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FOR SALE—A FEW NO. 1 COWS Apply to A. G. DUNN, Prescott, June 12, 1868.

KUSTEL & HOFMANN, METALLURGISTS AND ASSAYERS. Gold and Silver Bullion Assayed. MINERAL ASSAYS AND ANALYSIS MADE. 611 Commercial Street, San Francisco.

SILVER AND GOLD ORES worked in small lots up to a hundred pounds, by Chlorination and other methods. San Francisco, Cal., June 27, 1868.

Blank Mining and Quartzclaim Deeds, Special and General Powers-of-Authority, etc., for sale at the Miner Office.

MONTEZUMA HOTEL. Montezuma Street, Prescott.

HAVING RE-FITTED THIS COMMODIOUS Hotel for the reception of guests, resident and transient, I wish to assure my friends and the public, that it is my intention to make my house a home for all who may favor me with their patronage.

Single per week, in Currency, \$12 00. Single Month, each, \$35 00. JOSEPH EHLE. Prescott, October 3, 1868.

NEW ARRANGEMENT! GOOD FRENCH BREAD, EXCELLENT PIES, CAKES, etc.

Made by Carlo Lopez, a first-class baker and pastry-cook, late of Hermosillo, Sonora, will be on hand and for sale.

At SCHROEDER'S BAKERY, Montezuma Street, Prescott, on and after Sunday, August 16, 1868. ANTONIO YIVANUERA. CARLO LOPEZ. Prescott, August 15, 1868.

The Hagan Process for the Reduction of Rebellious Ores.

(From the San Francisco Times.)

The great interest manifested by the public in the Pacific Ore Company's operations at the Enterprise mine, near Cisco, with the Hagan Furnace, now in successful operation upon the sulphurets of that mine, led us to secure the services of a gentleman conversant with such matters to visit that locality and make a critical and thorough investigation of the furnace, the mode of desulphurization and its economical and practical results, and report the same for publication. The vast importance to the mining interests of this Coast, of the discovery of a process for the sure and economical reduction of the rich but rebellious sulphuret ores, which have hitherto resisted the efforts of the most skillful metallurgists, is universally acknowledged, and gives unusual interest to the subject. The following is his report:

After a close personal examination during three days of last week, of the working of furnace now in operation at the Enterprise mine situated six miles north of Cisco, on the Pacific Railroad, under the management of W. A. Williams, Esq., a thoroughly experienced and practical quartz miner, your reporter is enabled to pronounce it a decided success, and to give such information concerning it as he thinks will lead others to the same conclusion.

The Hagan process of desulphurization consists in the application of superheated steam to a furnace for roasting ores, in such a manner as to expel the sulphur, arsenic, antimony and other volatile substances, by the chemical effects of heat combined with the gases resulting from the decomposition of the steam by heated carbon, leaving the gold free and in condition to be readily taken up by the quicksilver. It was discovered by Dr. Hagan, of Albany, New York, a chemist of some reputation, and was introduced here two or three years ago. Several apparent failures have occurred during that time, by the attempts of unskillful or incompetent persons to construct the furnace and apply the steam. The Pacific Ore Company, of this city, the present owners of the patent, have, however, constructed one or two of these furnaces in this State, and worked them with success prior to the building of this one at the Enterprise mine, but without attracting much attention. To make a test which should remove all doubts of its success and establish its claims to popular favor, the company commenced, late in the fall of last year, the construction of one of these furnaces at the mill of the Enterprise company at their own expense and risk, the latter company agreeing to accept the same and pay for constructing it, if it should result in saving fifty per cent. more gold than the ordinary mill process. The deep snows and inclement weather of last winter, the inaccessibility of the mine to teams at all times, and various other causes, prevented the successful working of the furnace until a few weeks ago, when a decisive test was made by taking from the same pile of ore a tub of rock for the stamps and one for the furnace, alternately, until each had twenty tons for trial. The raw ore was first worked by the ordinary process for free gold, by an experienced amalgamator, yielding a fraction less than \$5 per ton and losing about two hundred pounds of quicksilver. The roasted ore was then crushed and amalgamated, yielding over \$19 per ton and losing between three and four pounds of quicksilver. As this result was eminently satisfactory to the Enterprise Company, and was more than a fulfillment of the contract, they cheerfully accepted the furnace and assumed the expense of its construction. The ore of that mine being the most rebellious known to exist in this State, this triumph is a complete victory over all classes of sulphuret ores existing in our mines.

