

Tejupilco—3 silver mines are actually worked in this district and 4 are abandoned.

Nancitilla—There are 11 silver mines, at present abandoned.

Amatepec—3 mines are worked actually.

Ixtapa del Oro—4 mines are actually worked in this district and 13 are at present idle.

Jultepec—38 mines are actually worked in this district and 105 are either idle or abandoned.

Zacualpan—10 mines are actually worked in this district and 68 are either idle or abandoned.

In this State 65 mines are actually worked and 259 are either idle or abandoned.

THE STATE OF MICHOACAN.

This is also one of the richest mineral States of Mexico. Among the most celebrated mines of Mexico is that of Halpujahua, as well on account of its richness as on account of its historical record. Close to this mine is situated the peak known as "Campo del Gallo," where Padre Hidalgo established a gun foundry, and where the first Mexican cannons used by the revolutionists against their Spanish oppressors were cast. The following mineral districts are also worked in this State, viz.:

Anganguao.
Espirito Santo.
Guayabo.
Omoltan.
Iguaran.
Curucupaceo.
Ozumatlan y barra.
Chapatuato.
San Antonio.
Cualcoman.
Tlalpujahua.

The metals of these mines consist of gold mixed with iron,

cinnabar, coal, antimony and emeral. The ores are worked both by the patio or cold amalgamation process and smelting.

In 1880, 32 mines were worked in the district of Tlapugahua 18 in that of Omatlan and 5 in that of Curucupasco. The names of the innumerable mines situated in the other mining districts are not known.

THE STATE OF MORELOS.

The principal wealth of this State consists in its agricultural productions, although the following mines are operated at present:

| | |
|------------------------------------|----------------------|
| Mining district of Oaxtepec, . . . | The mine of Tenango. |
| " " Huaulta, . . . | " Tlachichilpa. |
| " " " . . . | " San Esteban. |
| " " " . . . | " Concepcion. |
| " " " . . . | " San José. |
| " " " . . . | " Peregrina. |

In the municipality of Cuernacaca is a peak called Barriga de Plata (Silver Belly), in old times some mines were worked in that mountain, but are now abandoned. In the municipality of Jultepec is a mountain whose formation consists of carbonate of lime, marble with metallic veins formed by various oxydes, and a fine quality of gypsum.

There is actually in this State 15 paralyzed mines, 7 silver mines, 1 of cinnabar, 1 of alabaster, 2 of jasper, 4 of marble.

THE STATE OF NUEVO LEON.

In this State mines are found in the valleys as well as on the mountain tops. Most of its mines are now abandoned, they

contain silver, gold, lead, iron, copper, sulphur, nitrate of potash, alabaster and white marble. Muriate of soda is also found in large deposits.

Great bonanzas were found during the last century in the mountains of Boca de Leones or Villaldama, and the Iguana Hills, situated southeast of the latter place, as appears by the annexed reports of the Spanish governors and inspectors of that province.

The mines in the District of Serralvo, which produced great bonanzas last century are now worked again with success, and one of them is in bonanza.

The following mines have been worked successfully, and are now being placed in good working order, viz.:

Minas viegas.

La Catita.

La Ladera.

Moreno, Coyache, La Farandula and Chihuahua, four silver mines now in working order, the property of the Anglo-Texan-Mexican Mining and Smelting Company, organized by Mr. W. A. Gifford. Said company has its domicile at Houston, Texas, and its smelting works at the town of Villadama.

La Valenciana.

San Nicolas.

New mines in Potrero de la Parra.

El Rosario, now worked by a Texan company.

Vallecillo.

La Iguana.

Santa Rita.

Candela.

Pinitas.

Montanas.

Sabinas Hidalgo.

Real de Salinas.

La Plomosa, Sabarado and Sacramento

REPORTS FROM OFFICIAL DOCUMENTS.

Las Minas de San Antonio de la Iguana were discovered in the year 1757. They were very rich in native silver; and although

the bonanza lasted but a little while, it attracted many people from the interior.

