THE

Indé Mining and Reduction Co.

OF MEXICO.

INCORPORATED 1881.

WASHINGTON, D. C.
GIBSON BROTHERS, PRINTERS.
1882.

BIRDS-EYE VIEW OF INDE

MEXICO.

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Officers.

President, - - - - - - W. S. HOGE.

Vice-President, - - - ALEX. ELLIOTT, JR.

Secretary and Treasurer, - - JOHN TWEEDALE.

Assistant Secretary, - - - M. W. MITCHELL.

Mining Superintendent, - E. C. CARRINGTON, JR.

Directors.

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THOS. B. PENICKS,
JAMES M. CHADSEY,
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MEXICO—ITS MINERAL WEALTH, &c.

From the date of the conquest of Mexico its mineral wealth has become matter of history. For nearly three centuries the country quietly submitted to the rule of the Spaniards, who, in vast numbers, flocked to its shores, built towers and churches, uncovered its hidden wealth, and loaded great fleets of vessels with gold and silver for the mother country. Spain became the richest and one of the most powerful of nations, and her glory only began to wane from the success of the Mexican revolution, when an edict was passed by the young republic banishing all Spaniards from its domain.

From 1813, to within the last few years, the history of Mexico has been one of war, revolution, and revolt. Neither the country nor the people were in a condition for peaceful labor, but, after the defeat of the French and the death of Maxamilian, fresh impetus was given to labor, and the mines were extensively worked, principally, however, in the States of Zacatecas, San Luis Potosi, &c. In the more northern States of Durango, Cohahuila, and Chihuahua the incursions of the Comanches, Apaches, Mezcaleros, and other hostile Indians, made labor on mining property, away from the vicinity of cities, so hazardous to human life as virtually to cause an abandonment of the mines, and it has only been within the last three years that work to any extent has been done upon them. At the present time there exists a strong government, republican in form; the right of property has been firmly established; society well organized, and, by the death of Victoria, the Apache chief, and the defeat of his warriors, the country has been cleared of hostile Indians

to a point several hundred miles north of the city of Chihuahua.

Although mining operations, as conducted by the natives of Mexico, were attended with many difficulties, for a number of years they produced three-fourths of the silver current in the world, and the annual yield of silver is now estimated at $35.000,000 and of gold $32,000,000.

Mexican Methods of Extracting Silver.

There are, practically, but two methods known to the Mexicans for the extraction of the silver from the ore. One is the patio, which was discovered in 1557 by Bartolomi de Medina. This process can only be used where the ores are comparatively free from lead and metalloids, and is expensive, troublesome, and uncertain in its results. The process may be briefly described as follows:

The ore having been reduced, by pounding, to about the size of grains of corn, is placed with water in a rude machine called an arrastre, and ground to a fine slime or mud. An arrastre is a circular opening about a foot in depth and five feet in diameter, the bottom paved with, and the circumference protected by, flat stones. A wooden post in the centre supports a movable beam, from which, by raw-hide ropes, two large stones, weighing from five hundred to a thousand pounds each, are suspended One or two mules are hitched to an end of the beam and, being driven around, the stones revolve and the ore is ground. The time required to reduce ore to the proper condition depends, in a great measure, upon its character; it may take two days, or more than double that number, to reduce a ton. The slime is collected and placed in pits, where it remains for a certain number of days, until a sufficient quantity of the water it contains evaporates. When the mass, now called a "patio," has