The furnace in this case consists of a body of masonry twelve feet square at the foundation, and running up to the height of twenty-four feet, tapering slightly, with a stack or chimney rising from one corner to the height of about twenty feet. In the centre, and two feet from the bottom, commences a round ore chamber, five feet and three inches in diameter, lined with fire-brick and rising to the height of twenty feet. This ore chamber is drawn in gradually as it rises, to a diameter of four feet nine inches, and arched at the top to an opening two feet six inches in diameter, which is covered with a closely fitting cast-iron lid. Its capacity is estimated to be twenty-one tons, leaving a space at the top vacant for two flues which start from opposite sides and about two feet below the lid, and run horizontally to the base of the chimney. These flues are about two feet high and one foot wide, constructed of common brick, and each having a damper to close it, near the chimney. At the base of the ore chamber are four openings, one in each side of the thick walls of masonry-work, and being about two feet high by two and a half wide. Two of these, on opposite sides, are used as fire-boxes for the application of the superheated steam and the small quantity of fuel consumed. The other two are for drawing out the roasted ore, and are fitted with iron doors for closing tightly. Fire-bridges, or partitions, are constructed of tiles standing upright, three or four inches apart, to separate the fire-boxes from the ore chamber and prevent the ore from running into the fire-boxes. In the top of these fire-boxes are placed the coiled or curved pipes in which the steam is heated. These connect with a series of iron pipes resting on the fire-grates, a few inches apart, and pierced with small holes for the escape of the super-heated steam into the fire. The fire-boxes are provided with iron doors for closing tightly, so as to exclude the air as much as possible. Steam is conducted from the boiler of the engine which drives the stamps and other machinery, to these fire-boxes, by means of small pipes, the quantity used for super-heating being com-

paratively insignificant. The super-heating pipes are about 2 1/2 inches in diameter, with a three-quarter inch bore, and possessing great strength. The small holes for the escape of the gases are made so as to direct the jet forward between the ties, and into the ore chamber. In starting the fire at first, a quantity of shavings and kindling are saturated with kerosene, and lighted to produce a quick fire, and the steam turned on at once, when it continues to burn without cessation, being sustained by the gases supplied by the decomposition of the steam. A quantity of fuel, however, is used, amounting to about one cord of wood in twenty-four hours, for the purpose of furnishing carbon to act in combination with the gases upon the ores, to more effectually secure the destruction of the base metals. Charcoal would perhaps be best for this purpose, the object being to provide a bed of live coals for the jets of gas to pass through on leaving the pipes—but wood answers the purpose very well. On throwing in wood it takes fire and blazes up until the air is excluded by closing the doors of the fire-box, when it continues to burn like a charred fire-brand until consumed. The escape of the steam through the pipes produces a loud hissing sound, which suggests the idea that the furnace has a powerful draught, but such is not the case, as the air is purposely excluded, and the smoke and fumes creep lazily out of the chimney.

