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SALT LAKE CITY A MINING CENTER.

There are many requisites necessary to make a successful mining city. Thriving cities have been started in the west, on the supposition that the mineral resources were of sufficient magnitude to not only sustain them, but to make them great in population and commercial importance; but the vicissitudes of the industry have been such that but few important cities have been entirely sustained in their growth by the mining industry.

Salt Lake City, probably more than any other city in the United States owes its present prosperity and its promising future to mining. The great city of the center of one of the richest valleys in the United States, is surrounded by a mineral belt which present development is proving to be one of the most extensive in the world. But other things are necessary to make this vast treasure available for the uses of mankind. These immense deposits of mineral have probably existed thousands of years, but were useless to within a few years ago, on account of the want of a process to extract the precious metals economically. The fame of Utah has attracted mining men from all parts of the world, and there are now to be found in Salt Lake City many business institutions and mining men to whom the credit is due of having overcome all the apparently insurmountable difficulties of winning the values from the hitherto useless deposits of mineral.

To attempt a description of all the firms in Salt Lake City who cater to the mining trade would be beyond our power, as almost every business house in the city has more or less relations with the mines, but we will attempt to describe those that depend almost entirely upon the success of the mines for their business.

The Salt Lake Stock and Mining Exchange, one of the important factors in the transaction of mining business, was established in 1892. They have thirty dividend-paying mines on the board, all of which are in Utah, and a number of prospects. It is a daily call, and among the members are most of the prominent business men of the town, including bankers, merchants, professional men and capitalists. All the stocks are listed and pay regular monthly dividends, they are sought after as a permanent investment by many. There are also about twenty non-listed stocks which are traded in extensively, some of them commanding as much attention as the listed ones.

Among the business houses that are prominently identified with mining can be mentioned the Nelden Judson Drug Co. This firm, which succeeded the Roberts & Nelden Drug Co. in 1891, deal in all kinds of assaying and chemical goods. In their large stock can be found everything necessary to fit up a complete assay office and chemical laboratory. They are agents for the Roessler & Hasslacher Chemical Co. of New York, for the Becker Bros. and Trocner's assay balances, and are known to all the mining companies. They also do a large business in cyanide of potassium and blue stone. A new department has been recently added to their store, which is of great importance to Salt Lake City and the west in general, it is the manufacturing of balances of precision, and is known as the Keller Balance Manufacturing Co. They have been an untiring floor of building with machinery for the manufacturing of balances.

This is something that has never been attempted in the far west, and the enterprise of the industry is being thoroughly appreciated, from the fact that they have not been able to fill one half of the orders that have been received. The balance they are making has been put to the most thorough tests, and has been pronounced by the severest critics to be one of the most delicate and accurate ever manufactured in this country. Mr. M. Keller, who personally superintends the manufacturing, has the reputation of being one of the best mechanics in the west, and will not have a balance to leave the house until he has made the last and very careful test of the work. The trade of Nelden Judson extends over all the west, and is growing as the mining industry with which it is so closely connected.

The foundries of Salt Lake City would be a credit to any place. They have kept pace with the development of the country, and naturally feel the interest that is being taken in mining. The first we visited was Silver Brothers' machine shop and foundry, the oldest in the city, having been established by Wm. J. Silver, the father of the present proprietors, in 1866. We were shown a picture of the original building that was erected, which covered twelve feet square. In this building the first engine is said to have been built in Utah, in 1879. The business was moved to the present location, where a structure, that was considered pretentious in those days, the building is now, in 1886. This has been enlarged until, at the present time the Silver Brothers have the most extensive machine shops and foundries in Utah. They employ upwards of fifty men, and are prepared with every machine required for the mines. They manufacture all kinds of mining, milling and pumping machinery, and have equipped some of the largest mining plants in Utah. They have now in course of construction six very heavy stamp batteries for Austin, Nevada, and the castings are certainly as good as can be found. Indeed, Mr. Silver is making a specialty of good work, and are thoroughly familiar with all the requirements of the miners, having lived in their midst and been brought up in the foundry and mining business.

One block northwest of the Silver Bros. is located the Davis, Howe & Co. machine shop and foundry. This firm are also old timers in Salt Lake City, where they established themselves in 1866. They were the first through the works by Mr. Howe, and found an appearance of activity that argues well for the reputation of the firm. We were informed that their trade extended to Idaho, Nevada and Utah, and that although they, in common with all Salt Lake City, felt the low price of silver and lead, that the outlook was very favorable for the coming year.

The smelters, of which there are three, have contributed in no small measure to the successful operation of the low grade mines in Utah. The Germania Lead Works, located in one of the eastern districts of the city, is the oldest as well as the largest smelter in Utah. When we visited it, we found Mr. J. H. Tucker, formerly of the Globe Smelting Works, in charge. The plant is modern in every way, and compares very favorably with any of the Colorado smelters. At present, four stacks are in operation, one of them of 225 tons capacity, four reverberatory roasters, one Keller-Cole patent roaster and ten Brucker roasters, together with the copper smelter, complete the plant. Six of the ten reverberatories, just recently installed by the Denver Engineering Works, the well-known Denver machinery house. The establishment of the Germania dates back to 1873. It is very favorably located on the Rio Grande and Western and Union Pacific railroads, and receives shipments of ore from all parts of Idaho, Nevada, Colorado and Utah. We found the actual work being performed at the smelter to be 500 tons every twenty-four hours. There are 455 men on the pay roll. J. R. Jones, with head quarters in Salt Lake City, is the manager.

One mile nearer Salt Lake City than the Germania is located the Hanamer Smelting Works, which was established in 1882. They are operating three stacks with a capacity of 600 tons of reverberatory roasters. They have in use one of the Ropp Straight line furnaces, which have been so successful wherever used. This furnace is the most economical in existence, requiring very little power. Figures have been received from the Selby Smelt and Lead Company in San Francisco, showing that they roasted ores of iron pyrites for 90 cents per ton, in the Ropp Straight line furnace in their works, which is only 105 feet long and 19 feet wide—the cost of roasting is so reduced that it is not far out of the furnace. All the bullion from the Hanamer smelter is shipped to the Omaha and Grant Smelting Co., at Omaha. 200 men are regularly employed in the whole factory in the Hanamer works, which is located in the McLaurin Bank, Salt Lake City.

