The Mining and Metallurgical Journal

Volume XVI, No. 8

Los Angeles, Cal., January 15, 1897

Price, 10 Cents

The Harrington & King Perforating Co.

Metals Perforated as Required
For Mining Screens of All Kinds for Use in
Mining and Milling Machinery, Reduction and Concentrating Works,
Stamp Battery Screens, Standard Screens Perforated Tin and Brass Always in Stock.
Main Office and Works, 211-213 North Union St., Chicago, Ill.

The Russell Process

The Improved Method of Lixiviation
For Free and Relinquished Silver and
Gold Ores and Tailings, Either Raw
Or After Roasting. Send for New
Publications Just Issued:

The Russell Process Co. - Park City, Utah.

The Pelton Water Wheel

6000 Wheels Now Running

Affords the most simple, economical
and reliable power for all purposes.

Pelton Water Wheel Co., Dept. B.
121 Main St., San Francisco, Cal.

The Edward P. Allis Company

Manufacturers of

Mining, Milling and Smelting Machinery
Crushers, Concentrators, Pumps, Compressors, Hoists, Boilers,
Reliance Crushing Rolls, Reynolds Corliss Engines, &c.

Send for Catalogue.

The Machinery Supply Co.
307 W. First Street, Los Angeles.

MINING AND ELECTRICAL MACHINERY
UP TO DATE.

(See page 20.)

Consolidated Kansas City Smelting & Refining Co.

Buyers of All Classes of
Bullion, Matte, Ore MILL PRODUCTS, Gold & Silver Bars

Smelting Works (Leadville, Colorado. El Paso, Texas.

Ore Purchasing Agencies
Spokane Wash. Salt Lake, Utah.

Refineries: Argentina, Kansas.

(Leadville, Colorado. Denver, Colorado.

Cripple Creek, Colorado.)
THE GRIFFIN MILL

The only Perfect Pulverizer Working both
Wet or Dry
Process

NO JOURNEYS IN PULVERIZING CHAMBER.

Delivers a finished product. Will
pulverize to a fine powder in four
hours. No catalysts, gases or no
product. No losses of material and
waste of product.

Manufactured and Sold by
Bradley Pulverizer Co.,
93 State Street.
Boston, Mass.

GOLD MINERS OF THE SOUTHWEST

Los Angeles is our Mining Center
Save time, annoyance, expenses and
Get the Finest Work.

SILVER PLATED Amalgamated Mining Plates

Made to order, of Best Soft Copper, Finest Workmen,
accuracy, Despatch, full weight of
silver guaranteed.

SAVE GOLD

Old Plates Bought and Replated. Estimates Furnished

Pacific Cycle Company
INCORPORATED

Manufacturers of Machinery, Die Press Stampings, Contractors,
Gold, Silver and Nickel Platers

Office, 618 South Broadway, Los Angeles, Cal.

Chas. P. Grimwood,
Mining Engineer and Metallurgist
Laboratory, 214 Pine Street,
San Francisco, Cal.

Wm. H. Hoegee
MANUFACTURER OF
Oiled Clothing, Awnings, Tents, Sails, Tarpaniine, Flags, Banners, and
Camp Furniture. Tents and Canvas Floors for Rent.
Jobber of Cotton Duck, Etc.

136 S. Main Street, LOS ANGELES, CAL.

A SELF-EVIDENT FACT.

In the treatment of many low grade ores, the
margin of profit is so small that
great care and judgment is required in the se-
lection of property designed machines and
appliances as well as in the arrangement of
the same. The manufacture of

MINING MACHINERY

of every description is our specialty. Our new
crushing rolls, ore breakers
have acquired a reputation for superior
world-wide extent.

Crushing Rolls, Stamp Mills, Smelters, Concentrators,
Pan's, Settlers, Hoisting, Conveying, and
Pumping Machinery.

Complete Installations for all Methods of Treatment.

For Catalogue and further information, address
Gates Iron Works, 650 Elston Ave, Chicago, U.S.A.

FULTON ENGINE WORKS

MINING, MILLING AND SMELTING MACHINERY

Best Equipped Foundry, Machine, Boiler, Blacksmith
Shops in Southern California. P.O. Box 296, Station C, Los Angeles, Cal.

A. J. McCONE, President
J. P. McAllister, W. Lewis Bell, Managers
THE MINING AND METALLURGICAL JOURNAL

Vol. XVI. January 15 No. 8

F. W. EDELSTEN, Editor.

ULRICH KNOCH, Publisher
OFFICE, Sherman Block, Los Angeles, Cal.

SUBSCRIPTION PRICE:
For United States, Mexico and Canada..... $2.50 per annum
All other countries in the postal union...... 5.00 per annum
All other countries.......... 7.50 per annum

ISSUED SEMI-MONTHLY

SPECIAL REPRESENTATIVES:
The Journal is received by the following places where contracts for advertising may be made:
San Francisco, Cal.-L. C. Davis, 54 and 69 Merchants Exchange.
Denver, Colorado.-James A. Todd, 746 and 746 Krom & Olds.
Chicago, Ill.-Newberry & Co., Room 72 Monadnock Block New York, 72, 74, 76 Broadway.
City of Mexico, Mexico.-G. M. Agramonte, 15 Cinco de Mayo.

ADVERTISING RATES FURNISHED ON APPLICATION

WILLIAM WALDORF ASTOR.

The right to renounce allegiance to the government of a country wherein one was born or where citizenship has been acquired in any other way and to become a citizen of another, is one which our government has maintained from the first, and it has enforced recognition of the right by all the governments of Europe. In becoming a citizen of Great Britain Mr. Astor's action cannot be criticized so far as the right to do so is concerned.

We have freely admitted foreigners of the Caucasian race to become citizens, and it has been done in conformity with the belief, to a natural right and because we needed immigration to settle and develop a new and great country. Europeans who have emigrated here have done so because they liked our institutions and here were better opportunities for bettering their condition. Their motives were laudable, and those who came under such influences made good citizens.

Mr. Astor did not exchange American citizenship for British for the purpose of improving his fortune for he inherited all that could be desired by the most ambitious and selfish, but he did change his citizenship to Great Britain because he preferred British institutions and society. The institutions and society there are aristocratical, and favor wealth. Class distinctions prevail there founded upon riches, and consequently Astor, on account of his great wealth, can bask in the sunlight of the highest class. His riches have crushed out all regard for free institutions, for those great principles of equality which destroy distinctions not based on merit, and promote the elevation of the masses.

It is not that one man, a very rich man, has abandoned democracy for aristocracy that is so imposing a danger as the tendency of a dangerous tendency in this country, the general tendency among the very wealthy to prefer monarchy or aristocracy to democracy. This tendency is shown in many ways, in the distinguished honors conferred socially on the titled foreigners, the practice of American heiresses in lavishing their fortunes on titled Europeans, merely in consideration of receiving the handle of a title themselves. Our very wealth, such as it is, well befitting the general style of living, and look with contempt upon the masses.

The simplicity of early days on the part of high officials is disappearing, and indulgence in high official living with the rapid strides the pomp which characterizes the coronation of kings. If disparity in the possession of wealth continues to increase we shall have class distinctions and privileges as we have installed in this country sooner than even the pessimist expects. Our laws of late years have largely been made to foster the interests of the money holders, and though the country groans under the burdens imposed by trusts and combinations on the part of capitalists, government has but partially attacked them. The masses endure and vote for policies that impose injury upon them. Genuine republicanism or democracy is hardly a recognized element in our institutions and laws.

The money volume is kept small, far below what it should be as the basis of the country, which redounds to the benefit of the few and to the injury of the many. Cheap labor and pauperism is engulfing the nation through immigration from foreign lands, and Congress has not the courage to arrest it by legislation that will absolutely shut out the vilest, weakest and most degraded of foreign peoples. Trampism and incendiarism are increasing in proportion to the influence of foreign immigrants, and as soon as they involve the country in extensive disorders the hand of force will be employed to suppress them, and found aristocracy on the wreck of democracy.

NOT SO HOPEFUL.

With the failure of numerous banks and of business establishments come doubts about the setting in of that remarkable prosperity that has been expected. It is stated that a thousand saloons in Chicago have closed their doors, and that there is a demand for unemployed hands when saloons shut down, the people are very rapidly becoming teetotellers.

It is probable that there will have to be a vast reorganization in the field of business, that business will be healthy, or general prosperity will prevail. It is folly to attempt to rebuild a structure on a rotten foundation, and hence it will be necessary that all sickly and weak business establishments be swept away or braced up by new and healthy blocks, as we have been doing business on the whole on the bases of 3/4 per cent. cash and 96 2/3 per cent. credit, it cannot be otherwise than that there are a large number of business institutions that cannot be made to endure through the stormy outburst of prosperity that must come. These tottering houses keep up constant suspicion and doubt, and there will not be absolute confidence until all shaky establishments have fallen or are braced up with solid material.

Men with money are not as yet putting it out to any appreciable extent. Large capitalists are not adding to their fortunes to give themselves much trouble, certainly not enough to take risks. They prefer to invest in bonds which is not attended with labor beyond clipping coupons, and do not impede labor beyond clipping coupons, and do not impede labor beyond clipping coupons.

Bank development and thrift are displayed in the highest measure when men ambitious to make fortunes put their shoulders to the wheels of enterprise.

A protective tariff may help some, but there can be no profit in production unless there is somebody to purchase the products. The real cause of the depression in this country is and has been a long as business is done on such an enormous percentage of credit, and on a volume of money too small to accommodate the business of the country.

INTERNATIONAL SILVER CONFERENCE.

The Republicans in Congress are moving to bring about an early international conference on the subject of the coinage of silver and metal. Senator Wolcott, of Colorado, has gone over to Europe to confer with the bimetallists, so it is stated, for the purpose of arranging the plan of providing a suitable fund, and through a plan the countries. Every lover of America will hope that the scheme will be successful. The activity of the bimetallists in Great Britain and Germany gives some encouragement that Britain is not merely represented in the governments of these countries.

The German Chancellor states that a conference will be held to look into the question of the mints of India. We doubt if it is possible to induce the British government to make that agreement. India contributes $60,000,000 annually to the British exchequer. So long as silver was the medium of exchange or money of India, that sum was paid in ruppees, which are silver coins, but since India has been put on the gold basis, the revenue contributed is payable in gold instead of silver, which gives Great Britain the advantage of the 35 per cent. for which silver is discounted, and as a result the British government of Great Britain is not going to throw that away to obliged Germany, the United States or any other nation.

President McKinley appoint a mixed commission, as did Hayes, Garfield and Harrison, he might as well appoint one at all, for it will go there at headquarter among themselves, with no definite proposition to submit, and probably to be divided on any proposition that any foreigners may submit. To show that we are in earnest for bimetallism there must be a plan prepared which our representatives will stand by and press with vigor. More than that our conference should be prepared to say that unless a satisfactory agreement can be arrived at, that this country will open its mints to the free coinage of both gold and silver on its own hook. That probably would have some weight, and perhaps enough to produce a favorable result.
BANK AND BUSINESS FAILURES.

The extent to which business has been done on credit for the last eight or ten years could not have produced any other result than that which the country is now experiencing, when for a considerable part of that time there has been an abnormal condition of depression. The credit system has produced that depression in a great measure, and it is a symptom that has grown out of the insufficiency of the money volume. There may, and probably will be, continued failures until insolvent dealers are all swept away, and dismally and recklessly managed banks all close their doors and go into liquidation. This will be the case notwithstanding prosperity may return to a remarkable extent. But there will be no such prosperity as will remove the load of debt resting upon a large percentage of the dealers. Whatever advantage the country to that may ultimately be realized from the policies of the Republican party and the new administration, it will not be perceptible for many months to come, because existing laws are not likely to be materialized by the present session of Congress, and it will take considerable time for the new Congress to enact others in their stead and for the business of the country to begin the process of recovery.

Whoever expected that the mere result of the election would be sufficient to set in rapid motion the wheels of prosperity was greatly deluded. Before any appreciable change becomes manifest, there must be something done to stimulate industries.

As the economic laws enacted by the last Congress depressed our industries, they must be superseded by those that will reanimate them. The people however should not wait for their enactment, but they should unitedly exert themselves to create as much prosperity as possible with the means they possess.