The sulphur of the ore readily takes fire at the bottom of the ore chamber, and in a few hours communicates it to the whole mass, which continues to burn with a cherry red heat until the sulphur, arsenic, antimony and other combustible matter is driven off in vapor and gases through the chimney. The super-heated steam is decomposed by being discharged from the pipes into the bed of coals in the fire-box, the hydrogen being set free, and oxygen uniting with the carbon. The hydrogen burns up and thereby supplies the furnace with fuel for roasting the ores, and to some extent, unites with the sulphur, forming sulphuretted hydrogen gas. The oxygen having a greater affinity for heated carbon than for oxygen, unites with it, forming carbonic oxide and carbonic acid gases, which, in their highly heated state, form oxides, carbonates and sulphates with the base metals in the ore, after the latter has been rendered soft and friable by the action of the hydrogen. A portion of the oxygen unites also with a portion of the sulphur, forming sulphurous acid which rises and passes off in the form of vapor. Sufficient air finds its way into the furnace to furnish oxygen to unite with a portion of the hydrogen in combustion to form common steam which passes off through the chimney. An essential condition to the accomplishment of the desired result is that the super-heated steam shall be discharged into the bed of coals without coming in contact with the air, hence the exclusion of the latter from the furnace, except through the grate underneath the coals. Under such circumstances the air is decomposed by the fire, its oxygen being consumed by the combustion of the fuel and the hydrogen, and the nitrogen passing through the furnace unchanged. The heat produced in this furnace never reaches a high degree, consequently no slag is produced by melting the silica in the ore, nor any matter by the melting of the metals. The heat, as we have already stated, is a cherry red heat, and is maintained at that stage by the use of the dampers, placed in the flues.

In working the furnace one engineer attends the fires of both the furnace and boilers, it being necessary only to see that wood is supplied to the fire-boxes often enough to maintain a bed of coals about the pipes where the steam escapes. After it is once filled and set going, it should be kept up night and day, without ceasing, as long as possible. After it has burned two or three days from the start the services of two men are required every twelve hours to withdraw one-sixth of the roasted ore from the bottom of the furnace, and fill in the same quantity of fresh ore at the top. This operation takes but a short time—less than an hour. It is effected by opening the iron doors of the discharges first on one side and raking out some of the ore, then going to the opposite opening and repeating the operation, while water is thrown upon the hot ore that has been withdrawn, to cool it so that the men can return and rake out more ore. Thus the men draw the ore from one side to the other until the desired quantity is withdrawn, when the doors are closed tightly and fastened securely until the next drawing. Before drawing out any ore, half a dozen or more iron rods are driven between the upper side of the opening and an iron cross-bar, so as to project a few inches into the mass of ore in the chamber, and hold it up while that beneath is withdrawn. When the drawing is finished these rods are withdrawn, so as to let the ore down to the bottom and make room for fresh ore at the top. The work of drawing the ore is severe and very warm while it lasts, but a horse placed conveniently soon cools the burning ore and relieves the workmen. The filling is done by raising the iron lid which closes the top of the ore chamber, and raking in the raw ore which has been previously placed conveniently for that purpose. It occupies but a few moments time and is attended with no inconvenience from the fumes of the burning ore, as they do not rise above the opening, but pass off through the flues into the chimney. The lid being again put down is luted, or closed tightly, by covering with sand, so that no fumes escape. And here we may add, that none of the operations about the furnace are rendered disagreeable by the sulphur, arsenic and other obnoxious fumes from the burning ore, as they all pass off freely through the chimney stack and are dissipated in the atmosphere above. This furnace, being of about twenty-one tons capacity, three and a half tons of roasted ore, as nearly as the workmen can guess, are drawn out every twelve hours.

In summing up the economical results of

the working of this process we shall adhere closely to the truth at the risk of exciting the suspicion of the incredulous. The furnace of the Enterprise mill is constructed so that the roasted ore has to be raised to the battery by machinery, and handled over two or three times, yet the cost of treating the ore by this furnace does not exceed one dollar per ton. Where the furnace can be built over the mill, as is often the case, so that the ore may be withdrawn in front of and on a level with the battery, the expense would not exceed fifty cents per ton. If the furnace was of fifty or one hundred tons capacity, as it might be wherever desirable to have it so, the cost would be still further reduced. All ore has to be delivered at the stamps in proper size for crushing. The delivery of the same ore at the top of the furnace, when the same is built on the side of a hill, and running it through it in the manner described, before it reaches the stamps, cannot materially increase the cost of handling. Add to this the cost of fuel consumed, and the labor of two men to feed and discharge the furnace twice a day—say one hour each time—and the cost will be found to come within the limits we have named. It requires no extra firemen, as we have stated before, and but little steam; and the two men mentioned may be employed at other work about the mill four-fifths of the time. No chemicals whatever are used. As an offset to the expense of treating the ore with this furnace, we find that five stamps will crush as much roasted ore in a given time as fifteen will of the raw ore, and instead of wearing out the battery rapidly, only gives it a good polish. Further still, the gold amalgamates more readily, and the cost of quicksilver is apparently nothing. No sulphurets have to be concentrated, because they are all destroyed by the furnace. The Enterprise ore contains molybdenum, which is indestructible by fire, and of course passes off with the sand of the tailings. The roasting of the ore does not leave a coating on the gold, which prevents its amalgamation, as is shown by the fact that copper plates in the battery collect an unusual proportion of the gold obtained.