A tour of inspection was made in 1775 by Lieut.-Colonel Don Melchor Vidal de Lorca, in the new kingdom of Leon, belonging to New Spain, while Governor of the same. The following is taken from his report:

"In the Real de San Antonio de la Iguana, mining district of La Iguana, distant from this city (Monterey) 37 leagues north-west, was discovered a bonanza in the year 1757, it was visited by me on the 27th of February of the present year. In this place there are fifteen Spanish families with thirty-two servants, mostly all males, who are all engaged in mining. None of the mines are worked regularly, but rocks taken from them here and there still maintain the hope in these people. Those mines were in Borrasca (eight leagues south-west of Lampasas) and situated between two small mountains divided by a creek having a small spring at its head, hardly giving a sufficiency of water for the population, which is obliged to dig wells in order to provide for the daily wants of that community."

In his *Information and Catalogue of Mines* (written in 1806), Don Simon de Herrera, then Governor of Nuevo Leon and commander of the Corps of Observation sent to the Louisiana frontier (the same who, with Governor Salcedo, was butchered in cold blood on the Rosillo, in 1813, by order of Lara) speaking of these mines, says: "In 1737, the celebrated mines of La Iguana (lizzard), well-known in mineralogy, produced many millions in a few days on account of the richness of its ore. Miners called it a lizzard of silver, which disappeared in a few days. Most of the silver was found in loose stones in a ravine in the direction of the mine that produced the lizzard." The writer had one in his possession which weighed twenty-five pounds, and, being smelted, lost only eight ounces in weight. Being lead and silver it was easily smelted. To-day there are only a few buscones. Searchers now occasionally find small veins, which, although very rich, do not pay on account of the rebelliousness of the ore, in which much powder and steel are wasted. Mining engineers who have visited the district, say that it would become of great importance if its ores were steadily worked with sufficient capital, and prospecting made for the principal vein.

In 1757, near the frontier of Nuevo Leon, at La Iguana, was

discovered immensely rich silver mines, which, if the abundance of silver they furnished at first had continued, would no doubt have been by far the richest mines of New Spain. Its veins (*veña*) furnished three qualities of metal: The first was very curious (*Greta ó Leria*) being a quality of sand which hardened when exposed to the air, and which would, when broken, uncover threads of pure silver, so entangled together that art could not have imitated them. Though beautiful, this metal was inferior. The second vein was of silver lead, which, when smelted, produced 50 per cent. of silver. The metal found in the third vein was of a yellowish color, which, if cleansed of a few pebbles and sand, was pure silver.

THE STATE OF OAXACA.

This State contains the following mining districts: Ixtlan, Villa Alta, Texocómulco and Peras.

The districts of Ixtlan and Villa Alta are producing nearly all the silver, whether coined or exported from the State. One hundred and forty mines are now actually in operation and forty are abandoned.

THE STATE OF PUEBLA.

But little is known of the mining wealth of this State, though it is generally believed that important discoveries will hereafter be made. At present, a superior quality of stone-coal has been found in the department of San Juan de Los Llanos, and silver mines at Xihuitlipa, San Andres Chalchicomula, Techachalco and Teteta del Oro.

THE STATE OF QUERETARO.

The mining history of this State is only known with some degree of certainty since the year 1770, when a mining deputation was established at Cadereyta, that had within its jurisdiction the mining districts of El Doctor, San Pedro Escanela, Amoles, Rio Blanco and Majada Grande.

The variety of minerals found in this State are natural silver, sulphur of silver, galena, grey copper, copper, malachite, antimony, red iron, grey iron, cinnabar, native mercury, lignite, anthracite, opal, very fine and ordinary calcedoine, rock cristal, copperas, and many others.

In 1881, the following mines were either worked or abandoned as shown in the statement:

Mineral del Doctor; mining district of Las Aguas.—The mines of Santa Ines, producing silver, and that of Sombrete, producing green silver or chlorure, are both worked with profit.

Mining district of Vizarron.—The mines of La Sojonia and Nuestra Señora de las Nieves, are refractory earth and are worked.

Mining district of Tierra Colorada.—Five quicksilver mines are operated, viz.: San Joaquin, Señor de la Esperanza, San José and San Lorenzo.

DISTRICT OF TALPAN.

Mining District of Ahuacatlan.

| | |
|------------------------|------------------|
| Peñasco, | Lead. |
| Santa Clara, | Lead and silver. |
| San José, | " |
| El Carmen, | " |
| Mina Grande, | Silver. |
| Purísima, | Lead and silver. |
| Rosario, | " |
| La Merita, | " |

DISTRICT OF TOLIMAN.