The Weekly Independent Silver Advocate and Southwest Miner, published January 1st, at San Bernardino, Cal., under an article, entitled "Wave of Prosperity," says: "Fast Assuming Proportions of a National Wave," and then gives a list of firms who have failed within a week. The list occupies nearly a column, and the liabilities, over and above the assets, range from $45,000 to $5,000,000. This looks like a "Wave of Prosperity.""

CORRESPONDENCE

CALIFORNIA.

The Picacho Gold Mines Richer and Better.

Last Wednesday, January 6th, very rich ore was struck in the Little Frank shaft in the Niobrara, as shown by tests made by a gang of miners working at the bottom of the shaft, the rich pay streak is 16 inches wide and growing larger. Ore taken out on Thursday will pay $1,000 per ton.

The last strike ever made at Picacho was in the Gold Camp, Red Bird and Iron Hand mines, all on the same vein, last Monday. The great vein is from 80 to 200 feet wide, grading good free milling ore, that averages from $4 to $50 per ton. Samples taken from the croppings on the Red Bird and Iron Hand mines, 40 feet apart, range from $45 to $50 per ton. The vein crops out for 4500 feet and shows plainly on the Golden Sunset, rising in places 150 feet above the surface of the country around. It is within 2000 feet of several tribal roads, over which thousands of persons have passed since the discovery of gold in Picacho, thirty-five years ago, little dreaming that this great vein of rock would become a wonder of the world.

Rich ore was also struck in the Del Mar and De Smet mines, on another great vein in the Picacho Basin, on Tuesday. This is also from 50 to 100 feet wide, and the ore is of the same general character and value as that in the Gold Cup and Red Bird mines. These are the same mines that were bonded by Harry F. Selleck, of Col. D. K. Allen, last year, for George Gould and M. E. Graves of New York. In the White Gold Basin, the Planet and Sirius mines in the Pleiades group lead off with the largest bodies of good ore yet struck in that section. On Monday, Col. Allen, in his work opening this group preparatory to putting up a mill, found a body of ore 12 feet wide that runs from $8 to $50 per ton. Lying near this, turned over 20 feet wide, that averages $6 per ton. On the south side is still another, 80 feet wide, that averages its entire width from $4 to $5 per ton. These have been traced the entire length of the claim.

The ore in the Eddie Hodges mine runs from $8 to $15 per ton, that in the Colossus from $7 to $12, that in the I. O. Smith from $7 to $10, that from the M. E. Graves or Pleiades group from $20 to $30, that in the Pleiades from $8 to $10.

Col. Allen has ordered a 60-ton mill for the Pleiades group and is now on the way to Picacho. He has also ordered another 60-ton mill for the Capella group. Both of these will be on the White Gold veins.

The Golden Dream mine, 100 stamp mills, is nearly ready to start up. It will run on Noonday ore. Ex-Senator S. W. Dorsey is in London, closing the arrangements for building his 100 stamp mill at Gold Camp. The government is making an examination of the work on 160 of his claims. Other parties did the work on 65 others. Rich ore or fine prospects were found in more than one half of these 225.

The Golden Dream Mining Co. is organized as follows: George W. Ireland, president; Col. D. K. Allen, 1st vice-president and general manager; J. L. Rice, 2nd vice-president; Emerson Gee, chief engineer and assistant general manager; M. R. Ritchie, superintendent of mill. Messrs. Ireland, Allen and Gee hold the same positions in the Pleiades and Capella Mining Companies. The Capella group is situated on the east end of the White Gold Vein, and promises to be one of the best in the Old Picacho Mining District. The vein runs 80 feet wide, and the ore averages $5 per ton in free gold. A cross cut has been run on the 60-foot level on the Noonday mine. The vein is 39 feet wide. The ore averages $5 per ton in free gold. The shaft is only 200 feet from the mill.

The Golden Dream mill will have three oil engines; one will drive the stamp mill, another the crusher and the third the 10 stamp mills.

Never in the history of the Picacho mines was the future more bright, prospects better, more work to be done and more money pending. Those who have labored and sweated at the old camp are eating their crow, and rushing in to get hold of something before they get left.

X. X. X.

ARIZONA.

Arizona has a mining law which will not allow the re-locating of claims to avoid assessment work. It compels the locators to do the work, regardless of the necessity in California and it is to be hoped that it will pass the next Legislature.—Mining and Scientific Press.

The Golden Cross stamp mill out at Hodges, San Diego county, Cal., is now cleaning up $1000 a day.
Miscellaneous Mining News.

Arizona.

Professor Blandy, ex-territorial geologist, who is examining the mining statistics of Yavapai county, makes the statement that the mineral output of that county during the past year will exceed that of 1895 by $300,000.

The successful placing of the bonds of the Vulture mine would be the means of re-opening the greatest gold mine in Arizona. This mine has produced quite $15,000,000, yet the greatest depth ever attained on it is less than 40 feet.—*Free Press*.

Ore has been found in the St. Peter-Martin property, near Jerome, which assays $1.744 in gold. These claims will develop into great paying properties.

*The Williams News* says that F. R. Nells has bonded thirteen of his Canyon copper claims for $5,000 each, to a mining financial company of Boston. This company will at once expend a large sum of money in the development of these properties, which means much to this section, and in all probability marks a new business epoch in Coconino county.

The oil well discovery at St. David, in Coconino county, has created quite a little excitement. A high Southern Pacific official, who was at Tucson when the report was first made known, came to the scene of the diggings. He made a thorough examination of the oil, taking with him samples to be tested, and also of the jars of oil for formation and depth. The Southern Pacific uses considerable oil for fuel and should the new strike develop into paying quantities, that company would be in the market for every drop and also, doubtless, sink wells thereabout. Further developments are anxiously awaited.

Frank Maguire and sons last week brought in to Kingman a ton of ore from the Lookout mine, 200 feet below the surface. The tunnel will be widened, with a return of seventeen ounces in gold. One sack of ore from the same mine gave a value of $5,000 per ton. This is a good showing for the Lookout. There is no doubt that the mine would show up great quantities of ore fully as rich as this if it was worked in a systematic manner.

The shipment of a load of ore every other day is going forth from the Telephone, near Tombstone. This mine is owned by Messrs. Scribner, Farrington, English and Barron.

The United Verde Copper Company of Jerome, which nearly doubled the capacity of its plant during the past summer is still engaged in enlarging its plant and increasing its capacity. Parties who are in a position to know the output of the mine estimate that its daily output now averages between $115,000 and $30,000.

The Wallapai Company, at Music Mountain, Mohave county, are driving a crosscut tunnel that will cut their main level over 400 feet below the workings. The tunnel will be 800 feet when completed and will cross 12 ledges that crop on the surface beside the probability of other blind ledges. They are gold mines. The company is working 20 men. Hackberry is the nearest point on the road, and the nearest point where the company purchase their supplies. J. A. Chestnut is superintendent.

The long tramway of the Buffalo Mining company at Globe has been completed, and a large force of men will be put to work immediately taking out ore.

At the Wood-Morton mill on the Verde river, gold is being plated from ore taken from the King mine in the Cherry Creek district. This mill is under the management of Bert Morton.

An abandoned mine, which was being worked recently but has not been worked in for some time, has been discovered near Mountain Springs, seven miles from Hillside, and fifty miles west of Prescott. The mine was well developed and is rich in gold. The ore is red from oxide. It was discovered by two men named Marcomy and Walters.

The Gold Cliff Mining company, which was recently organized by Frederick Stock, of Los Angeles, and others for the purpose of developing and operating the Johnstone Pitts mine on Tomlinson hill at Pearce, is a strong company and is already displaying great activity. Arrangements have been made and men employed to sink the shaft to the depth of 700 feet from which level drifts will be run and mining prosecuted in earnest. Men are already at work in these shafts. The necessary offices are to be constructed at once. A camp, already in place, will be increased temporarily during the progress of development work; but if the company maintains the degree of activity which has characterized its initial movements it will not be long until the mine becomes a lively producer. As its name indicates the mine is a good property. The character of the ore has improved steadily with depth, and eighty feet from the surface the ledge measures eleven feet in good mining ore.—*Phoenix Republican*.

California.

Amador County.

The Kennedy mine at Jackson, was a mine that had been worked for some years and then abandoned. In 1885 some San Francisco people, about twenty in number, purchased the property, and September 4th, 1885, opened the mine. The original cost of the property was $100,000. The amount expended in development, including all voluntary assessments, was $300,000. On May 1st, 1887, the first dividend was paid, and the mine has never ceased since then paying dividends monthly. The dividends to date amount to nearly $2,000,000. The present value of the property is also estimated to be about $2,000,000. The depth of the present shaft is over two thousand feet, showing on bottom level a large body of high grade ore.

**Sutter.**

The Bahol mill on Sutter creek is nearing completion.

The drift south from the 700 level in the Central Rureka has been reopened and extended in 200 feet. In the bottom a large mass of quartz has been encountered which carries good looking sulphurites.

Drytown.

The Eastern owner of Dryton mine has ordered the shaft driven to the 1000-foot level before any prospecting of the ledge be done.

**Amador.**

T. C. Mayon is superintendent operations on the El Dorado mine in Amador county. It is being opened up and developed on similar lines as the Kennedy. A new shaft is being sunk on the old mine, which was full of water, which is to be driven and connected with the new shaft for nearly twenty years. The new three-compartments shaft is now down over 1,100 feet. It is a fine piece of work which cost about
The mining company, capitalized at $1,500,000, has been formed at Randsburg. It will place its stock, valued at $2 a share, on the market at 12 1/2.

W. C. Wilson, of Mojave, sold some mines north of Randsburg for $1600 cash.

A rich discovery was made December 17th, of a great extent of gold-bearing ground. The mine is fifteen miles distant from the San Andreas fault, and has been developed by a rich miner named Wilson, who has invested $5000 in the property. The mine is situated on the south side of the fault, and is about three miles distant from Randsburg. The mine is said to be worked by a large force of miners, and to yield valuable gold. The mine is known as the "Wilson Mine," and is expected to become one of the most valuable in the district.

Miners' Convention.
A meeting of the miners of Pinacate Mining District was held at the office of the recorder of the district, at which it was resolved to call a convention of miners and others interested in the district, to be held in Perris about February 1st. A committee was appointed to make the necessary arrangements, and to announce the date and place of the convention.

The town of Pinacate, about nine miles southeast of Perris, is rapidly developing. It is situated on the line of the railroad, and is expected to become a large mining center.

New Mining District.
The Defiance Mining district was organized on December 26th by thirty-four miners having claims in the Iron canyon part of the district. The boundary of the district is described as follows: It begins at a stone monument about half a mile south of the mouth of Iron gulch, and runs in a northwesterly direction to the apex of Sugar Loaf mountain, thence northwesterly on a line ten miles from the place of beginning, thence north ten miles, east fifteen miles, south ten miles and southwest five miles to the place of beginning. Only mine owners and prospectors having claims in the district for thirty days will be allowed to vote at any mining election. Each claim must be marked by four monuments ten feet apart, and must be staked out on each quartz claim within six months from the day of location, assessment work being counted at $1 per day. E. R. Baker was elected district recorder for the year 1897.

Gold Mountain Shut Down.
The work at Gold Mountain has suddenly shut down, and no satisfactory reason has yet been given for the stoppage of the work. A notice was sent that twenty men were taken to Bear valley by the company which held the lease of the mine from E. J. Baldwin, and what was
supposed to be a winter's work was commenced. A 10-stamp mill was taken to the mine, and it was understood that development work was to be pushed vigorously.

The first indication of anything to the contrary was when the miners reported in San Bernardino January 6th, bringing word that work had been stopped, and that all the men, or the larger part of them, had been discharged. They were paid off in full and told that no more work would be done.

There are several explanations of this step. Probably the most rational one is that there was a shortage of water, two wells having been put down without getting water for the mill, and it was thought best to thoroughly investigate the water question before proceeding further.

Another explanation offered was that Superintendent Church was furnished with a certain sum of money, and instructed to use it, but stop when it was spent, if nothing had been developed.

A third reason offered was to the effect that the company after sending Mr. Church here as superintendent, sent out an engineer or expert, and there was a clash in authority, and differences of opinion to the best method of carrying on the work.

Whatever may be the difficulty, the Gold Mountain is closed down for the winter and the miners are returning to the city—San Bernardino Weekly Sun.