The practical result at this mine, as already stated, is a yield of 400 per cent. above the ordinary process. As the Enterprise ore is the worst in the country to reduce, it is safe to assume that the furnace will not be less successful with other sulphuret ores. In fact, the process has been already tried upon many different classes of sulphurets with perfect success in every case; and the proprietors of the patent do not hesitate to claim a victory over all. Mr. Williams, the Enterprise Company's efficient Superintendent, thinks that ores should contain at least two per cent. of sulphurets to afford sulphur enough to maintain combustion and produce the chemical combinations necessary to effect complete desulphuration. This, however, is merely an opinion, and probably ore containing less sulphurets may be thus treated with success, by mixing fuel with the ore to aid combustion. At all events any ore would be made more friable and easier worked in the mill by the roasting. There is no strong draft to this furnace to carry off the light particles of gold, and the heat is never sufficient to volatilize either gold or silver. It is equally beneficial in the reduction of silver sulphurets. The cost of constructing such a furnace in ordinary localities, will be about \$2,000 to which must be added the royalty demanded by the owners of the patent. A larger one would cost proportionately less. The Enterprise ore is roasted three days, but Mr. Williams thinks two days sufficient. The writer formed the opinion from his observation, that by reducing the ore to egg size, it may be fully treated in twenty-four hours, as some of the Enterprise ore came from the furnace in lumps so large as to require breaking before they could be fed to the stamps. It is only necessary that sufficient space should be left to permit the passage of the gases up through the ore to the chimney. The whole process is remarkable for its simplicity, yet experience will doubtless suggest many improvements in the future. We went to inspect its operations, filled with doubts suggested by chemistry and practical experience in mining, and came away thoroughly converted. Whatever objections science may raise against this process, must give way to actual results such as we witnessed. Space forbids indulgence in the expression of any sanguine estimates we might make of the immense importance of this discovery, and its probable effect upon the future prosperity of the mining interests of the country. Our readers are free to do so at their leisure.

OUR SOUTH-WESTERN TERRITORIES.—A few years ago the geography of our South-western Territories conveyed the idea of an immense desert, equaling in extent and barrenness the great Sahara, and filled with desolation and death like the wastes of Tartary. But the forbidden sands have proved grains of gold, and the noxious dust that stifled the first adventurers has become a silver lining to many a miner's basin. Nevada, Colorado, Montana, Idaho, and Wyoming, have each been clipped in turn from the vast arena, and each bears products not less fabulous than Ophir. Never was transformation so complete. When Morse and Mitchell regaled our schoolboy days with descriptions of half a continent lost in sterility, and impenetrable because of its heat and dust and storms, they little dreamed that even their own pens would have opportunity to repeat the fable that what they had touched had turned to gold.—Appleton's R. R. Guide.

DR. HOLLAND writes concerning the death of Adah Isaacs Menken: "A story is current, which I give for what it is worth, that she laid a wager she could drink a given quantity of whiskey, won the bet, and died."

GREEN River City has taxable property to the amount of \$109,700.

The Early Mexicans.

Historians have marveled at the instantaneous collapse of the empires of Mexico, Peru, the Mayas, and the Natchez, before a handful of spanish filibusters. The fact was, wherever the whites appeared they were connected with these ancient predictions of the spirit of dawn returning to claim his own. Obscure and ominous prophecies, "texts of bodiful song," rose in the memory of the natives, and paralyzed their arms.