Twelve miles south of Salt Lake City, at Sandy, is located the Pennsylvania Smelting Company. They have seven stacks, two of which are reverberatory, and one of them is of 250 tons capacity, and the others of 200 tons capacity. They work mainly gold, silver and lead ores, and employ
250 men. Six reverberatory and five brick furnaces do the smelting. Most of the tonnage smelted comes from Idaho, Montana, Nevada, and Utah. Mr. F. H. Officer is the general manager of the Pennsylvania Smelting Company, which is owned by the Pennsylvania Smelting Company, of Pittsburg, Penn. We find Salt Lake City well supplied with machinery houses and agencies for large eastern houses.

The old reliable firm of Fraser & Chalmers, with works at Chicago, has an agency in Salt Lake, in charge of Mr. J. W. Young, with five men. They have just put in four large air compressors for the Centennial Eureka Company. Their trade extends to all parts of the world. The agency in Salt Lake City has been established two years.

The Colorado Iron Works have also real-ized the importance of Utah as a market for their goods, and are represented in Salt Lake City by Mr. A. Grant, an experienced machinist. The Colorado Iron Works have been favored with a liberal patronage, and include in the recent list of plants installed, the Cam- mora Gold Mining Company gold mill, which is 100 feet long. They also install the April Fool gold mill and cyanide plant at De Lamar, Nevada. Their trade extends wher-ever there is mining or milling going on.

In the Kaustaford Hotel building is located L. C. Trent & Co., who deal in all kinds of machinery for mining purposes. This firm have put in several large smelting plants in Arizona, including work at the United Verde Company of Jerome, Arizona, the Detroit Copper Company of Morenci, Arizona, and others. They installed the 100-ton concentrator for the Fremont Mining Company of Frisco, Utah, and are now putting in a 50-ton concentrating plant at Basin, Montana. The Brick Consolidated Mining Company of Vanderhill, California, purchased their equipment for a cyanide plant, consisting of four vanners, also the pipe for their pipe line, from L. C. Trent & Co. Their trade is ex- tensive through the west and is gradually extending into the southern country.

Another Denver house, which has ener-getically been competing for western busi-ness, has recently established an agency in the Utah capital, and, in selecting Mr. J. A. Yeatman for their agent, evinced good judge-ment, as he has been in Salt Lake for several years, and formerly represented the well-known San Francisco company, Milwaukee. Mr. Yeatman is a mechanical engi-neer, and has been very successful in ob-taining contracts for the companies he has represented. He has a new electrolytic cyanide process, which he is working on and ex-pects to introduce in the near future. The F. M. Davis Iron Works Company of Denver, which is represented by Mr. A. Scott, is known all over the west and have a large and growing trade.

Among the engineers and contractors, none are more prominent than Mr. and Mrs. John Roberts. They have found it profitable to combine other lines with their regular business, and are now representing Washburn & Moen Manufactur- ing Co., H. R. Worthington, Norwalk Air Compressor Co., Rarig Engineering Co. of Columbus, Ohio, and others. They have been established in Salt Lake City since 1883, and their name is connected with some important mining enterprises of Utah. The Pennsylvania Coal Company have a plant at Diamondville, the 50th Eureka Mill, the Hone Silver Smelter at Murray, and did a large part of the work on the Hanner Smelter. They do a large business in connection with mining, milling, smelting or cyanide work.

We were surprised to find, in spite of the large business that is done by eastern machinists in Salt Lake City, that the machinery is well supplied right at home with large stocks of everything necessary to conduct any kind of a mining or milling enterprise.

In looking over the extensive warehouse of the Utah and Montana Machinery Com- pany, we were surprised at the stock that is constantly kept on hand. This house has been doing business since 1883 and has incor- porated two important departments for the Knowles & Blake pumps, Ingersoll Sergeant rock drills and compressors, Westinghouse Machine Co., and Westinghouse Electric Co., Hahn & Breckinridge Co., Petticoat Iron, Safety Nitro powder, Truxton patent Automatic Ore Cars, J. H. Mont-gomery Machinery Co., Crecent Steel Co., Erie City boiler and engine, Ottunawa Iron & Steel Works, Young & Potts, Pott's & Topping Co., Reeves wood split pulleys and magnesium sectional pipe covering. They also handle oils of all kinds and heavy hardware for mining purposes and have a very large trade through all the mining camps in the west.

Besides the three smelters we have men- tioned there are three smelting works in constant operation, with general offices in Salt Lake City.

Taylor & Brunton, the well-known Denver firm, have a mill at Palace Station mine, and one half-miles from Salt Lake City, they have just finished putting in one of the Tayl- or & Brunton improved automatic sumpers. Most of their work is custom smelting. They sell their pumps, send consignments east, the idea being to get a check on the smelters. Mr. James W. Neill, an experienced mining en-gineer, has charge of the furnaces and has charge of the af-fairs of the Company.

The Pioneer Sampling Mill is owned and operated by Mr. R. Mackintosh, who has devoted his life to mining pursuits. He has two sampling mills, one being at Sandy, 12 miles from Salt Lake City, and the other at Park City, Utah. He employs 25 men at the Sandy sampler, and has a capacity of five hundred tons per day; in Park City he employs 30 men—both mills use automatic machin- es entirely. The business is public sampling and smelting on the open market. He receives consignments of ore from Nevada and all parts of Utah.

Located between 8th and 9th streets, on 4th West, is the Chinley City, is the Con- tinental Sampling Works, they have recently doubled their capacity and put in all new machinery and engines. They now have a daily ca-pacity of 300 tons. All their assaying is done by custom, as two men and their business extends through Montana, Nevada Idaho and Utah. Mr. C. B. Markle is general manager, with offices in the Adams Block, Salt Lake City.

Business in past years has been of such a general character in Salt Lake City that several general stores have grown up that would be considered large in any city. The first one we visited was Cunningham Company, which is ably conducted by Samuel H. Hill. Although our paper has considerable space, we would not care to jeopardize it by attempting to do Cunningham Company, they have the agency of the Giant Powder Works, the Gutta Percha and Rubber Manufacturing Co., and W. T. Garrett & Co. pumping and hydraulic min- ing machinery. The house was established in 1879, and enjoys the patronage of the min- ers through eastern Nevada, western Colorado, southern Idaho, northern Arizona, of the miners' trade, and carry every thing in the way of provisions, hardware and mining sup-ples.