The Colton Cement works started their fires for the first of the year, and this time it is said that they will not cease operations so long as the demand remains good, for the excellent quality of material which they furnish. A full force of men were started working in the quarry several days before the first of January to mine and run down a sufficient quantity of rock. The people of Colton are very much pleased with the renewed activity at the plant, as it means the employment of many men and a consequent prosperity in a local way. The people of the county in general, however, will watch the movements with a great amount of interest, as there is but little doubt in the minds of all, mining men that the cement works at Colton, if the cement works to a first-class smelter would mean a rapid development in many of the mining properties of the county and a subsequent widespread prosperity to miners and mining men.

Oro Grande Notes.

This place has undergone a development in mines until it is believed by local men that it stands second to no place in the county. Everywhere there is an activity that portends well for the future of Oro Grande.

The smelter which has been under construction for the past six weeks is now completed, with a capacity of 40 tons per day. It is receiving ore daily, and Superintendent Spears has notified the public that the smelter will commence operations as soon as he gets 1,200 tons of ore, or one month's run if needed.

Morgan and Decrow have made a very rich strike in the old What Not mine, and from 30 tons of ore will realize about $250. Danna and Decrow are now developing one of their claims, about 500 feet from here, and have struck a two-foot ledge, which is 200 ounces of silver and 40 cents per cent. In lead, which will be of great value to the smelter as a flux.

Two hundred tons of ore are now in the bins of the Koehn Springs mill waiting for treatment.

The El Dorado Canyon mill, on the Colorado river above Needles, is now on a steady run.

The Kramer mining district is coming to the front at a rapid pace; bids fair to soon equal the fortunes of Randsburg.

Today two cars of rich ore from the already famous St. Elmo mine, in Northern San Bernardino county, will be sent to the Pueblo smelter.

The capacity of the mill out at Koehn Springs, this side of Randsburg, has been doubled. Ten stumps are dropping now where five did business before.

Chas. Koehn, owner of a mine in what is termed the 'stringer country,' near the north line of San Bernardino county, is taking out some extremely rich rock.

We understand the Campbell mill at Vanderbit is now running steadily, with results that are entirely satisfactory, and the outlook for the camp is brighter than for some time.

L. C. Currier, who spent several days at the Virginia Dale camp, is home in San Bernardino. He says many things are exceedingly lively out there, and new camps are being pulled in every day. The lack of facilities for milling ore retards the development of the mines of that section. He spent a day or two at the Lost Horse mine, where he ran across Jep Ryan, who had just come in from Miles City.

The boys have been doing good business with the two stamp mill, the average month's run being nearly $1,000 per month. While Mr. Currier was there, they made a nineteen days' clean up which returned $2,500. In making the trip back to the railroad, Mr. Currier met twenty-five men headed for the district.—The Weekly Independent.

SAN DIEGO COUNTY.

The National Bank of California received from the Golden Cross mine near Yuma, three bars of gold, 8 ounces each, aggregating 1,374 ounces, and valued at $20,000. This represents about a twenty days' run, the daily output of the mine averaging nearly $8,000 per day. The mine is in a sound condition, and is making a clean up netted $29,000. The bullish is usually shipped from the mine direct to the National Bank of California to be forwarded to the bank of San Francisco. The Golden Cross is taking rank as one of the best producers among the mines of Southern California.

TOULMIN COUNTY.

Soulsbyville.

The lease holders of the Mountain Belle are sinking on the extension of the Wheal Perran vein. The rock encountered shows free gold.

The shaft on the extension of the Soulsby vein is not being worked although there is a very good water power hoist. The last crushing paid $75 per ton. The miners are pulling 1,000 ounces of silver and 40 cents per cent. In lead, which will be of great value to the smelter as a flux.

The Wheal Perran mine has just been watered preparatory to active work and equipment. This mine was in the early days very rich, the ore running up into the hun-

dressed per ton, sulphur price, and $20 to $30 in free gold, but the levels and stopes were all gouged out by the owners, and left, generally, in a very bad condition. This mine can be opened at water power, by pumping a pressure of over 300 feet. It is a parallel to the famous Soulsby.

The Soulsby mine is equipped second to none in the State, having both water and steam power. The shaft now is sunk over 200 feet and stoping is in progress from this level upwards. The ore is of high grade which the returns from the mill will shortly testify. A tramway 3000 feet long connects the hoist with the mill. The ore will be conveyed in cars and operated by electric trolley power. The mill is nearly completed, having 15 stamps with all accessories needed for a first class plant—concentrators, canvas tables, etc., etc.

Mother Lode.

The Jumper still is producing their now famous clean up.

The Ape mine is in good ore, and cleaning up good monthly returns.

The Golden Rule is progressively developing, as all of the other mines in this section are doing. Time and space will not permit any extended comment. Under bis, gilding the Alabama will in time add another jewel to the diadem of Old Toulmin.

The Rawhide still sustains its former reputation as a gold producer, their values are found largely in their sulphuric acid. Their chlorination plant is second to none on the coast. A large number of miners and employees are kept constantly on the pay roll.

The Whisky Hill property is being opened up, and I feel sure this mine will show up well as it is the best property in the district. The men are making a clean up netted $20,000. The bullish is usually shipped from the mine direct to the National Bank of California to be forwarded to the bank of San Francisco. The Golden Cross is taking rank as one of the best producers among the mines of Southern California.

Oil Fuel for the German Navy.

The German naval authorities have decided to equip all the existing large men-of-war in the German navy with apparatus for heating their boilers partly with oil, and the use of liquid fuel will be provided for in all new vessels. The oil will be stored on board in special tanks, from which it will be conducted to the furnaces by pipes and ejected in a spray by steam. For the storage of the liquid fuel in large quantities, reservoirs holding over 100,000 gallons have been built at Wilhelmshaven; and similar arrangements are to be made at Kiel and Dantzig.

A company has been organized in Glasgow, Scotland, under the name of the Meldrum Tunnel and Mining Syndicate, to run a tunnel, which will intersect the tunnel to the Telluride side of the mountain in Colorado. The cost is estimated at $2,000,000.
COLORADO.

Output of Leading Cripple Creek Mines for 1896.

<table>
<thead>
<tr>
<th>Mine</th>
<th>Gross Value</th>
<th>Men Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland</td>
<td>$1,600,000</td>
<td>175</td>
</tr>
<tr>
<td>Independence</td>
<td>10,800</td>
<td>60</td>
</tr>
<tr>
<td>Victor</td>
<td>14,000</td>
<td>175</td>
</tr>
<tr>
<td>Isabella</td>
<td>35,000</td>
<td>120</td>
</tr>
<tr>
<td>Eklon</td>
<td>7,500</td>
<td>175</td>
</tr>
<tr>
<td>Draper</td>
<td>6,000</td>
<td>60</td>
</tr>
<tr>
<td>Anchoria-Leland</td>
<td>4,718</td>
<td>95</td>
</tr>
<tr>
<td>Springfield</td>
<td>3,800</td>
<td>80</td>
</tr>
<tr>
<td>Union Gold</td>
<td>4,500</td>
<td>120</td>
</tr>
<tr>
<td>Last Dollar</td>
<td>5,000</td>
<td>200</td>
</tr>
<tr>
<td>Anaconda</td>
<td>6,000</td>
<td>175</td>
</tr>
<tr>
<td>El Paso</td>
<td>6,000</td>
<td>100</td>
</tr>
<tr>
<td>Gold Coin</td>
<td>5,000</td>
<td>100</td>
</tr>
<tr>
<td>Prince Albert</td>
<td>2,200</td>
<td>100</td>
</tr>
<tr>
<td>Jefferson</td>
<td>1,900</td>
<td>175</td>
</tr>
<tr>
<td>Tronclad</td>
<td>3,000</td>
<td>100</td>
</tr>
<tr>
<td>Great Western</td>
<td>1,000</td>
<td>12</td>
</tr>
<tr>
<td>Favorite</td>
<td>1,250</td>
<td>75</td>
</tr>
<tr>
<td>Windicator</td>
<td>1,000</td>
<td>70</td>
</tr>
<tr>
<td>Theresa</td>
<td>1,050</td>
<td>40</td>
</tr>
<tr>
<td>Leplin</td>
<td>2,091</td>
<td>40</td>
</tr>
<tr>
<td>Little</td>
<td>2,500</td>
<td>50</td>
</tr>
<tr>
<td>Christmas</td>
<td>700</td>
<td>14</td>
</tr>
<tr>
<td>Specie</td>
<td>500</td>
<td>15</td>
</tr>
<tr>
<td>Bankers</td>
<td>500</td>
<td>20</td>
</tr>
<tr>
<td>Bogaert</td>
<td>500</td>
<td>6</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>600</td>
<td>20</td>
</tr>
<tr>
<td>Colorado City</td>
<td>200</td>
<td>10</td>
</tr>
<tr>
<td>Squaw Mountain</td>
<td>150</td>
<td>15</td>
</tr>
<tr>
<td>Nellie V.</td>
<td>330</td>
<td>10</td>
</tr>
<tr>
<td>Abe Lincoln</td>
<td>392</td>
<td>40</td>
</tr>
<tr>
<td>Arcadia</td>
<td>600</td>
<td>45</td>
</tr>
<tr>
<td>Granite Hill</td>
<td>250</td>
<td>20</td>
</tr>
<tr>
<td>Raven</td>
<td>2,750</td>
<td>60</td>
</tr>
<tr>
<td>Work</td>
<td>735</td>
<td>17,715</td>
</tr>
<tr>
<td>Gold Crater</td>
<td>1,500</td>
<td>50</td>
</tr>
<tr>
<td>Garfield-Grouse</td>
<td>700</td>
<td>35</td>
</tr>
<tr>
<td>Moon Anchor</td>
<td>2,824</td>
<td>101,125</td>
</tr>
<tr>
<td>Gold Standard</td>
<td>130</td>
<td>6,000</td>
</tr>
<tr>
<td>Chief</td>
<td>150</td>
<td>9,000</td>
</tr>
<tr>
<td>Modoc</td>
<td>600</td>
<td>30</td>
</tr>
<tr>
<td>Trail</td>
<td>1,000</td>
<td>32,000</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1,000</td>
<td>50</td>
</tr>
<tr>
<td>Fanny B</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Orita</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Keyser</td>
<td>250</td>
<td>10,000</td>
</tr>
<tr>
<td>Lucky Goal</td>
<td>300</td>
<td>32,000</td>
</tr>
<tr>
<td>Dead Pine</td>
<td>100</td>
<td>4,000</td>
</tr>
<tr>
<td>Granite</td>
<td>300</td>
<td>18,000</td>
</tr>
</tbody>
</table>

The lack of which in the past has been the only drawback to mining development in that country. When a prospect has once been obtained it is as good as one in any country.

John McCool returned to Hemet from Ensenada, Lower California, Monday, January 4th, having been on business connected with the mines in which he is interested. He brought back with him a mineral patent for the Delberta group of mines in which Messrs. Burt and Young of Hemet are associated with him. There is now nothing to hinder them from going to work to develop their placer diggings. They have the title, and a plant is being erected for this purpose.

F. E. Russell, a brother of Major H. M. Russell, arrived in Eusenada on the last of December from Los Angeles and will resume work on the mine he worked for twenty years ago. He recently was bonded through F. E. Braddock to a Chicago company. The Aurora, in days gone by, was one of the best paying properties on the Peninsula, and the fact that the old works will be reopened and further explored will be particularly cheerful news.

MEXICO.

Rich Gold Mines

The "Tlatlaya Gold Mines," State of Mexico, will undoubtedly be, in the near future, the center of a great number of rich mines, as a number of valuable veins have already been discovered in this country, belonging to Mr. De la Camara & Co. is composed of three groups—the first with the mines at "Pera;

The "El Oviedo," "La Mejor," "Tres Rios," "La Colorada," is very rich in "free gold." These mines are located in the famous Cerro de los Ocoles; the second group is rich in copper, and the third has some auriferous veins, rich in silver-lead. A number of assays have been made from the above mentioned mines, and a large deposit of ore has already been made in the offices of the company and all show signs of great richness, especially those of the first class, which contain native silver, presenting to the naked eye a splendid aspect. The group has sold already several amounts of ore to the United States. Mining works, and the assays have given the following results in silver, from 8,000 ounces to 1,800 per ton of 2,000 pounds, with from 10 to 47 per cent. of iron; the copper from 40 to 60 per cent.; lead from 40 to 60 per cent.; gold, the lead ores 62 per cent.; lead from 40 to 80 per cent. of silver and 8 per cent. of gold. It is thought that with a large quantity of low grade ore, 20 per cent. of the ton of silver and 25 per cent. of iron or lead, that expenses can be paid and still leave a splendid margin for the owners.