Mining District of Rio Blanco.

| | |
|--|------------------|
| Nuestra Señora de Guadalupe, | Gold and silver. |
| Santa Ana, | " |
| San Antonio del Oro, | " |

There are actually 23 idle mines in the mining district of Las Aguas, 3 in the district of Vizarron, 4 in the district of El Doctor, 11 in the district of San Cristobal, 16 in the district of Attuacatlan, 3 in the district of Toliman, 2 in the district of Tolomanejo, and 7 in the district of Rio Blanco, mostly for the want of capital and enterprise, one only on account of its poor ores.

THE STATE OF SAN LUIS POTOSI.

The rich mines of this State are not developed for the want of necessary capital to work them, they ranked at one time among the richest of the country.

The principal mining districts are the following, viz.:

Real de Catorce.

Guadalcazar.

Charcas.

Ramos.

Ojo Caliente.

San Pedro.

Santa Maria del Peñon Blanco.

The above mines contain silver, copper, lead, mercury, sulphur, native silver, gold; and also others containing red and blue silver ores of rare beauty.

Santa Maria del Peñon Blanco has very rich salt deposits.

Blancas.

Los Pozos.

Matehuala.

HISTORICAL SKETCH OF THE GUADALCAZAR MINING DISTRICT.

This mining town was first settled in the years 1612 and 1620. Don Diego Fernandez de Cordova, Marquis of Guadalcazar, being

then Vice-Roy of New Spain (Mexico). This mining district contains a great variety of metals, such as gold in placers, silver, copper, lead, mercury, iron and sulphur.

It was overflowed in 1622 by a water-spout; these mines are said to be very rich and only need capital to be developed profitably. They were known under the following names: Ascencion de Alvarado, Veta Vizcaina, San Pedro, Santo Tomas, Tercias partes, Corcovada, San Clemente, Remedios, Estaquillo and San Amaranto: all of them situated on the eastern slope of the mountain of San Cristobal; on the west side of said mountain are also rich mines known as San Francisco del Ramillo, San José, El Cascajal, La Cocinera, Santa Catarina, La Angelica, La Compania and the Sacramento. All of the above mentioned mines produced ores very rich in metal, but also were abandoned in those days on account of the rebelliousness of the ore, but no doubt that they could with improved American machinery be worked profitably. At the foot of the mountain is situated a mine known as San Juan Stanislaio, it was discovered in the year 1648, and it produced a great bonanza in 1650. Its ores rendered \$80.00 per carga of 300 pounds when smelted. Adjoining this mine are those of Jesus, Promontorio San Juan de Encino, Marquesote, El Muerto, La Cruz, La Manavilla. On the south slope of said mountain the following mines are also found: that of San Rafael, which was discovered in 1627, and denominated as Santo Domingo, it produced immense wealth; also those of San Vicente, La Encarnacion, San José, La Concepcion, El Carmen, Guadaloupe, and San Miguel el Gato. In all of the above mentioned mines are found ores that do not average less than \$24.00 per carga of 300 pounds. They have the great disadvantage of becoming inundated when worked at a small depth. No doubt that they could be drained and worked with great profit.

Good quicksilver mines were also worked in this district until the year 1853, when this metal was abundantly produced by the new Almaden California mines.

HISTORICAL NOTICE OF THE MINING DISTRICT OF CHARCAS.

The town was founded in the year 1574 by Don Juan de Oñate Moctezuma, great-grandson of the emperor of the same name. It

was burned by the wild Indians in 1583, and was removed to the present site. It is now situated about four leagues west of the old town. In the year 1574, the mines of San Cristobal, situated about a league south of the old town, were discovered. Their ores were easily reduced by smelting. These mines were abandoned soon after their discovery, on account of becoming inundated. In 1583, at the time that the town was removed to its present site, other valuable mines were discovered in the neighborhood. Large quantities of metal were taken from them—mostly argentiferous lead. In the year 1600, the mines of San Carlos, El Sabino, Preasitas, Verganza, Sierpe, Coronado, and San Pedro were discovered. Out of the above mentioned mines belonging then to the jurisdiction of Charcas only two were worked on a large scale—those of San Carlos and Sabino, the incursions of the Indians were a great drawback to their working.

MINING DISTRICT OF RAMOS.