Geo. M. Scott & Co., although better known as hardware and metal merchants, do a large share of the mining business that comes to Salt Lake City. They deal in miners' hard-ware, mining machinery of all kinds, engines, pumps, and supplies. They have the agency of the California Powder Works, John A. Robing's Sons, Henry R. Worthington pump, the Dodge wooden pulley and metal pulley mill, Pond's Iron, &c. They were established in 1870 under the name of Scott, Dunham & Co. They find a market in Oregon, Nevada, Wyoming, Idaho, Colorado and Utah.

The company which carries a stock of miners' goods is the Salt Lake Hardware Co. They have been in business nearly ten years and have several valuable agencies, including Custom Steel Co., Hazard Powder Co., Tuhla Cordage Co., Howe's Scales, Washburn & Moen Mfg Co., H. M. Myers shovels, Sydney Steel Scraper Co., and Frictionless and Magnesia Metal Co. They realize the importance of the mine and are working up a large business through the camps of Idaho, Wyoming, Nevada, Montana and Utah, and with the completion of the railroad to Los Angeles, expect to extend their trade to California and Arizona.

The large increase in the use of the cyan-ide process to work Utah ores has increased the demand for cyanide leaching tanks and zinc shavings, and cyanide leaching tanks and zinc shavings. The firm was established nearly twenty years ago. They also deal in cyanide leaching tanks and zinc shavings, and cyanide leaching tanks and zinc shavings.

Their business in zinc shavings extends all over the west and northwest.

The interests of the smelters further east of Utah are well represented in Salt Lake City. Ness, Bamberger & McMillan represent the Philadelphia Smelting and Refining Co., one of the largest institutions in the kind in the world. They informed us that they had se-cured many good contracts for their Company through Idaho, Nevada and Utah. Scott & Anderson represent the interests of the Chi-cago and Aurora Smelting and Refining Co., and the Selby Smelting and Lead Co. They buy ore from the different sampling works on commission for their representatives.

We visited the offices of the Consolidated Kansas City Smelting and Refining Co. on his return from the north, where he as-sured us he had closed some very large contracts with the California and Colorado Smelting Co have Mr. F. W. Billings to look after their interests. Mr. Billings is one of the foremost contractors in the German smelting of zinc and lead in Salt Lake City since 1873. He is one of the largest smelters of ore going east and north. Mr. T. R. Jones represents the Globe Smelting and Re-
fining Co. and Mr. A. Hanauer the Omaha and Grant. The Pueblo Smelting and Refining Co. of Pueblo, Colo., receive a large tonnage from all the sampling works and from the miners direct. It is a smelter which has the confidence of the miners.

Last, but by no means least, we come to the assayers. There is probably no city in this country or any other that has such a number of competent assayers—Salt Lake City has drawn and kept from all directions. The Union Assay Office, under the management of Mr. M. S. Hanauer, was established in 1887. A general assaying business is done together in the Union Assay Office and the smelters. Mr. C. H. Sanders, who was formerly chemist for the Iron Belt Mining Co. of Michigan, has a well equipped office, and makes a specialty of analytical work. One of the most complete offices in the west is found at 150 Southeast Temple street, and is that of R. H. Officer & Co. This firm have a five-horse-power electric plant which runs the sampling works. In their offices they are prepared to make mill tests to determine best process to work ores by, and can handle large samples. Their business extends to Colorado, Montana, Nevada, Utah and Idaho. One of the oldest established assayers in the city is W. A. Hodges, he does work for many of the large mining companies and for the sampling works. He has been in Salt Lake City since 1869. J. W. Currie has a well equipped office at 159 Main street. He has been in the assaying business at his present location for ten years, and an assayer for seventeen years. He was formerly in the Sauktooth Mining district in Idaho. The Miners’ Assay Office is ably managed by Mr. Louis Sickels, who was attracted from Butte City, Montana. He informed us that his business was such that he had never regretted the change. He does a general assaying business and thoroughly understands his work. We found Leadville represented by H. W. Korty & Co., who have been in Salt Lake several years. We knew Mr. Korty twelve years ago in Leadville, where he was considered one of the reliable assayers of that great mining camp and had an assayer gains a good reputation in Colorado he can work in any country, F. M. Bishop, the last assayer we visited has been in business in Utah’s Capitol and is well favorably known by all the miners. He has the reputation of being a very careful and accurate man. He informed us the outlook was good for the coming year.

Only lack of space prevents us from speaking of many more things that go to make Salt Lake City one of the greatest mining centers in the United States. Over one hundred mining companies have their offices here and there are a number of reliable mining brokers and mining engineers who operate from this point.

There are two large daily papers, the Herald and Tribune and one excellent mining journal the Inter-Mountain Mining Review, edited by Mr. Alex. Hyslop, which has a wide circulation all through the west. There are also several weekly papers.

Utah is entering upon a new era and it is easy to forecast that by the time the state is ten years old it will be one of the most attractive mining States, as it is in one of the richest in the west.

The Territory was organized September 19th, and the first state officers elected in November 1851. Salt Lake City, the capital, has a population of 55,000.

We add a few statistics to show that the increase in the mineral output has been steadily growing in spite of the low price of silver and lead, which probably injures Utah as much as any other state in the Union.

<table>
<thead>
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<th>YEAR</th>
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<td>1880</td>
<td>165,724</td>
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<tr>
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<td>1882</td>
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<td>118,323</td>
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<td>1,327,961</td>
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<tr>
<td>1895</td>
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PRODUCT BY COUNTIES, 1895.

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<tr>
<td>Summit</td>
<td>8,254,000</td>
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<tr>
<td>Juab</td>
<td>5,080,000</td>
<td>1,515,166</td>
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<tr>
<td>Salt Lake</td>
<td>229,830</td>
<td>775,450</td>
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<tr>
<td>Tooele</td>
<td>605,631</td>
<td>120,751</td>
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<tr>
<td>Beaver</td>
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<td>305,400</td>
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<td>Millard</td>
<td>27,491</td>
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<tr>
<td>Washington</td>
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SOME DIVIDEND-PAVING MINES.