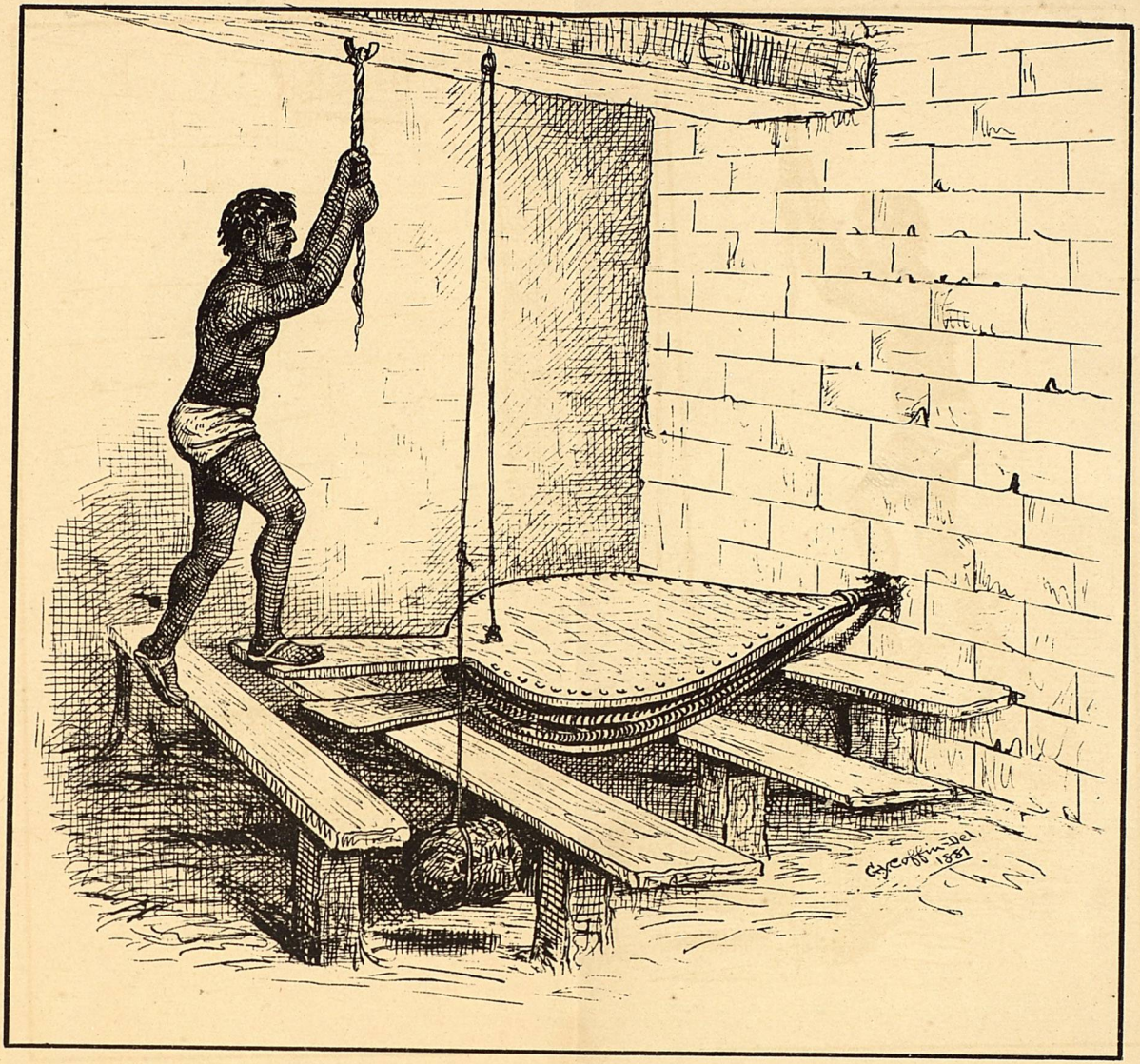
GRINDING ORE WITH ARASTRES.

ticed in collecting gold. The process is a wasteful one for mercury, every one hundred pounds of silver involving a loss of from one hundred and thirty to one hundred and fifty pounds of mercury. It has been estimated that the total expenditure of mercury in this process during the seventeenth and eighteenth centuries amounted to six million hundredweight. It is also a process not favored by the laborers, who, treading upon the mass with naked feet, soon have their systems filled with mercury, lose their health, suffer painful affections of the bones and muscles, and frequently sink into a decline. The animals employed are also affected; the hair drops off, they lose health and spirit, and only live for a year or so. It is a common expression of the country, in describing an old and worn out horse, "he is only fit for the patio."