It appears that the mines of Ramos were first worked about the year 1608, but were abandoned on account of a great Indian invasion of the country between the years 1636 and 1640, and were not reopened until the year 1796, when the rich mine of Cocinera was discovered, together with nine other mines situated on the same vein; they were also abandoned, though paying well, on account of being inundated. The principal mines of the district were those of La Cocinera, San Juan, San José, San Vicente, Animas, Aura, Valenciana, San Geronimo, Cinco Senores, and San Nicolas. They produce native silver, red and blue silver, pirites, galena, and rose-color silver (*Rosicler*). The stream that floods these mines is abundant, and they only can be drained properly with steam-engines of great power.

MINING DISTRICT OF OJO CALIENTE.

In this district is situated the mountain of San Miguel, containing valuable quicksilver mines.

Santa Maria del Peñon Blanco is a great salt mine, so rich

that the crown of Spain reserved it as a crown property. In 1868, it was the property of Don Joaquin Erraza.

The mines of La Nevada discovered in 1858. San Pedro, La Pastora, and La Ventura are situated on lands belonging to the estate of El Salado.

In the district of San Luis, the mountain of San Pedro and Bernalejo, 8 mines are actually worked and 66 are idle; in the district of Catorce, 65 mines are worked and 26 are idle; in the district of Charcas and Sabino, 8 mines are worked and 16 are idle; in the district of Peñon Blanco and Ramos there are 23 mines lying idle; in the district of Guadacalzar, 18 mines are worked and 99 are idle—making a total, in the State of San Luis Potosi, of 90 mines worked, and 231 lying at present idle or abandoned.

THE STATE OF SINALOA.

The mines of this State contain gold, silver, copper and lead. The richest are its gold mines, viz.:

Bacuvirito.

Chamelta, in the jurisdiction of Rosario.

Charcas, in the jurisdiction of Rosario.

Cosala.

Culiacan, capital of the State, situated 60 miles from the Gulf of California, on the River of Culiacan.

Frailes.

Guadaloupe de las Abas.

Noxotal.

Palo Blanco.

Pánuco.

Sivirijoa.

Tacupeto.

Todos Santos.

There is in this State 47 mineral districts containing 406 mines, 30 gold placers, 9 salt mines, and 52 smelting works. (The limitation of this work does not permit us to give all the names of the different mines.)

THE STATE OF SONORA.

The State of Sonora has always been considered one of the richest in minerals of the Republic of Mexico.

Immense masses of virgin iron are found in large veins in the Sierra Madre mountains and in the vicinity of the Colorado River. The mountain of Antunez, between the Sonora and Horcasitas rivers, north-east of the city of Aripe, and principally the Cananea, are renowned for the great quantity of copper they contain, which is of very good quality, and yields a large percentage of gold.

Lead ore containing silver abounds in Aguacaliente, Alamo, Papagueria, Aripe and Cieneguilla.

Sulphur of iron is found in abundance at San Xavier, San Antonio, La Huerta, Cieneguilla and Aguacaliente.

Silver is found in paying quantities in the districts of Topago, Saguaripa and Alamos. Among the most noted gold placers are the following: San Idelfonso, La Cieneguilla, San Francisco, Quitovac, San Antonio, Sonoita, El Zoni, La Basura, San Perfecto, Las Palomas, El Alamo, El Muerto, and El Vado Seco, that have in former years produced immense wealth. In Cieneguilla and vicinity pieces of gold have been found weighing from one to twenty-seven marcs.

According to the latest statistics the mineral productions of Sonora can be classified as follows:

In the district of Hermosillo—silver, gold, lead, copper, salt, alum, and marble.

In the district of Guayamas—gold, silver, copper, salt, lead, alum, iron, sulphur, and marble.

In the district of Ures—gold, silver, tin, iron, lime, gypsum, rock salt, precious stones, and topaz.

In the district of Aripe—gold, silver, copper, lead, iron, tin, nitrate of potassium, rock salt, and marble.

In the district of Alamos—gold, silver, copper, lead, iron, antimony, sulphur, salt, and marble.

In the district of Altar—gold, silver, copper, iron, salt, sulphur, carbonate of soda, and marble.

In the district of Saguaripa—gold, silver, copper, lead, iron, tin, alum, and antimony.

In the district of Magdalena—gold, silver, iron, copper, lime, gypsum, nitrate of potassium, and carbonate of soda.

In the district of Oposura—gold, silver, copper, lead, nitrate of potassium, carbonate of soda, lime, gypsum, and marble.