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<th>NO. OF SHIPPERS</th>
<th>INTEREST</th>
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<tr>
<td>Bullion-Beck</td>
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<tr>
<td>Cent-Burke</td>
<td>300</td>
<td>1,850,000</td>
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<tr>
<td>Crescent</td>
<td>600</td>
<td>2,500,000</td>
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<tr>
<td>Dalton &amp; Wood</td>
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<td>3,000,000</td>
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<tr>
<td>Daly</td>
<td>150</td>
<td>2,887,500</td>
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<tr>
<td>Eureka Hill</td>
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<tr>
<td>Galena</td>
<td>100,000</td>
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<td>Gemini</td>
<td>60,000</td>
<td>300,000</td>
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<tr>
<td>Horn Silver</td>
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<tr>
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<td>1,100,000</td>
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<tr>
<td>Maxfield</td>
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<tr>
<td>Mercur</td>
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<tr>
<td>Monte Carlo</td>
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<tr>
<td>Silver King</td>
<td>100</td>
<td>825,000</td>
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<tr>
<td>Utah</td>
<td>100,000</td>
<td>164,000</td>
</tr>
</tbody>
</table>

NOTE.—Many companies, like Marion, on which this list does not closely hold, do not make known what is paid stockholders, otherwise this list could be largely augmented.

We sincerely hope the next time we visit Salt Lake City to come over the Salt Lake City and Los Angeles Railroad and to see all the great wealth that exists between these two growing metropolis, utilized for the benefit of both places. And we are sure that a trip from the glorious snow-clad mountains of Utah to the sea coast at Los Angeles will convince anyone that the building of a road to connect the two cities is the most important matter we have before us for the coming year, and we hope the capitalists of both places will get together and build the short piece of road that will be necessary. From Milford north about three hundred miles, and a great part of the distance is over country where the expense of grading would be light. Estimates recently furnished by E. M. Hale, which states that the last 16 miles south of Milford can be graded for $375 per mile. The trip across the country is one that few care to undertake. By rail it now takes about twenty days, but with the direct line built the trip can be made in fifteen hours. Salt Lake City and Los Angeles will be equal-ly benefitted, and next spring should see active operations commenced and continued until the gap that now separates us is closed.

LOCATION OF THE HARBOR.

The dispatches announce that the Commission of Engineers appointed by the President to locate the harbor for Los Angeles will leave Washington for this Coast on the 9th instant. That body will decide whether the harbor shall be at San Pedro or Santa Monica. The contest over the location has been spirited and is now altogether devoid of bad feeling. A fair and impartial examination of such feeling now will have a weight with the Commission, and vituperation by or of one side or the other will only make a bad impression touching the character of our people. The location will be decided upon merits, for the Commission is disinterested and impartial.

Each side should present its case fully, and all efforts to give the Commission light will be welcomed by both engineers and commercial, the harbor is not to be built to merely accommodate San Pedro or Santa Monica, but to subserve the interests of all Southern California, and more especially the commerce of the city of Los Angeles. To locate it at one place or the other will not be a disaster to this city. Either will fairly accommodate its commerce. To build a harbor at either place is not practicable from an engineering standpoint, and the sum of money to be expended is the same in either case according to the provisions of the Act of Congress of July 17th. The National Commission will determine at which place the harbor can be most easily defended, and the commercial superiority of either place will be settled by the testimony of commercial men and ship owners.

Let every effort be made to give the Commission all the information attainable unaffected by local or personal interests. It is to the common interest that there should be the best solution of the question possible.

Electric Hardening of Steel.

A French electrical journal announces a new invention in the field of electrical metallurgy. It is a process which gives an extraordinary hardness to steel. It is reported that the inventor, a Mr. Taux, has executed the following experiments before a committee of engineers at Strasbourg. A drill, hardened by electricity, pierced a shell twice as quick as a drill of the best steel hardened in the usual way. The drill was closely examined afterwards by means of a strong microscope, and not the least injury could be discovered. An electrically hardened circular saw cut iron bar without any imperceptible effect. With a cold chisel, similarly treated, a steel bar 8 x ½ inches, was cut through and the operation was repeated five times on the same bar. Then a cast steel plate, one-quarter inch thick, was cut with the chisel, and the edge of which showed neither fissure nor any alteration afterwards. An electrically hardened table knife cut iron wire a thickness of an inch in diameter as easy as a cotton string. The process is said to consist in the hardening of red-hot steel objects in a conductive bath traversed by an electric current. If, as further practical experiences, the results would be of the greatest importance to the manufacturers of tools.
The Camp Floyd Mining District.

Mercur Gold Fields, the Johannesburg of America, are in the Camp Floyd Mining District, Utah. Mercur town, the business center of a wide mining area, the boundaries of which are steadily enlarging, is situated thirty miles south-west from Salt Lake City, as the Crow flies, and by railroad is distant fifty-five miles. The main portion of the district is just across the Oquirrh mountain range, in Tooele County—destined to be the foremost gold yielding section of America.

Salt Lake City is, and always will be, the outfitting and distributing point for the Camp Floyd mining district in Utah. As a preliminary inside of the value of the Mercur gold fields, a visit to Salt Lake City will be of much benefit, for it is in that city that the greater part of the capital has been found to develop the various properties. The head offices of all the shipping mines are located there. Its geographical and commercial situation—being the largest city between the western slope of the Rocky Mountains and the Pacific Coast—commercial enterprise of great advantage to the thriving new camp on the other side of the Oquirrh range.

Naturally, when a few venturesome prospectors assembled here, in the spring of 1870, to organize a mining district, "The Camp Floyd Mining District" was suggested and adopted as the most appropriate name. The meeting to perfect the organization was held in the middle of April.

No metalliferous region of the Rocky Mountains has experienced so many sporadic soon abandoned. This earliest attempt at gold mining is of interest simply as one of the phases showing the ups and downs of the district.

In this same year, 1870, a notable find of silver-bearing ore was made in the Sparrow Hawk and Last Chance lode claims, ground now owned by the Marion Company, on the northern outskirts of Mercur town. This uncovering of treasure proved of such great promise that the mine was sold to an English syndicate for a round sum.
A company was incorporated styled the Camp Floyd Silver Mining Company, the Sparrow Hawk mill was erected, in 1871, and first and last $700,000 was expended, while not to exceed $750,000 was taken from the mine. For a season the ore products were mostly of such high grade that they were more profitably shipped to the smelters than milled at home. Following closely after the Sparrow Hawk discovery, a renewed excitement was aroused by the Carrie Steele strike, which is still spoken of by old-timers as a memorable happening. From this ground a few men took out over $20,000 in three months. There were other finds of less or more moment, and all told they were of sufficient consequence to cause a stampede to the camp, bringing prospectors and miners from far and near.