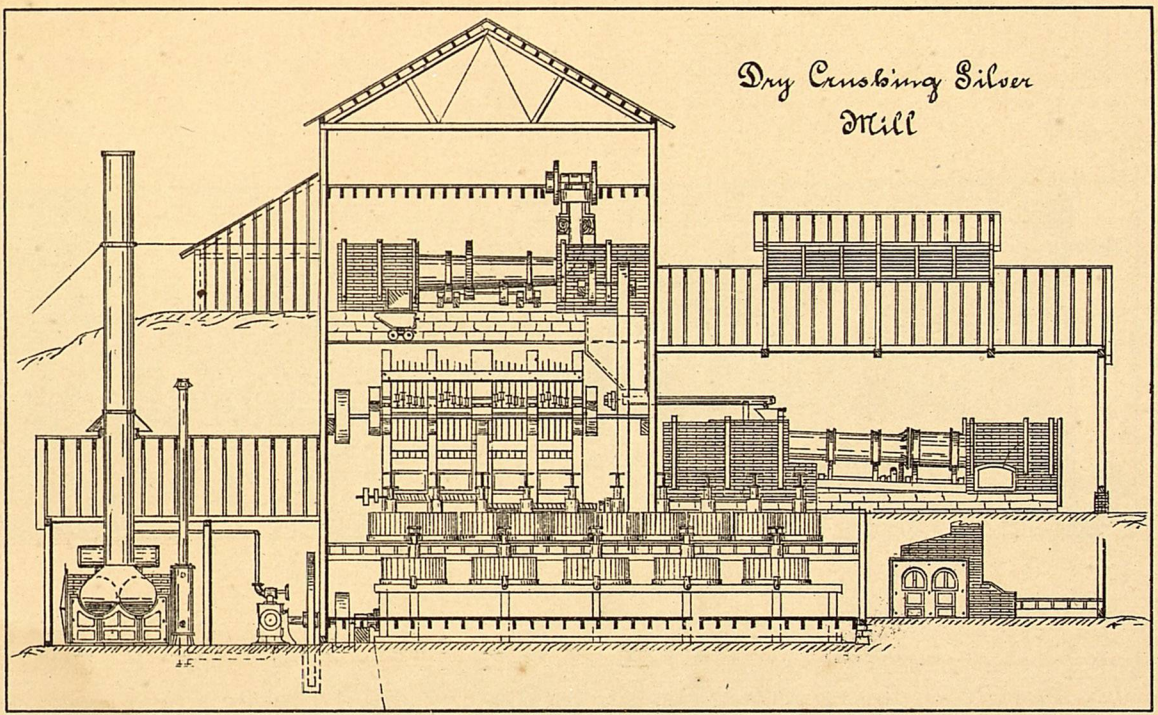
The other process is the extraction of the silver, in adobe furnaces, by means of fire. This can only be applied to such ores as are of high grade, and contain a large percentage of lead; it is costly, and, under the most favorable circumstances, only sixty per cent. of the precious metal is obtained.

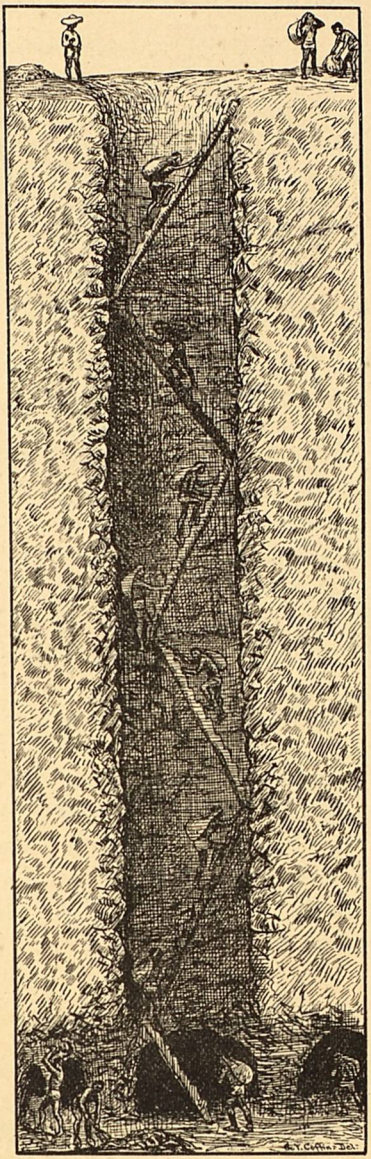
The ore upon the dump-pile is carefully selected; the richest portions and those containing the most lead are loaded upon jackasses and carried to the furnace, where laborers crush it between large stones. If it contains sulphurets an open fire is built about it, and the ore thus roasted. If the mass does not contain thirty-two per cent. of lead that metal is added, together with slag and various fluxes, and, with charcoal, is placed in the adobe furnace, built upon a model many centuries old. This furnace is a cross between a house without a roof and an open chimney. Upon the ground it is usually twelve or fifteen feet square, twenty feet high, and the chimney-opening eight or ten feet square. The blast is

MEXICAN FURNACE.



MEXICAN METHOD OF SUPPLYING FURNACE WITH AIR.