Anglo-Mexican Mining Co.

The report of the directors of the Anglo-Mexican mining company, limited, for the year ending 30th June last, states that the total receipts amounted to £6,950, and the expenses (including £1,000 written off for depreciation) to £7,165 leaving a balance of £3,485 as the profit for the year. Out of this sum, and the balance of £3,485 brought forward, the directors have paid during the year £3,807 in dividends, and since the date of the accounts further dividends, amounting to £3,712, have been paid, leaving £595 to the credit of revenue, out of which the directors have set aside £3,000 to write down the "cost of property" account, £15,085 has been expended during the year in development and dead work, and it is expected that all these works in order to prove and open up the mine in depth. The mine has already materially improved. The mill has been working regularly and successfully during the year 17,865 tons of ore, yielding at the rate of £165,127. The method of treating the tailings has at last been decided, and it is stated on good authority that the Campana gold mines, situated about eleven miles below El Plomo, Sonora, Mexico, the property of Brewer Cameron, L. H. Manning and Leo Goldsmith of Tucson, have been exploited by a syndicate of Englishmen, who will erect a stamp mill and work the property, the original owners retaining an interest.

The Corralitos track is now laid for ten kilometers out of Juarez, and as soon as the bridge gang has built the overhead crossing of the Mexican Central, the track layers will shoot out for the Corralitos country at the rate of a mile per day. The grading is completed for nearly fifty miles, and the contractors are building on as fast as possible. Chief Engineer Peck and Smith is sure the locomotive's whistle will be heard in Corralitos, in the State of Chihuahua, by next June.

The old Zumbite mine, nine miles east of Minas Prietas, in Sonora, has been worked for over one hundred years, and in that time has produced over $15,000,000.

At a general meeting of the shareholders in the Coronas Mining Company, Limited, held on the 6th of January, it was decided to call another meeting on the 27th inst., at 3.30 p.m., at the Hotel of La Calle de San Francisco, No. 14, so as to give time for the preparation of the accounts for the last year and Directors' Report to be presented to shareholders.

NEVADA.

There are about forty men employed at the Adelaide Copper Mine, near Golconda, Humboldt county.

Kingsley Notes.


The little camp of Kingsley is 25 miles west of Deep Creek, in Nevada. Sergeant Kingsley describes the country as being very well suited for Indians, he being out with a company of Gen. Conner's command, and soon after John O' Doherty, Judge Riley and others came here. Sergeant Kingsley of the 5, and all the time miners were so well pleased with what they saw there that they put up a Welch roaster and took out some ore, but it would not smelt as they wanted it to do. At first it was reported that that some ore was left and that work has been done in the camp every year, and
some ore was shipped when the Dollie Var- 
den smelter was running; and at this time
a large amount of ore was taken from the Morn-
ing Star, that assayed 20 per cent lead and from 60 to 125 ounces in silver to the ton.

The Star people are now breaking down
mineral which will be hauled by wagon to 
Tuano, from which place it will be shipped to 
Salt Lake by rail.

The Kinsey Mining Company, which is
composed of Salt Lake people, among which
are W. W. Chisholm, D. J. Kendall and Judge 
William Bradley, and Newton Dunyon and son, is the owner of 12 patented claims in this 
district, on which it has done a large amount of work, and which it is still developing. 
The company has shipped 67 tons of high grade ore from this property, and at the present time it has about 100 sacks of ore on the dump, which will be marketed as soon as possible. The company also has
about 300 tons of low grade ore ready for
shipment if this country had railroad facili-
ties, and if the road were only built into the 
Deep Creek country, it would leave a wagon
haul of only 20 miles to the Kinsey mines.

Dollie Var- 
den is 145 miles from Kinsey.

This property was a rich property when sil-
ver and lead were up, and there was also a
smelter at the mine; but one night the hands at
the plant were given a drink, and in the
morning it was found that the smelter had frozen up with a solid copper matte in it, which
had to be chiseled out. The owners had no more money to invest, so that the
plant has been closed down ever since.

H. J. Faust.

A shipment has been made to Salt Lake
from the Lyndon mine in Comet district, and
owned by the Prudential brothers.

A remarkable deposit of silica, free from
grit and almost absolutely pure, exists at a
convenient point near Queen's Station on
the line of the Carson & Colorado railroad.
The demand for such an article is great, it being
extensively used in making a preparation for pipe,
boiler covering and fireproof plating.
This is one of the few existing deposits free
from protoxide of iron. Shipments have been
made east as far as Boston.

The Delamarode Lode says that it is rumored
that the Delamarode company is negotiating for
the Ash Springs in Pahranagat valley, and
that electricity will be generated therefor
for hoists and mills.

NEW MEXICO
(Deming Headlight.)

Tres Hermanos.

M. C. Weaver is still pegging away at his
claim, and from present indications feels con-
siderate he has a good thing and he intends
to push it along.

A. Beals is having some development work
done on his property in this district, and the
outlook is very flattering.

Owners of other properties expect to com-
merce work in a short time, and it now looks as if this advance movement will soon be one of the leading camps in the county.

Coqui.

The advent of the new year has made few
if any changes in the prospects of the camp.
Messrs. Cotton and McDaniell, the owners of
the Enterprise mine, are preparing to do some
extensive development work on their prop-
erty. They have considerable quantities of ore
now in sight, but they propose to do further
prospecting in search of larger and richer ore
bodies where the mineral is known to be near by.
They will commence work in earnest within a
days. When the new ore body is struck, which is only a question of time, they will employ a large force of miners.

Central.

The doings in this camp are much the same
as usual, there being little or no change to re-
cord. The only event of any importance which has transpired in this vicinity lately,
ocurred on New Year's day, when the Texas
company made a strike of exceedingly rich
ore, at the depth of 252 feet. The vein is
twelve inches wide, six inches of which
contains gold plentifully. The ore is being
sacked for shipment to Philadelphia, the
headquarters of the company operating the
property. The fact of rich ore being found at
this depth demonstrates the fact conclusively
that the mines have been deepened and increase in richness as depth is attained.

Lost Mine.

Charlton and Allen are working on a lease
and they are extracting some good ore. They
will have made a shipment of two tons of sec-
ond class ore and one ton of first class ore to
the Deming Smelter this week. The proper-
ity is bonded to San Francisco parties who
will organize a syndicate of English capital-
ists who will, if they purchase the property,
operate extensively. In the sale, if it goes,
will be included properties belonging to H. J.
Hutchison, F. Bellm and others.

Bear Mountain.

Something, in all probability, will be done
in the near future with the extensive marble
quarries located here, as enquiries have been
made quite recently about them. A Chicago
firm has offered to put the stone upon the
market and to introduce it, pro-
vided the owners would ship them a carload lot.
The owners being poor, did not ship the marble for the simple reason that they
could not afford to ship more than one thousand, or fifteen hundred dollars in building wagon
roads and also that the philanthropists of the
Windy city failed to come to their aid finan-
cially.

Pinus Altos.

The Mountain Key company is plodding
along as usual and the Chilian mill is kept
running pretty regularly. Progress in the
mine is necessarily slow, as the large amount
of water in the shaft and lower workings in-
terferes materially. So far as it has been cleared out and remodeled the shaft and drills show up
well.

The Treasure and Bell and Stephens' mines
have been kept in constant operation, and the
Mammoth and Stanley-Martin mills will,
in all probability, be in operation before this
appears in print. The Stanley-Martin mill will start up on a lot of ore from Whiskey Creek.

Anderson.

W. P. Dorsey, formerly known by the
subliquet of "Horn Silver Bill," is again in
luck. About a year ago he located what was
supposed to be a body of onyx, but upon in-
vestigation it proved to be even more valuable. Samples of the stuff were sent to New York
City, and coming under the observation of
Tiffany the jeweler, he wrote, informing Mr.
Dorsey that the material was Flourescent, and
that if it could be obtained in large sized pieces it would be worth from 25 cents to
$1.25 per pound. Mr. Dorsey forwarded a
sample Monday morning for Mr. Tiffany's
inspection. The piece sent was nearly twelve
inches square, and weighed about thirty
pounds. The find is situated in Anderson
district near the Big Bonanza, middle
Gila, about three miles from Harper's ranch, and is on the east side of the river. Mr.
Dorsey has two locations on the ledge, and
he will do some work on his property this year.

Hillboro Mines' Output.

The following is "The Advocate's" Annual
statement, compiled from mill and smelter
books and accounts:

<table>
<thead>
<tr>
<th>Year</th>
<th>Ounces Gold</th>
<th>Ounces Silver</th>
<th>Tons Copper</th>
<th>Value of ore produced during past six years:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1897</td>
<td>$251,000</td>
<td>$432,680</td>
<td>117</td>
<td>$38,788.00</td>
</tr>
<tr>
<td>1898</td>
<td>$335,124</td>
<td>$489,598</td>
<td>145</td>
<td>$45,388.00</td>
</tr>
<tr>
<td>1899</td>
<td>$418,388</td>
<td>$428,399</td>
<td>137</td>
<td>$55,488.00</td>
</tr>
</tbody>
</table>

Bland Notes.

T. W. Briggs resumed operations on the
Monument mine January 1st.

The lessees of the Allerton put a gang to
work on that property the first of the month.

Charles McCoy is working the Mollie Gib-
son, a valuable property in Colla canyon.

Theodore Heckman has a force of men at
work on the Florence, developing for the lead.

Charles Graves has finished the assess-
ment on the 63, which lies between the Albermarle and Victor mines of Colla canyon.

Messrs. Philpot, Smith and Greenfield fin-
ished the assessment work on the Wilson, a
promising claim on Gold Hill, Dec. 31, '96.

The miners on the Good Hope have begun
to discuss the immense vein which is consid-
erably wider than seven feet, as at first re-
ported.

Messrs. Frazier and Wilson finished the
assessment work for 1896 on the Monte Carlo,
which lies south of the Washington mine, and
in the Noname group of claims.

While doing the assessment work on the
Free Trade, one of the claims of the Lone
Star group, the last of last month, an 18 inch
vein of shipping ore was struck. The ore is of
the same character as that in the Lone Star
mine, which has been a steady shipper since
operations first began, some three years ago.
The vein is widening considerably and in-
creasing in value with depth.—Bland Herald-
Weekly.

The Little Mollie mine at Bland, formerly
under bond and lease to George Marsh, of
Santa Fe, and Thomas F. Abbott and W. D.
Howard of Brand, has passed into possession
of the first two gentlemen mentioned and El-
mer A. Wilson, of Denver, who now consti-
tutes the owners of that valuable property, on
which the owners are now pushing develop-
ment will begin shipping at an early date. A force of men went to work to run a 90-foot tunnel at the bottom of the gulch, to intersect the vein at the depth of 100 feet. Also, the same day, the richest strike was made on the Little Mollie in the upper tunnel, and consists of a body of very high grade ore, plastered with native silver and gold bearing. There are two discoveries of quartz on this property, the largest of which measures eight feet eight inches across. Besides the mining operations, the owners intend to build a house at the Little Mollie, to be occupied by the workmen.

**Hillsboro Mines Output**

<table>
<thead>
<tr>
<th>Mine</th>
<th>Output</th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wicks</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Butler</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Richmond</td>
<td>75</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Happy Jack</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Snake River</td>
<td>75</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Opportunity</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Sherman</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Prosper</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Righteous</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Percha (silver-lead)</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>300</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Output of Hillsboro gold mines for the week ending Thursday, January 7th, 1897, as reported for *The Advocate*.

**Tintic**

A new steam hoist has been ordered for the Tennessee Rebel by George Adams, and as soon as it arrives, work will be resumed.

The values in the rich streak in the Mammoth appear to be increasing. The Mammoth Record reports a recent assay of 227 ounces gold to the ton.

The new compressor to run the machine drilled in the Emerald shaft is in place, and was started recently. The shaft will now be put down to the 700-level.

Thirty six full cars of ore were out of Tintic in one day last month, over the Rio Grande Western. The Union Pacific haul for the same day is not given.

From the strike recently made in the Little Willie, a fraction lying between the Eureka Hill and Centennial-Eureka, a sample carload has been shipped. If the ore pays, the Little Willie will be a constant shipper.

**Camp Floyd District**

The officers of the Sacramento Mining company met January 1st and declared its second regular meeting, payable on the 15th of the present month.

From a gentleman who has just returned to Salt Lake City from Mercur it is learned that the Sacramento is a looking "tinner than silt," and every foot of development work that is being done in this property is being done in ore.