There are thirty-four mineral districts in the State, in which a great number of mines were abandoned for the want of security, as well as of labor and capital, but not on account of the low grade or lack of abundance of the ores.

In the mining district of Alamos, the mines of Alamos produced in gold and silver, \$146,236.61; the mines of Promontorios, \$61,128.92; the mines of Adriana, \$37,415.34; the mines of Minas Viejas, \$6,027.94, during the last six months from July to December of 1880.

Mining district of San Bautista de Sonora—Santa Ana, El Rosano, and San Francisco, silver mines, and Cata de Agua, a copper mine.

Mining district of Nocosari—La Cobriza, San Pedro, El Rosario, El Barrigon, all silver mines.

Mining district of San Miguel—San Miguel and El Huacal, silver mines.

Mining district of Toriquipa—Toriquipa and Santa Genoveva, silver mines.

Mining district of Valenzuela—Valenzuela and San Ignacio.

Mining district of Tobacachi—Tobacachi, San Pedro, and La Prieta.

Mining district of San Miguel—Dagüiro, Chumbarri, and Guadaloupe.

Mining district of Promontorios—Promontorios.

DISTRICT OF ALTAR.

The Roseña mine, in the mining district of El Ploma, within the twenty border leagues on the frontier of Arizona. The lead runs from east to west, is 75 centimetres wide, and its inclination is 40°. It produces gold and bronze silver.

La Descubridera mine, is situated also within the twenty border leagues. The lead runs from north to south, its width varies from 28 centimetres to 1 metre 12 centimetres, and its inclination is 20°. It produces gold, silver and lead—\$16.00, gold; \$82.00, silver, and 72 per cent. of lead to the ton.

The mine of Cerro del Oro, in the mining district of San Antonio, situated as the above. The lead runs from east to west, its width varies from two to two and a-half metres, and its inclination is 35°. It produces \$26.00, gold; \$56.00, silver, and 70 per cent. of lead per ton.

The Mina Vieja de Oro, in the mining district of San Antonio. The lead runs from east to west. It produces gold about \$40.00 to the ton. The lead is 74 centimetres wide, with an inclination of 50°.

The mine of Rebosadero, also in the mining district of San Antonio. The lead runs from south-east to north-west, with a width varying from 56 centimetres to one metre and 40 centimetres, with an inclination of 20°. Its produce average \$15.00 to the ton.

The Cobriza mine, also in the same mining district. The course

of its lead is east and west; its width one metre, with an inclination of 35°. It produces gold averaging \$25.00 to the ton of ore.

La Providencia mine, in the same mining district. The course of its lead is north and south; its width averages a metre, with an inclination of 35°. It produces gold, silver, copper and lead; yielding \$8.00, gold; \$40.00, silver; \$20.00, copper, and \$2.00 of lead per ton of ore. All these metals are smelted at the works established in said mining district.

Mine of Rosario, in the mining district of Sonoita. Its lead runs from south to north; being 56 centimetres in width, which sometimes reaches 1 metre 25 centimetres. It produces silver averaging \$180.00 to the ton.

Mine of San Francisco, in the mining district of the same name. The course of its lead is from south to north, with a width varying from 28 to 84 centimetres; its inclination is 55°. It produces gold averaging \$40.00 to the ton.

Mine of Rosales, in the mining district of San Antonio. Its lead runs from south to north, with a width varying from 28 centimetres to one metre; its inclination is 35°. It produces gold averaging \$30.00 to the ton.

Mine of San Francisco, in the mining district of El Corazon. Course of lead, from south to north; width, two and a-half metres; inclination, 65°. It produces gold and silver ores averaging \$20.00, gold, and 56.00, silver, per ton.

The Mine Grande, in the mining district of Juarez. Its vein runs from south-east to north-west, with a width that varies from 84 centimetres to 3 metres, 36 centimetres, with an inclination 35°. It produces gold and silver averaging \$50.00, gold, and \$15.00, silver, per ton.

The Mina Juarez, in the mining district of the same name. The course of its lead is from south-east to north-west, with a width varying from 84 centimetres to 1 metre 68 centimetres; with an inclination of 65°. It produces silver ore averaging \$30.00 to the ton.

The mine of San Felix is also situated in the mining district of Juarez, near the coast, 56 leagues from the frontier. The course of its lead is from north to south; its width varying from 56 centimetres to 1 metre 68 centimetres; its inclination is 15°. It produces silver ores yielding from \$35.00 to \$200.00 per ton.