Dry Crushing Silver
Mill



MEXICAN PLAN OF HOISTING ORE.

supplied by an enormous bull-hide bellows, worked by a nude Mexican, who, steadying himself by a rope, keeps the machine in motion with his feet. When the ore contains sulphur, antimony, arsenic, &c., it has been estimated that more than twenty per cent. of the silver is lost in the fumes with these metalloids.

The mass in the furnace is never properly liquified, and another heavy percentage of the silver is lost in the slag. There are now enormous heaps of slag, containing many millions of tons, scattered through the mining districts of Mexico, and scientific men have estimated that this slag contains, on an average, from ten to fifteen ounces of silver to the ton, and attention has already been directed to its proper treatment and the extraction of the silver.

It will be seen that the only two processes in use among the native Mexican miners are suited to but two classes of ore, and it is a fact that much of the best ore the country produces cannot be utilized by these people, and that they rarely, if ever, attempt to beneficiate ores that contain less than sixty to one hundred dollars to the ton. When it is understood that the average yield of the great Comstock mines of Nevada is less than thirty dollars to the ton, it seems but fair to say that when improved American machinery is used for the reduction and treatment of the ores, Mexico presents a rich field for investment. By modern appliances the silver can be extracted from the ore at a cost of from six to ten dollars per ton, and perhaps less, and the yield, instead of being sixty per cent. of the silver contained, from ninety to ninety-five per-cent.

Indé—Railroad Connections, &c.

Indé is an old mining town, built by the Spaniards more than three centuries ago, and contains some five hundred inhabitants. The enormous slag-heaps, ruins of

former furnaces and arrastres, and the construction and character of the houses, show it to have been one of the central points of Spanish mining interests, as well as one of the wealthiest. It will be seen by reference to Colton's map, a lithograph of which is appended, that it lies directly on the line of the Mexican Central Railroad, which connects El Paso del Norte with the City of Mexico, and is the main line and principal railroad of Mexico.

Many thousands of men are now working on both ends of the line, and its completion to Indé is expected within the next year. The advance guard of American prospectors and miners have already reached this district. Two mining companies of Washington city, one from St. Louis, and one from New York own extensive property in the vicinity of Indé. Four Mexican miners are also at work upon their mines under the old system.

The country is elevated and of great beauty, diversified by mountain and valley, with an abundance of water and water-power. Wood is plentiful and cheap. All the necessaries of life are furnished in abundance, and at moderate prices. The wages per diem of skilled native miners is seventy-five cents, and of laborers fifty cents, and, under proper direction, they perform as much and as good work as those of any other nationality. The people generally are hospitable, courteous, and kind. The climate is agreeable and healthy, colds and pulmonary affections being almost unknown, and work upon mining property can be performed during all seasons of the year.

Description of the Mines.

This Company is the owner of five mines in the vicinity of Indé, State of Durango, Republic of Mexico, as follows:

The San Luis.

This mine is situated about six miles south of Indé,


DENVER
LEADVILLE
GUNNISON
Castle Rock
Colorado Sprs.
PUEBLO
ATCHISON
TOPEKA
TRINIDAD
Raton
SANTA FE
PRESCOTT
SOCORRO
San Marcial
TUCSON
Deming
YUMA
SAN DIEGO
Colton
Goshen
Visalia
ATLANTIC
PACIFIC
SOUTHERN
EL PASO DEL NORTE
GUAYMAS
SONORA
LLANO ESTACADO
OR
STAKED PLAIN
Terreno Desconocido
SALTILLO
Longitude West from Washington

and southeast of the Peak of Indé, (the landmark of this district.) The La Cruz mine, owned and now being most successfully worked by Don Cassimero Najara, bounds it on the north, the Del Agua, the property of the Washington and Mexican Mining Company bounds it on the east, separated, however, by a spur of the mountain. Almost due west lies the San Pedro mine, and on the south is an arroyo. The shaft sunk on the vein is about thirty-five feet deep ; the vein is a true fissure, clearly and strongly defined, and at this depth shows an average width of two and a half feet. At the time of its purchase by the company, the vein at a depth of six feet showed a width of eighteen inches, and assayed thirty dollars to the ton. At its present depth (having been developed by the company) it shows a width of two and a half feet, and ore taken therefrom yields an average of forty dollars to the ton.

The ore is tractable, free milling, and easily reduced.

The San Pedro.

This mine lies about a quarter of a mile to the west of the San Luis. On the southwest is the Anita mine, on the north the Matchos mine, on the south the Colorado mine, and on the west the Grefuela mine.