Of a sudden, early in 1872, Lewiston sprung up almost in a night, the town being built on the site now occupied by Mercur. On all sides there was life, vim and excitement. The silver bird perched on high, while, stores, hotels, saloons and gambling houses thrived apace. Several or six horse stages arrived and departed daily, and for a brief season its coteries claimed Lewiston to be the liveliest mining town in the territory. In this heyday of excitement there were, perhaps, about as many who thought that Mercur could last at the beginning of the present year, while the population numbered between 1,200 and 1,500. Before 1880 the mines were pronounced worthless. Granted the town was deserted, and the buildings, which were of the balloon pattern, disappeared one by one, until Lewiston Canyon had but one house and one inhabitant—Moses Manning, who put in his time working for assessments for himself and other claim owners.

So closed the silver era of the Camp Floyd Mining District. Somewhere in the neighborhood of a million dollars was contributed to Utah’s silver production from this region.

In the annals of the district the next phase forms the connecting link between doubtful successes and momentous achievements, as here begins the story of the Mercuro mine. Arie Pinedo, a German, located the Mercuro lode claim in the spring of 1881, naming it the German word for mercury, in the belief that he had discovered a valuable vein carrying cinnabar, the common quicksilver ore. So well satisfied was he of this fact that he proceeded forthwith to obtain a patent for the ground.

The Receiver’s receipt for the Mercuro lode is dated March 22, 1882; mineral entry No. 735 for the Territory of Utah. Though cinnabar was brought to light in considerable amount the claim could not be made to pay, and little dreaming of the vast stores of gold in the mineralized zone it had opened, Pinedo, in disgust, abandoned the district, soon afterward leaving the country, to be hunted up in 1890 when a deed was wanted for the tract, $200 by 1,500 feet, the value of which was just beginning to be demonstrated.

Although the life had departed from Lewis Canyon, a few prospectors each season rifled over the Quirrin range, and others came in from Ophir to try their luck. It was probably in 1883 when gold was first found in rocks, and met with the same fate as the cinnabar. Numerous lots of rock were pulverized, washed, and washed, invariable failing to show colors of gold—one of several characteristic peculiarities of Mercuro ore.

From about 1885 to 1890 this region appears to have been wrapped in oblivion. In March 1889, Joseph Smith, the largest owner of the shares of the present Marlon Gold Mining Company, leaving the cars at Fairfield, walked over the range determined to test the Sparrow Hawk ground of the old Camp Floyd Silver Mining Company—now the property of the Marlon Company. He sampled the ore which in the abandoned workings and the dump was said to contain gold, for silver, having no thought of gold values, and decide they would pay to work. A small fifteen-ton amalgamating mill, equipped with rolls, pans, and dryers, was put up. In a few months, after an expenditure of about $15,000, it was apparent the procedure was a failure; and this was the last attempt at mining and milling these silver ores. There was shown to be considerable silver but the mineral was too base. Finding that extracting the silver could not be profitably accomplished, and remembering the story of cinnabar in the Mercuro lode, he desisted, in sheer desperation, as funds were getting low, to see if something could not be made out of quicksilver mining. At the same time he was desisting, and recalling the myths about gold in the Mercuro lode, he made a number of tests for the yellow metal, the first series of assays returning from $500 to $600 a ton. Wanting hopes were revisited: all quicksilver notions quickly vanished, and men were put to work mining for gold. The developments previously made by Pinedo, together with the general character of the formation, augured a large amount of ore, giving promise of good returns. It was late in the season when five tons of gold were brought down from the mountains, by raw hides, to the bottom of the canyon, and thence hauled by sleds to the amalgamating mill, where a short time before the treating of Sparrow Hawk silver ore had proved a failure. A careful sampling of the tailings from this trial run showed an apparent gold extraction of eighty per cent, which was deemed sufficiently encouraging to warrant going on with the undertaking. The milling of this five-ton lot from the Mercuro claim closed the work of 1889, under bright and cheering auspices.

During the winter Mr. Smith endeavored to induce capital in what he was convinced would prove a good gold venture. In March, G. S. Peyton and H. W. Brown were prevailed on to visit Lewis Canyon. After a patient examination of the auriferous ground, tested in the closing weeks of the previous year, they were amply stimulated by the showing to take hold of the enterprise. The patented Mercuro lode claim, 200 by 1,500 feet, lies in the heart of a seventy-acre tract, the remainder of which has only recently been 'located, thus accomplishing a desirable consolidation of claims and removing the necessity of the first step to be taken was to obtain a deed from Arie Pinedo, the owner of the Mercuro claim, and he was not in the United States. L. S. Manning, who was then operating with Joseph Smith, learned of the whereabouts of Pinedo and secured a bond for a deed for $10,000. This accomplished, Messrs. Peyton and Brown offered the seventy-acre group to the Nebraskans—farmers, stock growers, and withal shrewd, far-seeing business men—John Derr, E. H. Abris and John Heinrich. At the outset $100,000, to take up the Mercuro bond, was advanced by them, after which, in June, the Mercur Gold Mining and Milling Company was incorporated with capital stock of $500,000, divided into 250,000 shares of a par value of $2.00 each. According to the plan of the organization of the company there were 30,000 shares of the treasury stock which were taken by the Nebraskans at one dollar a share. Of this fund $25,000 was expended in the erection of an amalgamating mill, with pans, settlers and the old regulation equipment, on the site of the present mill at Manning, a short distance above Fairfield; the remaining $25,000 was spent in opening the mine and in building a road from the mine to the mill. Meanwhile another winter had set in and further operations were suspended until spring.

To within a comparatively recent date the story of the Mercur Company is the story of the serious mining for the king of metals in these unique gold fields. As the important achievements of this company afford the
Several modifications were adopted, the two most important being in not crushing the ore so finely and in not agitating it while in the solution. By these and other minor changes, cyaniding has proven to be the desired process for winning the Mercur gold.

The complete demonstration of this all-important truth was the accomplishment of the operations of 1892; a season of doubt, trial and tribulation, involving heavy expenditures and no immediate returns, the particulars of which need not be itemized. After the overwhelming failure of the amalgamating process, the personnel of the Mercur Company underwent several changes, Messrs. Dern, Airis and Heinrich still continuing, while the original promoters dropped out.

As advances in the exploration of the Mercur vein, as well as in the economic winning of the gold from the ore were steadily being made, the skeptics smiled credulously at the idea of obtaining a profit from the abandoned mines of Lewiston Canyon.

