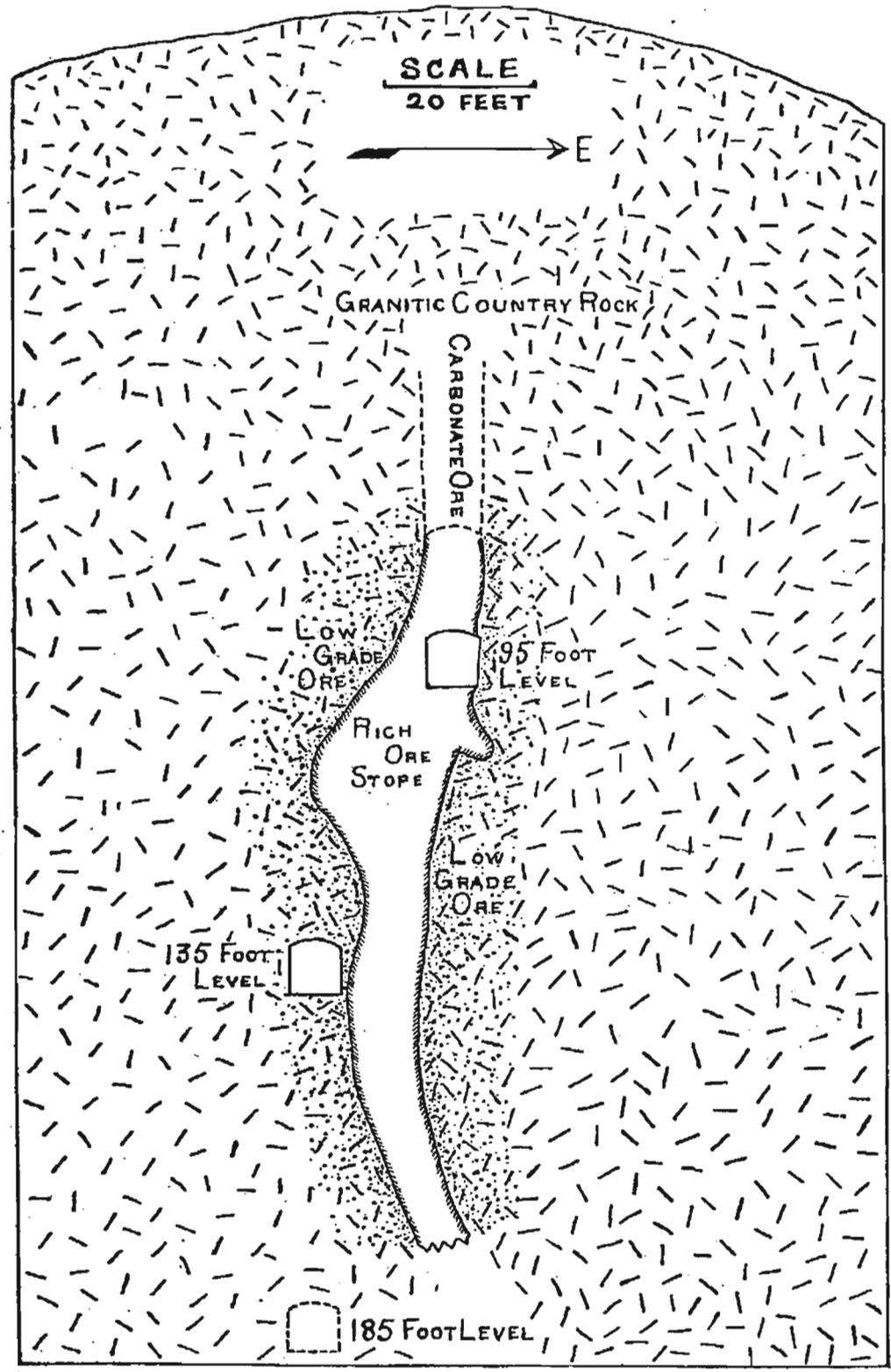
## SAN DIEGO COUNTY.

(From Our Special Correspondent.)

**Boulder Creek Mining Company.**—At the mine, near Julian, the tunnel has been driven 150 ft., and the ore is stated to average \$12 per ton. Drifting from the tunnel is in progress.

**Julian Reduction Company.**—This company, with M. Jacoby as manager, intends to put up reduction works at Julian, including a 100-ton furnace.

Oct. 25, 1902



VERTICAL SECTION THROUGH STOPE, GREENBACK COPPER MINE.

Dec. 20, 1902 p 826

INYO COUNTY.

(From Our Special Correspondent.)

**Cecil R.**—This company, owning mines in South Park District, 68 miles south from Johannesburg, has made a \$600 clean-up from 5 days' run with its 2-stamp mill. A 20-stamp mill will shortly be completed. U. S. G. Todd is manager.

KERN COUNTY.

(From Our Special Correspondent.)

**Big Blue.**—This company, at Isabella, has hoisted the pumps from the Clara Belle shaft. Some ore is about to be crushed at the Hooper Mill.

**Caliente District.**—Only superficial work has been done thus far at the mines near Caliente, but the ore is of high grade. Lack of capital has prevented any great developments.

**Kern River Oil Field.**—The oil companies operating on Kern River have decided to put a series of levees in the river, dividing it into ponds to collect the oil and prevent serious damage to crops, etc., at places where the water is used for irrigation. The land-owners and irrigation companies threatened to sue for damages unless the oil was kept from the river water.

RIVERSIDE COUNTY.

(From Our Special Correspondent.)

**Tip-Top and Iron Chief.**—At these mines, near Walters, owned by Pittsburg, Pa., men, the miners recently drove the superintendent, J. E. Collins, away from the mines. A sheriff has gone out to settle the trouble.

**Wright-Lawrence Mining Company.**—This company now owns mining property opposite Parker on the Colorado River, about 75 miles from Needles. J. W. Peebler, of Chicago, Ill., who is interested, says that a proposed smelting plant at Needles will be built by this company. The ores carry copper and gold.

SAN BERNARDINO COUNTY.

(From Our Special Correspondent.)

**New York.**—These mines consist of 8 claims, about 5 miles southeast of Manvel. A side track has been put in. Prospecting is being done.

**Orange Blossom Group.**—Work has been resumed on this group 8 miles from Bagdad. The ore carries copper and silver.

**Roosevelt.**—S. Washburn, of Pasadena, is perfecting plans to put a lot of machinery on this mine near Ludlow.

**Waterloo Mining Company.**—D. D. Connell is working a lease on the properties of this company at Ludlow. A 15-stamp mill is in operation.

SAN DIEGO COUNTY.

(From Our Special Correspondent.)

**Glade Mining Company.**—This company, an English corporation, has recently come into possession of the Noble mines, near Descanso. J. H. Thring, representing the stockholders, is looking over the mines. There has recently been installed a stamp mill, with concentrators, etc., all run by gasoline engine. Development is going on.