"For a very long time," said Montezuma, at his first interview with Cortez, "it has been handed down that we are not the original possessors of this land, but came hither from a distant region under the guidance of a ruler who afterwards left us and returned. We have ever believed that some day his descendants would return and resume dominion over us. Inasmuch as you are from that direction, which is toward the rising of the sun, and serve so great a king as you describe, we believe that he is also our natural lord, and are ready to submit ourselves to him."

The gloomy words of Nezahualcoyotl, a former prince of Tezcuco, foretelling the arrival of white and bearded men from the east, who would wrest the power from the hands of the rightful rulers and destroy in a day the edifice of centuries, were ringing in his ears. But they were not so gloomy to the minds of his down-trodden subjects, for that day was to liberate them from the thralls of servitude. Therefore when they first beheld the fair complexioned Spaniards, they rushed into the water to embrace the brows of their vessels, and despatched messengers throughout the land to proclaim the return of Quetzalcoatl.

The noble Mexican was not alone in his presentiments. When Hernando de Soto on landing in Peru first met the Inca Huascar, the latter related an ancient prophecy which his father, Huayna Cabac, had repeated on his dying bed, that in the reign of the thirteenth Inca, white men (viracochas) of surpassing strength and valor would come from their father the Sun, and subject to their rule the nations of the world. "I command you," said the dying monarch, "to yield them homage and obedience, for they will be of a nature superior to ours." The natives of Haiti told Columbus of similar predictions long anterior to his arrival.

When the name of Quetzalcoatl was no longer heard from the teocalli of Cholula, that of Montezuma took its place. From ocean to ocean, and from the river Gila to the Nicaragua lake, nearly every aboriginal nation still cherishes the memory of Montezuma not as the last unfortunate ruler of a vanquished state, but as the prince of their golden era, their Saturnian age, lord of the winds and waters, and founder of their institutions. When, in the depth of the tropical forests, the antiquary disinters some statue of earnest mien, the natives whisper one to another, "Montezuma! Montezuma!" In the legends of New Mexico he is the founder of the pueblos, and intrusted to their guardianship the sacred fire. Departing, he planted a tree, and bade them watch it well, for when that tree should fall and the fire die out, then he would return from the far East, and lead his loyal people to victory and power. When the present generation saw their land glide, mile by mile, into the rapacious hands of the Yankees—when new and strange diseases desolated their homes—finally, when in 1846 the sacred tree was prostrated, and the guardian of the holy fire was found dead on its cold ashes, then they thought the hour of deliverance had come, and every morning at earliest dawn a watcher mounted the housetop, and gazed long and anxiously in the lightning east, hoping to descry the noble form of Montezuma advancing through the morning beams at the head of a conquering army.

ARMING.—We clip the following from the Cleveland Herald, a paper that is neither an alarmist, nor does it deal in sensations:

"It is stated that the State authorities of Missouri have brought into and distributed throughout several counties some eighty thousand stand of arms. On Saturday night fifteen thousand stands were brought into St. Louis, across the river in skiffs, and are now stored somewhere near the arsenal. These movements are quietly made, in anticipation of an outbreak at the coming election. It is reported that the Democrats are making similar preparations."

AN exchange says: "The enormous sum of five hundred and forty thousand pounds was remitted by the Irish in America to their relatives in Ireland during the past year. Of this sum two hundred and two thousand pounds were transmitted as return passage orders. Since 1848 the Irish in America have transmitted fourteen millions and a half pounds sterling to Ireland."

PRINTED matter, such as books, pamphlets, etc., is now carried in the mails at same rates as newspapers. Heretofore, letter postage has been charged upon books, etc., sent to the Pacific States and Territories from the East.

THE Salt Lake News tells a story of a young man who lost his mules by Indian thieves in Wyoming, followed the Indians, on foot, 100 miles, and recaptured the mules. We believe this story, notwithstanding, etc., etc.

THE Augusta (Georgia) Chronicle thinks its State good for the Democracy by about 50,000 majority.

It is said that Dr. Franklin introduced broom corn into this country.