During the past few days a discovery has been made in this mine that discounts anything else that has been found since the first pick was struck into it, and this was when the men at work in this property opened up a 40-foot body of ore that is good mining, and which is really the nicest chutte of mineral ever disclosed in this mine.

It is the intention of the company to increase the capacity of its plant at an early day, and it is the general understanding that when this is done the dividends will be increased also.

It is the general impression that the Sacramento is one of the most promising mines in Camp Floyd district. As it is the youngest dividend payer in the camp, and the indications are that it will open out into a mine as great as the Mercur, if not larger.

There was one time in the history of Mercur when it was believed that the adjoining ground, and the Sacramen
to ground was unoccupied long after the company began its first payments of dividends.

State Line District.

It is reported that the Burro company has arranged to have the ores treated at the Phoenix Reduction works at Bullionville, Nev., a move that will reduce the cost of transportation about 65 per cent.

The Rocky Mountain group has a tunnel in 165 feet and from this a winze was recently sunk which cut the ore body in a short distance. The ore averages 3000 per ton in gold and silver, while poor samples have been obtained running much higher.

On the property of the Fourteen company a shaft that was being sunk struck the ore at a depth of thirty feet, and at this depth $127 gold values were obtained, while a picked sample showed 540 ounces gold in addition to the gold. The ore streak is about eighteen inches wide.

**Utah**

(Extracts from Inter-Mountain Mining Review.)

Bingham

The Rogers concentrator is running through a 100-ton lot of Southern Chief ore.

The incline sunk on the vein of the Starlins is to be pushed down another hundred feet.

The 100-level has been driven 100 feet eastward, and a fine streak of ore carrying native copper and black oxide has been encountered.

A shipment of ore running 8% per cent, lead, 10 per cent. iron and 12 ounces silver, has been made from the Snowbird by Jones & West. The Snowbird is situated in Markham Gulch, opposite the Montezuma, and on the same side as the Centennial which has produced considerable ore.

**Park City**

Tim Sullivan, shift boss at the Silver King, has been advanced to the position of general foreman of the works, and Duncan Gillis has been made shift boss.

John Bogan, manager of the Bogan company, is making earnest efforts to effect a re-summation of work in the shaft and hopes to be successful early in the new year.

At the Cumberland, the shaft being sunk from the tunnel level is down 250 feet, the power used, being a gasoline engine. No prospecting has yet been done on the vein cut through at a higher point, the policy of the management being to get greater depth in the shaft before starting the search for ore.

The concentrated extraction of ore from the Valeo in the past three months has apparently made no impression on the ore body, and Mr. Dahlgren stated this week that in all his experience in Park City he does not know of a vein that preserves the uniformity of size and values so well. Ex-Governor Thomas secured 221 shares of the stock last week at $2 per share.

Now, however, this and other properties in the immediate vicinity of the Mercur give promise of developing into dividend payers that will equal this bonanza property in every respect.

In the Sunshine mine, at Sunshine, Camp Floyd District, a winze is being sunk from the bottom of the 700-foot incline for the purpose of cutting the ore body at that depth, and developments are also being pushed in other portions of the mine.

Secretary Ben T. Floyd, of the West Mercur Mining company, received an order for a block of 28,000 shares of the treasury stock of the company at 10 cents a share. The West Mercur is located on the west slope in Camp Floyd district, just south of the Sego Lilies, which adjoins the Daisies, on which it is stated DeLamar has just secured a bond for $70,000.

**General News**

The Hercules Gas Engine works has just completed and shipped a 25 H. P. stationary engine to Randsburg, where it will be used to run a 10-stamp mill, rock breaker and concentrator. The engine is of a new type equipped with distillate attachment and Corliss engine governor, which gives more perfect control than any other governor yet used on gas engines.

According to the report of the Bureau of Statistics of the United States, the exports of gold and silver for October, 1895 and 1896, and for ten months ending October 30th, 1895 and 1896, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Gold</th>
<th>Silver</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
<td>1896</td>
<td>1896</td>
</tr>
<tr>
<td>Imports</td>
<td>4,197,500</td>
<td>3,055,000</td>
</tr>
<tr>
<td>Exports</td>
<td>8,797,500</td>
<td>8,797,500</td>
</tr>
<tr>
<td>Gold</td>
<td>1,957,850</td>
<td>1,957,850</td>
</tr>
<tr>
<td>Silver</td>
<td>3,055,000</td>
<td>3,055,000</td>
</tr>
</tbody>
</table>

The Rawhide Mining company has placed an order with the Hercules Gas Engine works for a horizontal gasoline or distillation engine which will be used to run the corn pumps. Plant will be installed and in running order in about 30 days. As electricity has been here-tofore used at the "mess hall" the installation of this new engine marks a new era in power for mining purposes and shows the great advancement made by the builders of these engines.

**Biggest Casting Yet.**

A Kratzer cast at his foundry at Bakersfield late on Monday night, January 11th, the largest piece of iron ever melted and poured into one mould in Kern county. This big casting is for a quartz mill and is certainly a jumbo. Moreover, it is the finest casting of this size and character ever attempted here. The moulders were busy all Saturday and Monday preparing for the hugh casting, whose weight is 3,000 pounds. It will undoubtedly go either to Randsburg of Greenhorn. It is not unlikely that other heavy mining machinery may be cast there in the near future. Those requiring machinery of this kind are not slow to discover that castings as good as those made in San Francisco can be made in Bakersfield at San Francisco prices, and no freight to pay on patterns or castings.
Electric Smelting of Iron and Steel.

The all-pervading conquest of electricity seems to have made yet another important branch of industry. In this country, as in France and in Sweden, at least three well-known inventors have taken out patents for electric furnaces. The smelting of iron and steel and, it is understood, that in the last-named country the process is about to be put into effect on a large scale. Vivian has secured one side of the falls of Trollhatten and has organized a large company to exploit his invention. At Naunhausen M. Herrault, the inventor of the electric aluminum process, known under his name, and under which the larger part of the aluminum of Europe is manufactured, has also devised an electric smelter, and claims to have secured admirable results therefrom, although no definite figures have yet been given out. In this country Joseph A. Vincent, of Philadelphia, has taken out letters-patent of an exceedingly simple smelting furnace which he has received high commendation from those who have examined it, and for which the inventor likewise claims high efficiency.

Briefly described, the furnace consists of an oven containing a pair of electrodes supplied with a powerful current, the ore being driven between the latter by means of a rotary screw, and the smelted material caught in a plunger below. The body of the furnace is formed of refractory material, such as fire-brick, and is provided with a verticle channel or hearth, open at the bottom and terminating at the top in a neck, leading to a feeding device adapted to positively force the material to be smelted into the hearth. This feeding device consists of a chamber or hopper into which the material, after its first being finely pulverized, is delivered, and a screw or mechanical propelling device standing the hopper, and extending into the discharge neck, through which it is forced into the hearth below. By turning this screw, the materials from the hopper are forced with a steady pressure into the hearth. The lower end or bottom of the latter consists of a table of refractory material mounted on a piston working within a hydraulic cylinder. The lower end of the piston is connected by pipe with a stand pipe, which has sufficient capacity to create a pressure upon the side of the piston, and thus uphold the bottom of the hearth to the desired point. An ingenious automatic device with a float valve controls the action of this piston. Opening transversely into the hearth, and substantially of the same depth as the latter, are two dums arranged diametrically opposite, through which the electrodes are thrust. These electrodes are of carbon upon roller carriages running on rails and moved to and fro by means of screws and an electrically controlled power device. The latter are a pair of electro-magnetic governors, operating in such a manner that when the resistance of the hearth is abnormal, due to the burning away of the electrodes, the governors come into operation to push the electrodes toward each other, thus maintaining proper maintenance of the arc at all times.

By means of a pair of pulleys, operated mechanically, when sufficient current passes through a by or shunt circuit, the magnet shifts the belt until the electrodes are drawn sufficiently near together. The current in the main circuit then increases and a spring shifts the belt again and the electrodes remain stationary. Several modifications of the device are also provided for to meet varying requirements for different conditions. In operation the current goes down between the electrodes in the hearth, under the positive action of the screws. As the pulverized material is smelted the product sinks upon the piston-supported flour. Under a sufficient pressure the latter sinks, thus allowing a continual stream of fresh material to be brought within the zone of fusion between the electrodes, and without interfering with the continuous operation of the furnace. It is evident that with a furnace constructed in this manner the ingot of smelted material may be of great length by simply providing the cylinder sufficiently long. When the floor is fully lowered the ingot may be removed from the space below the hearth. The production of combustion and gases generated in the process is converted by a flute extending laterally from the hearth and leading to a chimney above. This smelter, like both of the others, is especially designed for iron and steel and coke are expensive and cheap power from a watermill or culmbank is to be had. At the present time the seat of the iron and steel industries is approximately the open place of cheap fuel and cheap ore, and notably where these exist side by side. Deposits of iron ore, however, very frequently occur at long distances from coal areas, and the cost of transportation naturally lowers the profit of the mines. It does not now seem probable that the electric smelter will come into general use where coal is to be had cheaply and in abundance; but it may prove an immense boon to other iron producing localities where this is lacking. —Salt Lake Herald.

The estimated output of gold and silver by states, as reported by the Rocky Mountain News of Denver, is as follows:

- **Gold**
  - **Alabama** 320,000
  - **Arizona** 700,000
  - **California** 250,000
  - **Colorado** 12,057,952
  - **Georgia** 150,000
  - **Idaho** 2,000,000
  - **Michigan** 50,000
  - **Montana** 10,000,000
  - **Nevada** 2,000,000
  - **New Mexico** 2,000,000
  - **North Carolina** 5,000
  - **Oregon** 50,000,000
  - **South Dakota** 75,000
  - **Texas** 250,000
  - **Utah** 5,843,868
  - **Washington** 400,000
  - **Wyoming** 250,000

- **Silver**
  - **Alabama** 320,000
  - **Arizona** 700,000
  - **California** 250,000
  - **Colorado** 12,057,952
  - **Georgia** 150,000
  - **Idaho** 2,000,000
  - **Michigan** 50,000
  - **Montana** 10,000,000
  - **Nevada** 2,000,000
  - **New Mexico** 2,000,000
  - **North Carolina** 5,000
  - **Oregon** 50,000,000
  - **South Dakota** 75,000
  - **Texas** 250,000
  - **Utah** 5,843,868
  - **Washington** 400,000
  - **Wyoming** 250,000

Total: $61,717,926 $32,817,320

The gold production of the country in 1894 was placed by the mint at $39,500,000. In 1895 it rose to about $48,000,000. The figures above indicate a gain of more than 25 per cent. during the year just closed. The production for 1896 is $22,217,820 more than in 1894. To this Colorado contributes, roundly, $7,000,000, the production in that state in 1894 being $9,549,731, as against $16,500,000 in the year just closed.

**Personal News Items**

General Manager P. T. Farnsworth, of the Austin Mining Co., left Battle Mountain, Nev., for Austin, the county seat of Lauder county, January 5th.

Hon. A. W. McCon, of Salt Lake City, Utah, left the fore part of the month for the Kootenay country, in British Columbia, where he has large and valuable mining interests.

J. N. Bradbury has just returned from the Virginia Dale district, but from Banning, Cal., where he has been doing assessment work on some of his claims.

G. S. Moore left Battle Mountain, Nevada, for the Adelade copper mine near Goulburn, to accept the position as blacksmith from the company.

Carl Haller, the Royal Mining and Mechanical Engineer of Germany, was a caller at the Journal on the 18th inst. Mr. Haller has just returned from an extended visit to Mexico, and did not have his letters at his return to Chicago, Ill., where he has made his headquarters since the opening of the Columbian Exposition in 1893.

Jack Shelly, an old timer of Bland, N. M., and a first-class miner, returned to the above city from Cerillos the last of December.

Thomas Whito, a mining man of Soulsville, was among last week’s visitors to Sonora.

J. R. Boner, of Kingman, Ariz., has gone to Phoenix, Ariz., on mining business.

James H. Harrison, of Randolph, Cal., is visiting some friends in Santa Ana, Cal.

Mike Powers came down to Bland, N. M., from Clovis through the first of the year to the position on the Lone Star mine in the Cochiti district.

J. F. Stevens of Fresno, Cal., will start a stage route from Mojave to Randolph in a few days.
A. McDonald, the Superintendent of the Bellevue mine near Somora, Cal., returned from San Francisco the last of December. He intends making a trip to British Columbia very shortly.