Total number of mines worked at present in the district of Altar:

| Mining District. | No. | Mining District. | No. |
|------------------------|-----|-------------------|-----------|
| Plomo, | 2 | Corzon, | 1 |
| San Antonio, | 6 | Juares, | 1 |
| Sonoita, | 2 | In all, | <u>12</u> |

IN THE DISTRICT OF ARISPE.

The mine of San Fernando is situated five kilometres west of the village of Sinoguipe. The course of its lead is from east to west; its width, two metres, and its inclination, 75°. It produces silver ores averaging \$80.00 per ton. Its ores are worked by the Lixiviation process.

The mine of Santa Elena, situated six kilometres west of the village of Banamichi. The course of its lead is from east to west, with a width varying from 50 centimetres to two and a-half metres, and sometimes five metres. It produces gold and silver. Its ores average \$25.00 per ton—four parts gold and one of silver.

THE STATE OF TAMAULIPAS.

The mines of this State are not worked for want of capital, and on account of the indifference which the inhabitants show to the development of that branch of industry; notwithstanding this, the few persons engaged in mining in this State during the five years elapsing between 1844 and 1848, took out of them 7,680 marcs of silver, valued at \$61,440.

There are six mining districts in this State which are known under the following names, viz.: San Nicolas, San José, Bustamente, El Zique, La Miquihuana and Villagran.

San Nicolas has twenty-five abandoned mines, known as San Nicolas, Santa Salomé, Remedios, San Gayetano, Santa Gidirina, Santa Gertrudes, Espiritu Santo, Animas, Soledad, San Augustin, La Mejora, Toyagua, Pilar, San José, San Roman, La Cruz, La Estaca, San Miguel, Dolores, La Luz, El Teniente, La Corroleña, La Mexicana, Las Hormigas and the Tres Candelarias; four are

now worked, which are those of La Trinidad, Providencia, Pastores and Colorada.

The ore of these mines is extracted by men known in Mexico as "buscones" or searchers, who then sell it to the smelters.

The Miquihuana district has four abandoned mines known as Mina Verde, a copper mine; and San Cajetano, Refugio and Promontorio, silver mines.

The mine of El Zigüe or La Muralla contains lead and silver; the depth of its shaft is 138 feet. Alabaster also abounds in these mines.

The mining district of Bustamente, originally known as Infantes, has twelve abandoned mines, known as Santa Ana, Cinco Señores, Guadalupe, San Rafael, Nuestra Señora del Refugio, San Simon and Judas, San Cayetano and Promontorio, all silver mines; Mina Verde, of copper, and La Ascencion, Dulce Nombre de Maria, Santo Niño de Atocha, lead mines. Judging from the duties that these mines paid to the Spanish crown, they must have been very rich.

The mining district of Villagran, known when first discovered as Real de Borbon, contains gold and silver mines, which have been abandoned many years ago. In the stretch of country situated between the towns of San Carlos, Morelos, Guerrero and Camargo, are found copper ore, and in the vicinity of the two latter places, coal mines; about Guerrero, red ochre and red lead.

In the vicinity of Ormillas, alabaster of fine quality is found. About Santa Ana of Tamaulipas, a fine quality of jasper marble abounds.

In the vicinity of Aldama, silver, copper and iron ores are found; also good slate quarries.

In the vicinity of Victoria, iron ore of good quality is found.

THE STATE OF ZACATECAS.

This State is considered as the first in the Republic of Mexico for its mineral productions. It would take a volume to attempt to describe its mineral wealth. Below we give the names of some of its most important mineral districts.

STATEMENT OF DISTRICTS ACTUALLY EXPLORED.