It is, in truth today, but little more than a year since the worth of the veins began to be appreciated. Meanwhile the Company continued to quietly work away, exposing more ore, until, during the spring of 1893, from thirty to sixty tons were being hauled daily, eight miles across Oquirrh range to the mill at Manning, where to 140 acres, was bonded to Henry R. Wolf, of Colorado, and associates, for $75,000, for three months. The vein was prospected by drifts and crosscuts and several diamond-drill holes were bored, the testing of the ground being conducted by R. C. Hills, prominent Colorado mining engineer. At the expiration of the three months an extension of the bond was asked for, as Mr. Hills, while well satisfied with the worth of the property, was not sufficiently so to induce the purchase, more particularly as his exploitation had not given the results he had counted on. The Mercur folk refused to extend the bond and resumed the active working of the mine. It was afterwards found that two of the boxes from the diamond drill passed through the vein in barren lime boulders, while a short distance on either side was a strong body of good grade ore. Had fortune favored Mr. Hills a few feet, one side or the other, in selecting the points where his diamond drill penetrated the vein it is probable the Nebraskans would not day be receiving handsome monthly dividends from this bonanza.

Another short-time bond for $1,500,000 was secured on the Mercur by Captain J. R. DeLamar towards the close of 1893, but the transfer of title was not consummated owing, as it is said, to the unfavorable condition of the money market during the mid-winter holiday period and immediately thereafter. To day it is safe to say this fine property is not for sale—at least not for double the amount of the DeLamar option.

What remains of the story of the Mercur mine is replete with interest. The company now owns 160 acres in a connected body covering the vein, which has been opened for four-fifths of a mile on the strike or course, while the longest incline is over 1,200 feet. The dip of the ore zone is that of the enveloping strata—about fifteen or twenty degrees from the horizon toward Lewiston Canyon. In thickness the ore varies from ten to fifty feet and probably averages nearly twenty feet. So far as exploration has gone the values hold their own throughout the entire property. The mine is operated by a system of tunnels run into the side hill on the strike. The workings are a confusing net-work of openings that show a vast amount of ore reserves with extensive rich territory of virgin ground.
only partly explored. During 1895 some 50,000 tons were sent to the mill which averaged $1.2 a ton, the metallic extraction being a fraction above 85 per cent. of the assays. The cost of mining, transportation and treatment, with interest on investment, including office expenses, was $3.40 a ton.

Up to the middle of March, 1896, a round million dollars was the yield from this ground, of which $473,000 were distributed in dividends. This is an exceptional record for premiums received by the stockholders of a comparatively new company. Fully $150,000 was expended in enlarging the mill, which last year was given a daily capacity of 200 tons, acquiring additional territory and in perfecting equipment.

A steam hoist has been erected on the Matie No. 4, on the extreme southeast end of the property, and the ground adjoining the Golden Gate on the northeast will be opened this season. These new workings are planned to insure an ample ore supply for the 400-ton mill now being constructed at the mine. By thus treating the ore immediately at home, and with a more systematic method of handling the mine products, $100 will be added to the daily profit, on an output of 200 tons. It is probable that the cyaniding plant at Manning will in the near future be a custom mill, for which there is already a generous demand.

These are the achievements of the Mercur Company up to date; covering the development period, both as regards to proving the resources of the gold-bearing ground and in the perfection of the method of extracting the values from the ore.

With the new mill in successful operation the monthly premium to stockholders, now of potassic cyanide added. It requires from three to six days to fully dissolve the gold from a vat or tank, charged with ore.

Ordinarily rock for cyaniding is made to pass through sieves divided into from twelve to thirty meshes to the inch, while here the screens in use allow pieces a half-inch or more thick to pass to the leaching vats. This is one of the astonishing surprises to all acquaint ed with gold metallurgy on their first visit.

The metallic gold extraction varies from 50 to 95 per cent., according to the handling and the percentage of arsenic in the ore. Each
though the eruptive at Leadville and the
details of their mode of occurrence are quite


However, the fundamental fact
that the ore here is in Carboniferous lime-
stones, and not in the quartzite as might be


bition found in so many of the great western
mining districts, is in itself suggestive of Mer-
cur's continued prosperity.


The auriferous zone is near the vertical
axis of an uplift caused probably by the in-
trusion of an eruptive mass immediately be-


strata, and from this axis the strata are
inclined in all directions. As is frequent in
such uplifts, the summit of the arch has been
deeply eroded, forming Lewiston Canon, where
the upturned strata are exposed to
view. The predominant rocks are limestones,
especially toward the lower portion exposed;
above alternating with shaly beds containing
thin layers of limestone, while towards the
summit shaly beds predominate. Some of the
limestones contain considerable quartz
teutral.


Outcropping around Lewiston Canon are
two ore-bearing zones, from 100 to 200 feet
apart, substantially conformable with the their
areas of eruptive rocks below. From
these solutions and vapors forced upward
from these areas of eruptive rocks below. These
solutions and vapors spread out from
the fissures along the broken and fractured
lines of bedding, depositing their burden of
gold and associated minerals, thus forming
the ore deposits of the district.


There is no reason why the gold should be
confined to one horizon or stratum; on the
contrary, there is clear evidence that there
are two and possibly more strata which have
proved to be gold bearing. Probably the
Sunshine zone is different from the Mercur,
as it appears to be in shale, with bands of
limestone of different character and color.
There are positive facts which show that these
events, there is no evidence that it is the
same stratum, and there are strong contrary
indications.


This outline of the rock formation and ore
deposition is in substance that approved by
Messrs. R. A. F. Penrose, Jr., S. F. Emmons,
J. E. Spurr, R. C. Hills and other distin-


This ore contains two varieties of
dozen metallic particles, as only in rare instances has
its presence been made manifest by pan-
ning.


The ores of the region are of two varieties,
oxidized and arsenical or base. Each is
unique. The gauze, or waste, of the veins
is made up of the mixture of the rock of the
current and the hot solution in the stone and
shale, frequently stained by clayey or
talcous material. For the most part, the
ore has a yellowish cast, though each separa-
tion is a distinctive character.


There is but little iron, and the mineral as
mined goes from thirty to sixty per cent in excess of silica, a most desirable feature for cyaniding. Cyanial, with its


thin layers and fine stringers. It lends inter-


et of mining operations, though no-


where is it present in sufficient quantity to
pay for the quicksilver contents. Native sul-


fries is the poorest and the most peculiar and largest specimens as
yet brought to light coming from Sunshine
ground, in the southern end of the district.


All the producing properties are oxidized or nearly so. They only produce the products that at present can be economically
treated. The cyanide solution is impaired by the presence of arsenic, failing to dissolve the gold. If the arsenic is left standing in the mine, or is thrown out before the ore is shipped to the mill. Ordinarily, this separation is easily accomplished as there is a plainly marked line of division between the two varieties of ore, the proportion of
base commonly being a small per centage of the entire mass.