R. S. Philpot, who has been in this city for some time on business, has returned to Bland, N. M., where he has some mining interests.

Joseph Trulbe, of Kingman, Ariz., has gone to Randsburg Cal.

W. C. Doelittle arrived in Phoenix, Ariz., Monday, January 4, from Claremore, Michigan, and will in a few days go to Humborg, where he will take position on the mill of the Humborg Mining company.

E. Downey, of Visalia, is in Bakersfield, January 15th on mining business.

J. H. Colvoun, of Kingman, has gone to Randsburg, where he will look into the possibility of supplying the town with water.

Mr. E. W. Wann, the Denver mining expert, arrived in Phoenix, Ariz., Monday morning, January 4th, to look after some mining properties in that portion of the Territory in which he is interested.

John M. Crawford left Randsburg for Bakersfield, Cal., last week.

Capt. Pier, a Denver mining expert, who has been spending the past two or three weeks in the country adjacent to Randsburg, is now inspecting the mines along the Colorado river in the neighborhood of Needles. There's a good deal for a mining man to look at in that country.

Dr. Helm, of Phoenix, Ariz., has gone to San Francisco, Cal., where he will meet a syndicate of capitalists, who will probably invest in Arizona properties.

Judge Wynn has returned from Bakersfield to Randsburg, Cal., where he is interested in mining.

Richard Gird, who went to Southern Mexico the latter part of October, with Wilbur Parker, of this city, to examine some mining property, will return home about the middle of January.

Robert Duncan, Jr., superintendent of the Alaska Treadwell properties, paid San Francisco a visit during the middle of last month.

Stephen Peck, the St. Louis capitalist who is interested in some mining property near Casa Grande, Arizona, arrived in Phoenix, Monday, January 4th.

F. H. Mills, of Caminita, Mich., is now the superintendent of the Mereed Gold Mining Co., at Cottonville, California.

A. F. Granger, the Denver mining man, who is interested in some mines near Bumble Bee, Ariz., arrived in Phoenix the 4th inst.

Charles Butters, manager of the Rand Central Ore Reduction company, of South Africa, is on his way from New York to California, and is expected in San Francisco on the 15th inst.

Charles Thomas, one of the discoverers of the famous La Portuna mine in Arizona, has struck a fine prospect at Sien's Pass.

Russell L. Dunn, who left San Francisco in August for Siberia, to examine and report upon some gravel properties for a Russian syndicate, was at last mail dates at Gorbatka, on the Chika river, a branch of the Amour, in Siberia.

J. H. Canovan, for a number of years superintendent of the Old Dominion Smelter, at Globe, Ariz., is now in Phoenix.

Marcus Daly is going to Mexico in the near future to look up some mining properties in which he is interested.

R. E. Moore, who is interested with Mr. Mergenthaler, the inventor of the type setting machines, in the Butte mine near Jerome, Ariz., was in Phoenix January 30th.

Emile M. du Marais, a noted French mining engineer of Paris, is visiting Utah mining districts in the interest of French capital.

E. L. Davis, one of the foremen of the Arizona Copper company's works, at Clifton, Ariz., who has been quite sick for a month past, left Clifton, Jan. 5th, in company with Bud McLean for St. Louis, to recuperate for a while.

James A. Pollock, of Salt Lake City, Utah, who was here the last of December, was in San Francisco, Cal., the 9th inst.

John N. Ingrig and N. B. Brown were in Tucson, Arizona, January 6th, from Casa Grande, and report that a boom has struck the latter place.

E. George Ginn has resigned the Pacific Coast agency of the Gold and Silver Extraction Company of America, Limited, and will in the future devote his attention to mining business.

J. J. Riley, of Cherry Creek, near Prescott, Ariz., has gone to San Francisco, Cal., to purchase a mill for his property.

See the "Want ad," page 18.

Charles Olsen and C. W. Anderson, miners, left Phoenix, Ariz., the fore part of the month for Lower California, where they have some promising claims.

W. H. Will, the superintendent of the Black Warrior Copper Co.'s property, near Globe, Ariz., was in Phoenix the fore part of this month on mining business.

Hercules Gas, Gasoline & Distillate Engines

Hoisting Engines 1 to 200 H.P. Stationary Engines 1 to 200 H.P. Marine Engines 1 to 200 H.P.

Our newly designed and perfected DISTILLATE VAPORIZERS requires a saving of 50 per cent. in cost of fuel. Just 5 of your expense saved by using a HERCULES in place of any other. We make no exceptions.

Nearly 3000 Hercules hoisting, stationary and marine engines in actual use, high grade.

We claim full power, automatic and positive adjustment regulating speed and consumption of fuel in proportion to work being performed. No spring electrodes to burn out! All springs are outside. Points of ignition, speed and amount of fuel can be changed while engine in operation.

We make a Specialty of Mining Trade. Address Hercules Gas Engine Works

Write for Illustrated Catalogue. Established 1887. THE ABOVE MACHINERY IS BEING SET UP AND CAN BE SEEN AT OUR STORE.

DODGE MINING MACHINERY CO.

MORRIS BALL PULVERIZER

IT POSsesses GREATER CAPACITY THAN ANY MACHINE OF EQUAL WEIGHT. IT PULVERIZES HARD OR SOFT ORE EQUALLY WELL. IT MAKES NO DUST IN DRY PULVERIZING. IT REDUCES EITHER WET OR DRY EQUALLY WELL AND PULVERIZES TO ANY DEGREE OF FINENESS.

For further information Catalogues and Testimonials apply to D. M. DOUB, General Agt., 137 First St., San Francisco.
C. Ducmomun, 300-302 N. Main Street, Los Angeles

Assayers Materials, Mine and Mill Supplies

Dixon's Black Lead Crucibles, Denver Fire Clay Crucibles, Muffles, Crucifiers, etc.; Quicksilver, Drill Steel, Retorts, Mortars, Gold Pans, Drilling Hammers, Drifting Picks, Horn Spoons and Shovels.

To Gold Miners!
Silver Plated Copper AMALGAM PLATES

For Saving Gold.
GOLD REMOVED FROM OLD PLATES AND REPLACED

San Francisco
GOLD, SILVER and NICKLE Plating Works
555 and 655 Mission Street, San Francisco, Cal.

E. G. Denniston, Proprietor

Every description of work plated. Send for Circular.

FULTON ENGINEERING
AND
SHIPBUILDING WORKS

MINING AND MILLING MACHINERY
Adapted to every description of Mining and Milling.

Office and Branch Works, 213 First Street, San Francisco, Cal.

L. Booth, Mechanical Engineer
L. Booth & Sons
Engineers and Machinery Merchants

We carry the best stock of power generating and transmission machinery in Southern California.

Get the

Hardy Ore Buckets and Cars

The strongest and most durable made

338 North Main Street

Los Angeles, Cal.

W. H. Perry, President
S. H. Bott, Vice-President
W. A. Morgan, Secretary

W. H. Perry Lumber and Mill Co.

Agents for the

St. Paul & Tacoma Lumber Co., Tacoma, Washington

Special attention paid to Mining Timbers

Correspondence Solicited

316 Commercial Street

Los Angeles, California

Hallidie Patent Ropeway

For the

Transportation of Ore, Fuel and other material, has been erected by us all over the country and is the most economical and efficient method known. Nothing to get out of order, has always given satisfaction.

California Wire Works (Licensors)

Office, 6 Pine Street, San Francisco, Cal.

Wire Tramways
Ropeways,
Inclined Planes,
and Railways.

Holding Apparatus, Patent Grip Pulleys, Transmission of Power by Wire Ropes; 25 years experience; Send for Ropeway Pamphlet.

California Wire Works
338 Bay Street, San Francisco, Cal.
C. H. SANDERS,  Analytical Chemist & Assayer  
21 W. 24th South Street,  
SALT LAKE CITY,  
GOLD IN COLORADO!  
Colorado has within its limits some of the greatest gold mines that have ever been discovered. In Cripple Creek it is estimated that there are at least 500,000,000 ounces of gold. The West Creek district which is only thirty miles north of Cripple Creek is being thoroughly prospected and is one of the most interesting fields at the present time for the mining. The Denver and Rio Grande railroad has built a substantial stage road from Palmer to Fernie which will greatly shorten the distance between Denver and the West Creek district.  
The discoveries made on the West Creek mining camp and the mineral product of which made Denver what it is today, is becoming a big producer of gold. The low price of silver has driven all the men and capital that were formerly in silver mining to gold mining and the new inventions for working low grade gold ores, together with the discoveries made on new and old mining claims, have opened up a field for the miners such as they have never had before. Colorado has induced inventions to offer such as no other district in the world possesses, the record of the state in gold production for the last three years speaks for itself. Among the other prominent camps in the state are: Tal- 

A. A. BAILEY  MANUFACTURER AND DEALER OF THE LEADING  PACKINGS AND ENGINEERS SUPPLIES  LUBRICATING OILS AND COMPOUNDS  Exclusive Manufacturer of the UNI-

Nelden-Judson Drug Co.  
The Only House in Utah that carries a Full Line of  
ASSAYERS' MATERIAL, 
Furnaces, Scales, Balances,  
Weights,  
C. P. Cianciolo Potash, Per Ozois Soda,  
Blue Vitriol and All Chemicals.  
Salt Lake City, Utah  

STATE ORE  
Established 1882. 
Sampling Works  
A general ORE MARKET - Ore Works in Colorado, Oregon and Montana. 
ORE SOLD ON COMPETITIVE BIDS.  
Call or write for our large and complete line of ORE ANALYZING MACHINES.  
Write for sample of concentrates.  
Agents for Bailey & Adams' Chemistry  
Paraffine Paint Co.  
524 South Broadway, Los Angeles, Cal.  

W. T. Ferris, San Francisco  
THE FINLAYSON PATENT WIRE ROPE TRAMWAY  
This tramway is the best that has ever been placed on the market. It has no rival. It is strictly automatic and its capacity runs up to 1000 lbs. per bucket. We especially call attention to the automatic loading and unloading terminals and intermediate stations, as being important improvements over all other systems. If you are interested in a tramway and want the best that can be had, write us for information.  

STIMSON HALL COMPANY  
WHOLESALE AND RETAIL DEALERS IN  
PUGET SOUND FINE HUMBOLDT REDWOOD LUMBER  
MIILS AT SEATTLE, WASH.  
CARGO and CARLOAD ORDERS SOLICITED  
LOS ANGELES, CAL.  

STIMSON HALL COMPANY  
WE ARE THE SOLE AGENTS AND MANUFACTURERS OF  
THE FINLAYSON PATENT WIRE ROPE TRAMWAY  
This tramway is the best that has ever been placed on the market. It has no rival. It is strictly automatic and its capacity runs up to 1000 lbs. per bucket. We especially call attention to the automatic loading and unloading terminals and intermediate stations, as being important improvements over all other systems. If you are interested in a tramway and want the best that can be had, write us for information.  

THE COLORADO, DENVER, IRON WORKS CO.  
Contracting Engineers for and Manufacturers of  
MINING, MILLING AND SMELTING PLANTS  
We design and erect CRUSHING PLANTS with guaranteed capacity to any degree fineness. Investigate late improvements in our line of machinery.  

CORRESPONDENCE INVITED  
CATALOGUES ON APPLICATION
GOLD MINES!
IN JULIAN DISTRICT,
SOUTHERN CALIFORNIA.

I have listed for selling, bonding, or leasing, strict investigation invited.
Letters of inquiry about any mine or company answered.
Envelopes stamps for reply.

B. A. STEPHENS
917 F STREET, SAN DIEGO, CAL.

UNION HARDWARE STEEL METAL CO.
DEALERS IN
Boiler Tubes, Iron Pipe and Fittings
RAILROAD, MILLING, MINING AND FOUNDRY SUPPLIES
214 and 216 N. Los Angeles Street
Los Angeles, Cal.

Am. Zinc-Lead Smelter
CANON CITY, COLORADO.

New Mexico and Arizona Smelter
Hanover, Grant Co., N. M.

Will buy all kinds of ores; specially made of copper ores and those containing zinc, low grade refractory ores desired.
Write for prices to either smelter.

O. H. CURTIS, Gen. Agt.
New Mexico and Arizona Smelter.

THE WILSON
Forged High Grade Steel
Shoes and Dies
Guaranteed to Wear Longer and Prove Cheaper than any others.
Made by one of Special Appliances. Patented Aug. 16th, 1892.