The shaft is about sixty feet deep, with two drifts. The vein is peculiar in its formation, and not as regular as the San Luis. Sometimes it increases and widens out six or eight feet, and again pinches to one or two feet. Other openings have been made upon the vein, and give indications of a large body of ore. The ore yields from seventy to one hundred ounces to the ton. It is called a smelting ore, although the percentage of lead is not very great, and can be most successfully treated by the lixiviation process.

The Candelaria.

This mine is bounded on the north by the Union mine, on the east by the Peak of Indé, on the west by an arroyo, and on the south by the El Oro. The out-croppings of this vein, which can be traced for a long distance, are very strong. The ore is exceedingly rich, the low grade assaying ninety-seven ounces, and the high grade three hundred ounces, to the ton. The vein is a true fissure, and at a depth of fifteen feet shows an average width of two and a half feet.

The Lolita.

This mine is about one mile west of Indé. Very little work has been done upon it, the shaft being not more than ten feet in depth, but at this depth the vein shows a width of from five to seven feet. Assays of surface ore gave a yield of twenty ounces to the ton.

The San Juan.

This mine lies southwest of Indé, and about five miles distant therefrom. The shaft is about forty-five feet in depth, and the vein from three to four feet in width. Specimens taken from this mine yielded seventy-seven dollars to the ton.

Each of the foregoing mines contain 2,600 lineal feet, by a width of 450 feet.

WHAT HAS BEEN DONE, PROSPECTS, &C.

Much has already been accomplished by the Company in furtherance of its interests. It has purchased and had transported to Indé all necessary mining, carpenter, and blacksmithing tools, and is the owner of considerable live stock. Its mines have been developed, and a quantity of ore extracted, a portion of which has been treated by the old Mexican methods, and with such results as to

show the great richness of the mines, their capacity of production, the fine quality of their ores, and that they can be worked with profit by the rude processes of the country. But appreciating the fact that, with American machinery for the reduction of ores, capable of treating from twenty to thirty tons a day at a minimum cost, the profits would be enormous, it has already looked to the purchase of such machinery, and through a competent committee made an exhaustive examination of the subject in the cities of New York, Pittsburg, and Chicago, and it proposes at once to send to Indé the requisite machinery of the latest and most approved patterns.

STOCK—ITS DESIRABILITY AS A PERMANENT INVESTMENT.

The stock of the Company is limited to 50,000 shares, each share being of the face value of $20. There is now in the treasury 20,000 shares, 10,000 of which it offers for sale at $2 per share, in order to complete the working capital. Should it be unnecessary to sell the remaining 10,000 shares, they will be distributed *pro rata* among all the stockholders.

The Company is free from debt.

Its shares are full paid and non-assessable.

There is no personal liability on the part of the stockholders.

It owns virgin veins of great richness, which will yield an unlimited supply of metal.

There are no reduction works nearer Indé than the city of Parral, 120 miles distant, where $45 is charged for the reduction of a single ton of ore, and even at this rate the native miner finds it more profitable to have his high-grade ore beneficiated by American machinery, because he obtains from 90 to 95 per cent. of the silver it contains, while under his own process never more than 60 per cent., and that at a cost of some $30.

This Company proposes to treat the ores of its own mines, and as much as possible of those of the other mines of the district at the same rate as charged at Parral.

Persons desirous of investing in the stock of this Company can do so by applying to any of the officers or Board of Directors.

Assayer's Report upon samples of ores sent Campbell Carrington, Esq.

1st. Marked Candelaria, No. 1:

Contained	No	oz.	gold	per	ton.
"	80	"	silver	"	"
Muffle correction	.8	"	"	"	"
Total	80.8	"	"	"	"

Market value, $91.80.

2d. Marked Candelaria, No. 2:

Contained	No	oz.	gold	per	ton.
"	160.6	"	silver	"	"
Muffle correction	4.5	"	"	"	"
Total	165.1	"	"	"	"

Market value, $187.58.

3d. Marked San Pedro, No. 3:

Contained	Trace	oz.	gold	per	ton.
"	65.5	"	silver	"	"
Muffle correction	.7	"	"	"	"
Total	66.2	"	"	"	"

Market value, $75.21.

4th. Marked San Louis, No. 4:

Contained	Trace	oz.	gold	per	ton.
"	32 7	"	silver	"	"
Muffle correction	.3	"	"	"	"
Total	33.0	"	"	"	"

Market value, $37.49.

E. T. FRISTOE,
Prof. Chem., Columbian College, Assayer.