In general appearance, the base is dark,
greenish yellowish brown, breaking showing
thin seams of realgar and orpiment, arsenic
sulphides. Here and there it fills the entire
vein, as in the Golden Gate, where Captain
Timmons dug and bought over the entire
arsenic into a commercial product. The arsenical mineral has been found to carry but little
gold, though often the associated rock is rich,
while it is the same assemblage of minerals in
a way of a post-ore extraction of the precious
metal. On roasting the base ores they are
rendered porous, and by leaching gradually yield up their gold contents. Breccia, a long, a
roasting annex will form a part of the cyan-


The veins are from ten to forty feet or
more thick, averaging fifteen feet, or, as the miners
express it, one of surface and one of deep
area. In some places, the apparent thickness of the paying rock is phenomenal, due

to the tough fibers and, several have
gone to some pains to show wherein the
name is non-appointive. Nevertheless it has
been taken up and adopted and there are reasons why the fact should be in vogue.
The original Johannesburg ore bodies of the
transvaal are low grade, the values being
saved by cyaniding; the gold-bearing beds are of unusual thickness and the
boundaries, as exaration has advanced,
have constantly extended outward—peculiar
characteristic conditions which apply with
equal force to the goldfields of Tooele county,
Utah.


Next to the Mercur, the Marion mine and mill
attracts notice. The Marion Company owns
eighty acres of the original claim, the
mill below and adjoining the mine. Something of
the history of this property has already
been told in this article. Underground there
are in the neighborhood of three miles of the
development workings. Since the mill first
started in June 1883, the first in the district after the Mercur, it has been idle but three
months. At the outset the capacity was 50 to
60 tons a day and it has never been enlarged.
The ore yields about $4.50 per ton, the
extraction being 90 per cent, while the cost of
mining and treating was but 50 cents a


The presence of quicksilver is the greatest feature for cyaniding. Cyanial, with its
sing red color, occurs in small bunches,


dividends are regularly paid, but being a
close corporation the shares are held
mainly by three persons, figures are not made
known. The mine has extensive ore reserves
remaining.


Nearly four miles to the south of Mercur is the
Sunshine mine a new town of the same
name, which has budded forth since January last. The Sunshine district is on a
dcline over 600 feet on the dip of the vein, which is thirty-three degrees. Numerous
levels have been driven on the vein, all ex-
posed faces are in ore and the visitor is im-
pressed with the magnitude of the rich ap-
ppearing reserves blocked out. This develop-
ment is of special moment from the location of the property, so far removed from the gold
bearing formation of Lewiston Canyon. By
all odds the finest, best equipped, and most
scientifically managed mill in the entire re-


Near by the mining town is a magnificent 25-
foot waterfall, which angle and size of
water get the attention of the visitor.


THE MINING AND METALLURGICAL JOURNAL
Some 12,000 feet of development work show immense ore reserves that will require years to exhaust. There are several shafts connected by inclines, with numerous levels and cross cuts, exposing mining as thick as in the pioneer days, and not much higher grade. The first ore bodies opened up were base for the most part, though in the past few months extensive deposits of oxidized ore have been brought to light.

Here is by no manner of means simply a low grade proposition. Some test carload shipments recently made gave highly flattering returning values, forming the basis of a result of exploration, no ore has been mined. When Captain De Lamar visited the camp in March, 1896, he stated that the problem of the economic saving of gold from the base mineral was practically solved and that before many months the arsenic rock would be contributing handsomely to Utah's gold production. Beyond peradventure, the Golden Gate will prove the best of all the region as yet known.

So far the history of America's Johannes- burg has been a story of low grade ore, the supply almost exhausted. It is now a more and more extensive. It is not a mere form of words to say that there are vast stores of such mineral that it will require years to work out. This is but a fragment of the information tell of bodies of rich, high grade gold ore in this region, as the one spoken of in the Golden Gate is not the only instance brought to light. The systematization, prospecting recently inaugurated has made known the existence of valuable smelting products, in nearby localities, where heretofore gold was not looked for.

Both on the surface and underground this is a dry camp, Lewiston Canyon being a dry water course, if the misnomer is allowable, the greater part of the year. For the needs of mining this is a desideratum, enabling the carrying on of mining exploration and ore extraction at a minimum of cost. For other purposes on the surface, ore treatment, domestic needs and the like, water is an essential that had to be provided. This was accomplished in the past fall and winter by the efforts of Col. M. A. Wall, the organizer and promoter of the project. The systematization, prospecting recently inaugurated has made known the existence of valuable smelting products, in nearby localities, where heretofore gold was not looked for.

From a carefully prepared paper, recently read by Colonel J. W. Donelan, President of the trust, comes the information that the gold will be worth more than the gold itself. The systematization, prospecting recently inaugurated has made known the existence of valuable smelting products, in nearby localities, where heretofore gold was not looked for.

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Highest cash price for old gold and silver, placer and retort gold; we will make returns in Southern California, Arizona, New Mexico from 4 to 6 days quicker than from any other point.

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Of all Descriptions, for Mills, Mines and Smelters

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Advertise in the Journal

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Over 3,200 in Actual Use

Manufactured under Patents of April 27, 1910; Sept. 18, 1885; July 24, 1885; and March 31, 1892

It can be safely stated, without going into a description of several new and improved concentrators that have lately come into the market, that where sulphur ore is of such value as to make close saving necessary, the Frue Vanner is always used. It is the only endless belt concentrator in the market that can be used on a belt of ore, and give universal satisfaction. (In all competition of concentrators the Frue Vanner is taken as the standard machine of the world, and all comparison made by it. They are used 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 this machine to increase its capacity and durability, and particular attention is called to the Patent Key Flange for the roller bushing which has been added to the front end of the Machine, and which is being made in all size motors at the factory and shipped from the works. This key flange is quite important, as it allows for an extra pin on the roller bushing at the front of the machine, and the pin is used for the purpose of preventing the bushing from being ground down, which is quite important when using tin, lead, or other soft metals. The bushing is made in the same sizes as the other bushings, and is made in two sizes, 90° and 180°. The 90° bushings are used for the larger end of the machine, and these bushings are made in all sizes, from one inch up to five inches, with all the standard baffle plates and all the other standard baffle plates in the market. The cut of flange bushing outward in going to the large end, and rolls the baffle plates by the bushing itself, the bushing itself, or at the edge of the bushing itself, as the case is in all cases with a baffle edge.