JOSHUA HENDY MACHINE WORKS
SOLE AGENTS
38 to 44 Fremont Street,
San Francisco, Cal.

JOHN WIGMORE & SONS CO.
Heavy Hardware.
Agents for JOHN A. ROEBLING'S SONS CO. Wire Ropes.

MINING SUPPLIES
Iron and Steel
117 So. Los Angeles St., Los Angeles, Calif.

WM. T. SMITH & CO.
GOLD AND SILVER REFINERS AND ASSAYERS
Highest cash prices for old gold and silver, placer and retort gold. We will
make returns in Southern California, Arizona, New Mexico
from 4 to 5 days quicker than from any other point.

128 N. Main St., Los Angeles, Cal.

BELTING
Of all Descriptions,
FOR MILLS, MINES AND SMELTERS
Specialties
DYNAMO WATER PROOF, RAWHIDE AND SEWED...
BETTING.

FRED R. COOK,
206 Mission Street, San Francisco, Calif.

FRUE OR ECON CENTRATOR
Over 4,200 in Actual Use
Manufactured under Patents of April 27, 1885: Sept. 12, 1885: July 18, 1911; and March 31, 1892.

It can be safely stated, without going into a description of several new and unusual concentrators that have lately come into the market, that where sufficient ore of such value as to make concentrating necessary, the Frue Valenner is always used. It is the only endless belt concentrator in the market that can be relied on to handle large classes of ore, and give universal satisfaction. In all competition of concentrators the Frue Valenner takes the standard machine of the world, and all comparisons made by it. There have been over 200 of these machines made, and they having been sold on the Pacific Coast alone. They are in use in every part of the world where mining is carried on, and in all cases they are giving perfect satisfaction. From time to time valuable and important improvements have been made in the machine to increase its capacity and durability, and particular attention is called to the Patent Lip Flange for the rubber belt, which does away with nearly all the strain and cracking, as in the old style of flange, making the life of belts more than double that of other flanges in the market. The lip of flange bends outward in going over the large end and makes thereby distributing the strain in the solid rubber, and bringing virtually no strain either at the edge or at the base of flange, as is the case in all other plain belts.

Price of 4-foot wide Plain Belt Frue Valenner $600.00 each.
Improved Belt Frue Valenner 800.00 each.
6-foot wide Plain Belt 800.00 each.

For any information, pamphlets, circulars or testimonials, call on or address:
JAS. S. BROWNELL,
Western Agent FRUE VALENNER MACHINE CO.
132 Market Street, - San Francisco.

THE SOUTHERN CALIFORNIA LUMBER CO.
WHOLESALE
PUGET SOUND
PINE AND REDWOOD LUMBER
Delivered at any R.R. point in New Mexico, Arizona or California
FIRST-CLASS MATERIAL
LOW PRICES PROMPT DELIVERY
We make a specialty of Mining Trade

REPRESENT LEADING PROPERTIES
Survey and examination made and reports furnished by the most
Correspondence
Solicited
Information promptly
Address
Furnished
J. C. O'BANNON
Durango, Mexico
School of Practical, Civil, Mechanical, Electrical and Mining Engineering.
Surveying, Architecture, Drawing and Asaying.
723 Market St. San Francisco, Cal.
OPEN ALL YEAR
A. VAN DER SAALLEN, President.
Assaying of Ores, Geo.; Bullion and Chlorination
Address for Circular.
Freighter
From Mojave, Kern County to the mines and all points in Kern and Inyo Counties.

Neil McLean - - Mojave, Kern County, Cal.

The Wilfley Concentrating Table
Consists of a flat table, 54 x 16 feet, resting on rollers operated by an eccentric, giving a jerk to carry heavy material to bottom of bed and move it forward to upper end of table. The pulp is fed into feed box at side and silicious or refuse matter passes across and off on opposite side.

There is a simple attachment which raises and lowers side of table to give it proper incline, operates with screws and wedges so that movement is the same the entire length. The Table is covered with Linoleum, and a novel feature of its construction is strips of wood which are wench shaped, one being nailed on at about the center of table and the other at its edge, the center one extending to middle and the one on the edge to within a foot of heel end of table, the result being that the silicious or waste passes over these to get away, and heavy or valuable matter passes up to and around end, the space between end of one or edge and end of table, allowing mi quills to pass down into trough along side and run to lower end of table where they are taken up by wheel conveyor and carried to extreme back end of table to be worked over again.

We can handle from 15 to 25 tons in 24 hours with the best possible results. We have replaced tables of other make on competitive rates. If your present work is unsatisfactory or if you contemplate building, it is well worth while to write us and see our testimonials.

We Also Handle the Hays Wire Bramway.

THE MINE & SMELTER SUPPLY CO.
Dealers in All Mining Machinery.

For Sale! Steam Shovel, Capacity 600 to 800 cubic yards per day, complete and in thorough working order, will dig cut 25 feet wide by 9 feet deep. 1 Centrifugal Sand or Tailings Pump, capacity 60 cubic yds. per hour, new. 1 Centrifugal Water Pump, capacity 1800 gallons per minute, new with Primer. 1 Flat Car and Rotary Screen with automatic ore feeder. For price and particulars address J. R. T. JOURNAL Office, Stimson Block, Los Angeles, Cal.

W. O. ABBOTT, . . . . . . . ASSAYER . . . . . . .
ASSAYING IN ALL ITS BRANCHES
CHEMICAL DETERMINATIONS ACCURATELY MADE
TOMBSTONE - - - ARIZONA

All Goods
ConsIGNED to my care
will be promptly forwarded to destination.

WASHBURN & MOEN MFG. CO.
WIRE ROPE AND WIRE
OF EVERY DESCRIPTION
PACIFIC WORKS
SAN FRANCISCO

THOUSANDS Now in Use Over the World
TRAUX Patent Improved
Automatic Ore Cars.
THE ARE THE BEST AND CHEAPEST.
TRAUX Mfg. Co.
DENVER, COLORADO.
The Only Ore or Car Manufactures in America.
Send for Catalogue. All dealers in Mining Machinery have them.

The “Journal” Office
The Newman Gold-Saving Machine.
(Patents Pending)

The Most Simple Amalgamating Process known that actually saves all the Gold. Can be used in hydraulic, river washing, or quartz mining.

Is not a Dry Washer. Positively saves the Float Gold and fine Quick silver.

No Extra Labour, No Motive Power, No Excess Expence.

Office, Room 205 Currier Bldg
212 W. Third Street
Los Angeles, Cal.
Kellers' New Improved Feed Water Heater, Purifier, Condenser, and Hot Air Blast Combined.

Built entirely upon new mechanical lines to that of all other Heaters; 50 per cent of fuel saved, and steam condensed saving nearly one half of Water Bill.

No compounds needed to keep boilers from scaling as all impurities are precipitated and lodged in the tank.

Feed water is superheated after it leaves the pump and goes to the boiler at boiling temperature without 'back pressure' on engine or no charge for Device; the Thermometer and Back Pressure Gage registers results.

180 deg. of hot air forced out of device which can be utilized for drying or heating purposes or carried under the boiler furnaces as a forced draft. The foul air can all be drawn out of mine with this same attachment. Where the air is not required leave off the Fan, it will not condense quite so fast, but other results will be the same. This Device is endorsed by practical Mechanics and the largest Smelters and Plants in the country. This is the Only Heater Endorsed by the American Institute of Mining Engineers. Send for Descriptive Catalogue.

Star Boiler, Sheet Iron and Feed Water Heater Works,
2166-76 Fifteenth Street, DENVER, COLORADO
LOS ANGELES SEWER PIPE ASSOC’N.
MANUFACTURERS OF
Fire Brick, All Fire Clay Products,
Milled Fire Clay, etc.
For Fire Boxes, Lime Kilns, Furnaces and Smelters.
Also Dealers in English Fire Brick
Special Facilities for Supplying Assayers and the Trade of the Southwest.
649 and 651 S. BROADWAY,
LOS ANGELES, CAL.

PATENTS!
Hazard & Townsend
Solicitors of Patents
Patents on Inventions secured in all countries. Copyrights, Trade Marks and Labels.
Office, 905 Downey Block.
Telephone 947.
Los Angeles, Cal.

GOLD
-- AT --
CRIPPLE CREEK.
The heart of the Mining District is reached by the Molland Ter-
minal Railway, which is the direct connection of the
Atlantic and Pacific Railroad
Southern California Railway
Through Palace Sleeping Cars and Through Pullman Sleeping Cars run every day from
San Francisco, Santa Fe Route.
B,—GOLD DISTRICT

Through Tickets and Sleeping Car Reservations can be obtained at the Ticket Office of the
Santa Fe Route.
644 Market St., San Francisco.
2d and Spring Sts., Los Angeles.

F. M. ENDLICH,
Evan Davis
ENDLICH & DAVIS,
Mining Engineers and Metallurgists
Mines and Processes examined and reported on.
Specialties—Treatment of Low-grade ores, Concentration, Leaching, Designing, and erection of
suitable plants for refractory ores. Mines bought and
sold. Only first-class properties considered. Money
furnished for development of first-
class “prospects.”

Correspondence Solicited.
Office: 201 Ballard Block.
Los Angeles, Cal.

STERNE BROS.
TELEPHONE — 90 —
MACHINISTS AND FOUNDERS,
MILL AND MINING MACHINERY.
Blacksmithing, Brass, Iron and Aluminum Castings,
Copper, Sheet Iron and Boiler Work
Corner of H and Union Streets, San Diego, Cal.

THEODOR LEXOW
156 Broadway New York
General Agent for
CARBONS
for
DIAMOND DRILLING and all Mechanical Purposes
Henry Demmert

J. HOWARD WILSON
Assayer and Chemist
A Specialty Made of Umpire Work.
303 Santa Fe Ave., Pueblo, Colo.

DENVER PUBLIC --- SAMPING WORKS,
H. E. SMITH, PRESIDENT.
ORES SOLD ON THE
PUBLIC MARKET.
Denver, Colo.

LINK BELT
MACHINERY CO.
Engineers, Founders, Machinists.

MEXICO, T. O.
Martinez Iron Foundry

Elevators and Conveyors

ELECTRIC
Coal Mining Machinery
Water Elevators, Shafting, Palleys,
Gearing, Fricition Gears,
Homes, Etc.

Send for Special Mining Machinery Catalogue.

VON SCHULZ & LOW, ASSAYERS, CHEMISTS, AND BULLION DEALERS.
F. O. B. Denver, Colorado

Gold Quartz Mines & Prospects
 Bought and Sold on Commission.

F. C. CARBUTT
Stimson Building, Los Angeles, Calif.

THE MINING AND METALLURGICAL JOURNAL.

GOLD QUARTZ MINES & PROSPECTS

MEXICO

MINING STOCK QUOTATIONS.

BOSTON

COLORADO SPRINGS STOCKS

DENVER STOCK REPORT

NEW YORK

ST. LOUIS

MEXICO

MEXICO

SALT LAKE CITY

MEXICO

MEXICO
McDearmon & Co.
Asbestos Boiler & Steam Pipe Coverings
Ashbestos Cement for Boilers, Irons, Heaters, Etc. Special facilities for supplying the mining trade.
Pacific Coast Agents for W. W. Sibley's Oil's Adjustable Coverings
428 Sacramento Street, San Francisco, Calif.

STEAM FOR CRUSHING ORES
STAMP FOR CRUSHING STAMP
GATES IRON WORKS, CHICAGO

"Union" Hoist

Union Gas or Oil Engine and Hoist Combined, on strong, iron base.

No Fire No Steam No Boiler No Danger

Ten Years' Experience. Two Thousand Engines in Use.

Started instantly. Compact, strong, simple, efficient, economical. Perfectly governed, so that oil is used only in proportion to the work done. No expense when idle.

Particularly Adapted to Mining in Localities Where Fuel and Water are Expensive.

Built in the following sizes: 1 H.P., 2 H.P., 3 H.P., 6 H.P., 8 H.P., 10 H.P., 15 H.P., 20 H.P., 25 H.P., 30 H.P., 40 H.P., 50 H.P.

Send for Catalogue and state what H. P. required.

Union Gas Engine Co.
301 Howard Street, San Francisco, Calif.

Rix Compressed Air Machinery Co.
11 and 13 First Street, San Francisco, Calif.

MANUFACTURERS OF

A120 DEALERS IN
General Mining Machinery

Send for Latest Catalogue.

M. Hughes
Mineral and Coal Engineer

Standard Iron Works
Mineral Machinery
Castings in Iron and Brass, Shoes and Dies, Pumps, Engines, Boilers, Windmills.

Blacksmithing and Machine Work of Every Description.
Cor. 7th and L Sts., San Diego, Cal.

Advertise in The Journal

ALL THE MINING CAMPS OF UTAH- COLORADO ARE LOCATED ON OR REACHED BY THE RIO GRANDE WESTERN RAILWAY

CRIPPLE CREEK
GREAT CREEK IN THE WORLD 30 YEARS OLD
45 MILES FROM SALT LAKE CITY

AMERICA'S NEW WONDERFUL CAMP

THE SHORTEST, QUICKEST AND MOST DIRECT ROUTE TO MERCUR AND CRIPPLE CREEK

W. B. SANDERS, Chief Engineer
D. C. DOUGLAS, Chief draftsman
S. R. BURROCK, Chief draftsman

F. W. WILLOW

Technical Scientific Books

Including BOOKS ON MINING Chemistry, Metallurgy, Assaying, Electricity, Mechanics Trades, Science, &c.

TOOLS and HARDWARE
Workshop Machines operated by foot and steam power. Novelties, New Tools and all recent Inventions

Send for Free Catalogue and Price List

Books sold at Publishers' Prices, and delivered free to any point in the United States or abroad.

HAMMOND MANUFACTURING CO.

MANUFACTURERS OF

STAMP MILLS
CONCENTRATORS
And all Classes of
MINING MACHINERY

Wire Rope Tramways with Automatic Loading Apparatus permitting the ore bins to be permanently open.

Specialty made of the Improved, Iron Frame Self-Contained Stamp Mill, the greatest success of the day in reduction of ore to pulp. A great boon to mill builders in countries where timber is plenty and therefore a greater boon to those who have no timber from which to draw the huge pieces needed in old style mills. We claim for this mill:

1. It is no longer a new thing, but well tried and its durability proven.
2. Cheaper than the Wooden Frame Mill when ready to run.
3. Saves a great amount of delay in erection and it can be set up in a short time as a self-contained engine.
4. Saves much space.

We call the attention of Prospectors to our Self-Contained Two Stamp Mill.

We have inaugurated a system of amalgamation and Concentration which renders both much more satisfactory and cheapens the cost of concentration by a great saving in the repairs to the complicated machinery now used.

Farin's intending erecting mining plants would do well to investigate our mills. We build any mill desired and will deliver F. O. B. Steamer or cars at San Francisco, California.

We are prepared to furnish parties desiring small plants or localities where fixed is extremely expensive, with mills coupled up and ready to run with gasoline engines, guaranteeing the efficiency of both engine and mill.

Write for Catalogues and Estimates

THE PACIFIC AMALGAMATOR

This machine is guaranteed to do the work represented and will save coarse or fine gold equally well. The weight of the standard size for mill is 600 lbs. and for placer use 1000 lbs. The machine can be shipped in sections, no piece weighing over 100 lbs., this makes it by far the cheapest for use in mountainous districts where it is necessary to use pack animals for transportation. The standard size machine has seventy square feet of amalgamating surface constructed in such a manner as to give the greatest contact without securing the plates.

This machine can be opened and the process of amalgamation be seen at any time while in operation.

Send for further particulars to

The Pacific
Mining Machinery Company
127 First Street, San Francisco, Cal.

JOHN P. CULVER, Civil Engineer.
FRANK H. JACKSON, Mining Engineer
JOHN P. CULVER & COMPANY,
ASSAYERS, MINERALOGISTS AND MINING ENGINEERS,
146 South Broadway, - LOS ANGELES, CAL.

EVELETH & MACLYMONT
ASSAYERS
Analysts and Engineers of Ore, Practical Mill-tests by 3-Stamp Mill and Concentrating Plant
20 Annie Street, San Francisco
Cable Address: Villenoin, San Francisco
Telephone: Male 726

LLEWELLYN IRON WORKS.
Manufacturers and Dealers in
All Kinds of Mining, Smelting and Milling Machinery,
LOS ANGELES, CAL.

Assay Office. A Chemical Laboratory
Established in Colorado, 1898. Samples
by mail or express will receive prompt
and careful attention. Gold and Silver
Bullion refined, melted and assayed, or
purchased.
Address 1700 and 1702 Lawrence St., Denver, Cal.

Union Iron Works
Manufacturers of and Dealers in
Machining, Milling, and Smelting

TOOL MAKING OF ALL KINDS
C. W. Constable,
154 N. Los Angeles St., Los Angeles.
## Ore Tariff

### From Points in New Mexico, Arizona, and California, to El Paso, Pueblo, Denver, and Kansas City.

**ATCHISON, TOPEKA & SANTA FE R.R.**

### A. T. & S. F. R. R.

<table>
<thead>
<tr>
<th>From to</th>
<th>Car Loads in dollars and cents per ton</th>
<th>Ore Concentrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaymas, Mex.</td>
<td>El Paso</td>
<td>10.00</td>
</tr>
</tbody>
</table>

### Southern California Railway

**Rate on Ore in car loads, valuation not to exceed $50 per ton, minimum weight 2400 lbs.**

**Oro Grande, Cal., to Pueblo, Colo., 350 per ton.**

**Same, Victor, Cal., to Pueblo, $10 per ton.**

**Ore, car loads, when coming from the Republic of Mexico, valuation not to exceed $50 per ton.**

**Sirs., National City, to Denver, Col., and Pueblo, Cal., $1 per ton.**

**Mileage charge on ore not to exceed $5 per ton.**

### Southern Pacific R. R. Company

**Rates on Copper or Zinc Ore to Canon City.**

**Taking Effect July 1st, 1894.**

- So far as rates on Copper or Zinc Ores are concerned, the rates fixed by the Railroad Company, at owner's expense, will govern the value and determine the rate.
- Agents may cause shippers to understand the conditions upon which these rates are based, and should make their receipts:
  - "Rates subject to correction according to valuations at destination."
  - These rates may apply only in lots of four tons or over. On lots of one ton and under, 20 per cent, and on lots of one ton and less than four, 40 per cent, will be added to the above rates.
  - Base Metal, Copper Matte, and Ore Concentrations, in lots of less than one ton, will be charged at rates based on the above points, except that no rate above 50 per cent shall be taken, and rates on small lots of high value may be less than the rates when lots of one ton or more are taken.
- Intermediate points not named will be charged according to rates for next station beyond.

**SOUTHERN PACIFIC R. R. COMPANY**

### From Points in New Mexico, Arizona, and California, to El Paso, San Francisco, and Vallejo Junction.

**SOUTHERN PACIFIC R. R. COMPANY**

### ATLAS PACIFIC RAILROAD

<table>
<thead>
<tr>
<th>From to</th>
<th>Car Loads in dollars and cents per ton</th>
<th>Ore Concentrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flagstaff, A.T.</td>
<td>Pueblo</td>
<td>6.00</td>
</tr>
</tbody>
</table>

- **RATES MARKED BY*** apply on Carloads ONLY, or excess only on lots of two tons and over. On lots of four tons and under, 20 per cent, and on lots of one ton and less than four, 40 per cent, will be added to the above rates.
- **Vallejo Junction takes same rate as San Francisco.**

---

**Note:** Shippers are advised to consult the latest edition of the tariffs for the most current rates and conditions.
THE PUEBLO
Smelting and Refining Company,
PUEBLO, COLORADO.

BUYERS OF
Gold, Silver, Lead and Copper Ores,
Copper Matte and Bullion.

Refiners of Gold, Silver, Lead and Copper.

Manufacturers of Bar and Pig Lead, Lead Pipe, Antimonial Lead, Copper Ingots,
Granulated Test Leads and Litharge.

Pays Highest Prices for all classes of Ores.
Especial Attention to Sampling by most Approved Processes.
Quick Returns on all Consignments.

KENDALL GOLD & SILVER EXTRACTION COMPANY

THE KENDALL PROCESS is the most efficient method of using cyanide for the
extraction of precious metals from their ores; whenever the process has been
adopted the result has been increased, percentages of values recovered and saving
of time; material reduction in consumption of chemicals has also been demonstra-
ted with respect to several classes of ores.

All ores, without exception, amenable to cyanide treatment, can be treated to better
advantage by the Kendall Process; this can be accepted as an axiom.

The manager of one of the largest mines in the Mercur district, Utah, telegraphs as follows: “We now begin to understand cyanid process; last 20 days treated 220 tons per day of $26.50 ore, average of all tailings samples $8.52.”

Owners of mines and reduction works can obtain full information on application to the

Kendall Gold and Silver Extraction Co.
47 Broadway, New York City

VULCAN ROPEWAY

* For Conveying
Ore,  Cordwood,
Etc.

Empire, Nevada, April 17th, 1886

Vulcan Iron Works—Gentlemen: The rope-
way furnished by your Company to convey tailings
from Morgan Mill to Mexican Mill, a distance of seven-eighths of a mile, is giving entire
satisfaction. We transport 200 tons of tailings in ten hours; one man does the whole busi-
ness, including elevating tailings from hopper in the ground, operating Vulcan self-loader, and
attending to the rope-way generally. The self-dumper requires no attention whatever. The Vulcan loader 1 consider the
best feature in the whole Rope-way, making it possible for one man to load 200 tons in ten hours.

Yours very truly,

VULCAN IRON WORKS,

VULCAN WATER WHEEL

Adapted to all Heads from
3 Feet to 2000 Feet
Our experience of 33 YEARS
Building Water Wheel

Send for a Pamphlet of either Wheel and write
full particulars.

James Leffel & Co.
SPRINGFIELD, OHIO, U.S.A.

CLARENCE HERSEY,
Assayer and Chemist,
LEADVILLE, COLORADO

Samples by Mail or Express Receive Prompt Attention

SPECIMEN ASSAY PRICES:
Gold silver and lead, $1.00; any ten of the
above, any one of above, zinc, copper analy-
sis, $1.50 each.
GET THE BEST BuY THE

HERCULES GAS OR GASOLINE ENGINE
FOR HOISTING, PUMPING AND MILLING
FROM
Fraser & Chalmers, Chicago, Ill.
City of Mexico, Mex.; Denver Colo.; Salt Lake City, Utah,
and 80 Broadway, New York.

Get their Prices on any MINING MACHINERY Required. Catalogues on Stamp Mills, Engines,
Smelters, Pumps and Hoists in Spanish, French or English sent post free. Write us about your mining plant and
we will send you interesting information on the class of machinery which you use or require.

JOSHUA HENDY MACHINE WORKS
Nos. 38 to 44 Fremont St., San Francisco
DEALERS IN AND MANUFACTURERS OF
All the Latest Improved
Mining, Sawmilling, Pumping, Smelting and
Electrical Machinery, Engines and Boilers,
and Mining Supplies of all kinds.
Manufacturers of the HENDY IMPROVED TWO-STAMP MILL.

BAKER IRON WORKS
Los Angeles, California
Manufacturers of
Mining and Milling Machinery, Atlas Engines and Boilers, Worthington Steam Pumps
Water Works Machinery
A SPECIALITY

RISDON IRON WORKS
Office and Works, Cor. Beale and Howard Sts., San Francisco
MANUFACTURERS OF
Johnston Concentrators,
Bryan Patent Roller Quartz Mills
Evans' Patent Hydraulic Gravel Elevators
Risdon Ore Feeders, 'Challenge' Type
Air Compressors
Mining, Milling, Pumping and Hoisting Plants,
KNIGHT WATER WHEELS
GOLD AND SILVER STAMP MILLS
Catalogues and Prices on Application
Risdon Hammered Steel Stoves and Fire

IMPROVED HYDRAULIC GIANT
The above cut illustrates the improved form of Hydraulic Giants, in which
the Center Shoe is dispensed with, which was in liable to catch fires.
Prices and catalogues of our specialties sent free on application.

PARKE & LACY COMPANY
21 and 23 Fremont Street, San Francisco, Cal.
MINING MACHINERY AND SUPPLIES, ENGINES AND BOILERS
ROPP STAFFAGE LINE FURNACE
FOR ROASTING, CHLORINATING, AND DESULPHURIZING ORES.

Knowles Steam Pumps    Lidgerwood Hoisting Engines
Dodge Rock Breakers and Pulverizers
Ingersoll-Sergeant Rock Drills and Air Compressors