Price of 4-foot wide Flax Belt Frue Vanner

5000 ft. o. b. $250.00

Improved Belt Frue Vanner

6-foot wide Flax Belt

5000 ft. o. b. $400.00

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Western Agent, Frue Vanning Machine Co., Successor to Adams & Carter

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A. Van der Nillen, President.

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Puget Sound

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LOW PRICES

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Coal Mining Machinery

Water Elevators, Shafting, Pulleys, Geared, Planetary, Breech Clutches, Ropes, Sheaves, etc.

Send for Special Mining Machinery Catalogue.

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F. C. CARBUTT

STEINHELM BUILDING, LOS ANGELES, CAL.

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For Mill or Piler Users

The only efficient device for saving fine gold from cloudy juices, etc. Has been proven for superior to longitudinal plates in every instance. Recommended by leading miners.

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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 at a cost of fuel saved and steam produced saving nearly one half of other Bill.

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No compounds needed to keep boilers from scaling as all impurities are precipitated and boiled 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 cost for device; the Thermometer and Back Pressure Gage registers results.

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San Francisco

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Assaying in all branches
Chemical determinations accurately made

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Arizona

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The only Mill in the world for reducing hard and tough ores cheaply, either wet or dry. Guaranteed superior to Stamp's, less power required, very much less wear and tear, and a much higher per cent. of gold saved. Other so-called Quartz Mills are positively "not in it." In operation daily. Caston Mill. Send us your ores. Call or address,

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STAMP MILLS
CONCENTRATORS
And all Classes of MINING MACHINERY

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3d. Saves a great amount of delay in erection and it can be set up in an hour or a time as a self contained engine.
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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.

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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 one box, and 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 scouring the plates.

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ORE TARIFF.
From Points in Mexico, New Mexico, Texas and Arizona, to El Paso, Pueblo, Denver and Kansas City.

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

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Car Loads in dollars and cents per ton of 2,000 lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Paso</td>
<td>Pueblo</td>
<td>12.00 - 13.96 - 15.56 - 17.36</td>
</tr>
<tr>
<td>Pueblo</td>
<td>Denver</td>
<td>12.50 - 14.46 - 16.06 - 17.86</td>
</tr>
<tr>
<td>Kansas City</td>
<td>El Paso</td>
<td>15.00 - 16.96 - 18.56 - 20.36</td>
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<td>13.50 - 15.46 - 17.06 - 18.86</td>
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<tr>
<td>El Paso</td>
<td>Carthage</td>
<td>12.50 - 14.46 - 16.06 - 17.86</td>
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<tr>
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<td>El Paso</td>
<td>12.00 - 13.96 - 15.56 - 17.36</td>
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<tr>
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<td>El Paso</td>
<td>13.50 - 15.46 - 17.06 - 18.86</td>
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**SOUTH SOUTHERN RAILWAY**

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<tr>
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<th>Car Loads in dollars and cents per ton of 2,000 lbs.</th>
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</thead>
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<tr>
<td>San Antonio</td>
<td>El Paso</td>
<td>13.50 - 15.46 - 17.06 - 18.86</td>
</tr>
</tbody>
</table>

**ORE TARIFF.**
From Points in New Mexico, Arizona and Colorado, to El Paso, San Francisco and Vallejo Junction.

**SOUTHERN PACIFIC R.R. COMPANY.**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Rates on Copper or Zinc Ore to Canon City.</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Paso, Ter., San Francisco</td>
<td>$5.50 - $6.10</td>
<td>$6.50 - $7.10</td>
</tr>
<tr>
<td>Deming, N.M.</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Gage</td>
<td>San Francisco</td>
<td>$5.50 - $6.10</td>
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<tr>
<td>Sepah</td>
<td>San Francisco</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Lordsburg</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Sisco Pass</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Howie, A.T.</td>
<td>San Francisco</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Willcox</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
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<tr>
<td>Dragun</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
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<tr>
<td>Green</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Mariposa</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Gil-Rind</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Aztec</td>
<td>El Paso</td>
<td>$5.50 - $6.10</td>
</tr>
<tr>
<td>Gila City, El Paso</td>
<td>$5.50 - $6.10</td>
<td>$6.50 - $7.10</td>
</tr>
</tbody>
</table>

Note: All rates marked by * apply on Ore or Zinc only, and are subject to reduction at the rate of 25 per cent. All other rates apply only on loads of twenty tons or over. On loads of less than twenty tons, 25 per cent shall be deducted. Rates marked by ** apply on Carloads only, and are subject to reduction at the rate of 20 per cent. All other rates apply only on loads of twenty tons or over. On loads of less than twenty tons, 20 per cent shall be deducted. Rates marked by *** apply on Ore or Zinc only, and are subject to reduction at the rate of 20 per cent. All other rates apply only on loads of twenty tons or over. On loads of less than twenty tons, 20 per cent shall be deducted.
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Smelting and Refining Company,
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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,
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Quick Returns on all Consignments.

KENDALL GOLD & SILVER EXTRACTION COMPANY

THE KENDALL PROCESS is the most efficient method of using cyanide for the
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of time, material reduction in consumption of chemical has also been demon-
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All ores, without exception, amenable to cyanide treatment, can be treated to better
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The manager of one of the largest mines in the Mercury district,
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all tailing samples $8.50."

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PURCHASERS OF
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Special Facilities for Handling ores from the South-West and Mexico

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Adapted to all heads from
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Our experience of 32 YEARS
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enabled us to supply every require-
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We guarantee satisfaction.

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full particulars.

James Leffel & Co.,
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VULCAN ROPEWAY

For Conveying Ore, Cordwood, Etc.

Empire, Nevada, April 17th, 1896

Vulcan Iron Works—Gentlemen: The rope-
way furnished by your Company to convey tailings
from Morgan Mill to Mexican Mill, a distance of seven-tenths 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 crusher I consider the
best feature in the whole rope-way, making it possible for one man to load 300 tons in ten hours.

Yours very truly,

J. P. WOODBURY, Sept.

Manufacturers of Mining Machinery,
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Assayer and Chemist,
(Established 1879)
LEADVILLE - COLORADO

Samples by Mail or Express Re-
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SPECIMEN ASSAY PRICES;
Gold and silver, lead, zinc; any two of the
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FOR ROASTING, CHLORINATING, AND DESULPHURIZING ORES.

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