| Names of Mining Districts. | Names of its mines. | Class of metals. |
|--|---|--|
| Quebradilla. | Quebradilla, Buena Vista. | Sulphur, sulphurate of silver in many varieties. |
| | El Piquete, La Acacia, Negociacion, Euterpe. | Silver, argentiferous Galena, pyrites of iron, quartz, &c. |
| <i>Mining District of Veta Grande.</i> | | |
| San Marcos. | Carniceria, San Marcos, La Union. | Metals the same as Quebradilla. |
| Barones. | San José de García and San Pablo. | Ordinary. |
| Cinco Señores. | Cinco Señores, San Carlos, Jesus Maria and Rosario. | Green silver. |
| El Loco. | Tunnel of El Refugio and annex. | Low grade ores. |
| La Reforma. | La Reforma. | 3½ marcs to the carga. |
| El Bote. | The mines of Cerro del Bote, Clérigos and Caly Canto. | Sulphur of silver. |
| San Rafael. | San Rafael, San Bartolo, Bolsas, La Purisima, San Pascual, San Vicente, La Aurora and La Paz. | Ordinary. |
| Purisima de Nápoles. | Purisima de Nápoles. | Ordinary. |
| <i>Veta Grande.</i> | | |
| Purisima Concepcion. | Purisima Concepcion and Sirena. | Ordinary. |
| Zapopan. | Zapopan, La Verde and Los Colorados. | Bronze metal. |
| La Luz. | La Luz and Santa Rita. | Not productive. |
| Hércules. | La Soledad, San José and La Chica. | Ordinary 3 marcs per carga. |
| Bilbao. | Bilbao, Esmeralda, Salto, Los Lirios and Talisman. | Low grades. |
| Nueva Gallega. | Guarda Raya, La Vista, Porvenir, San Antonio and Quiote. | " |

Names of Mining Districts.
La Asturiana.

| Names of Mining Districts. | Names of its Mines. | Class of metals. |
|----------------------------|--|-------------------------------|
| La Asturiana. | Asturiana, Nueva Granada, Taso, San Tiburcio and Sta. Teresa. | Black bronzed ores. |
| Euterpe. | 5 mines located upon a vein one metre wide. | Sulphur of silver, irregular. |
| Mines of Veta Grande. | Cata de Juanes, Gallega, San Francisco, San Borja, Uriata, Macias, Proano, Purisima, La Flor, Tiro General, Tiro Nuevo, Alvarada, Soledad, and Carolina. | Ordinary. |
| El Refugio. | El Refugio, San Nicolas and la Ascencion. | " |
| San Acacio. | San Acacio and annex. | Sulphurate of silver. |
| <i>Panuco.</i> | | |
| Consuelo. | Consuelo and tunnel of San Pedro. | Red ores. |
| Providencia de Panuco. | Providencia, El Angel, La Victoria and Purisima. | Sulphur of silver. |
| Santa Rosa. | Santa Rosa. | Ordinary. |
| Moscosa. | Moscosa. | Lead silver. |
| Santa Teresa. | Santa Teresa. | " |
| Bilbao. | Bilbao. | " |
| Gloria. | Gloria. | " |

MINING DISTRICTS ACTUALLY PARALYZED.

| Names of Mining Districts. | Cause of Abandonment. | Names of Mines. | Class of Ores. |
|----------------------------|--|---|-------------------------|
| Malanoche. | Grade of ores too low; in the plan of San Amador, rich ores were found, but had to be abandoned on account of the great flow of water. | San Clemente, San Antonio, Rondarena, San Nicolas, Loreto, La Luz, La Borrega, Coyotal. | Bronzed metal. |
| San Martin. | Cost that would require a new shaft. | | |
| La Filarmonia. | Want of capital. | La Filarmonia. | |
| San Rafael. | Grade of ores too low. | San Vicente, Santa Ana, San Gregorio, and San Pablo. | |
| <i>Veta Grande.</i> | | | |
| Purisima Concepcion. | Abundance of water. | Purisima Concepcion. | 15 ounces to the carga. |
| La Soledad. | Want of capital. | La Soledad. | 3 marcs per carga. |
| Guarda Raya. | Unproductive. | Guarda Raya and Lavista. | |
| El Refugio. | " | Revolucion, San Pascual, San Antonio, San Pedro, and San Buena Ventura. | Ordinary. |
| La Frontera. | | La Frontera. | Not known. |
| <i>Panuco.</i> | | | |
| San Pablo. | Want of capital. | San Pablo. | Sulphur of silver. |
| La Purisima. | " | La Purisima. | |
| Las Vueltas. | " | Las Vueltas. | |

140

MINING DISTRICTS ACTUALLY PARALYZED (Continued).

| Names of Mining Districts. | Cause of Abandonment. | Names of Mines. |
|----------------------------|-----------------------|---------------------|
| Catillas. | Want of Capital. | Catillas. |
| Carolina. | " | Carolina. |
| Consuelo. | " | Consuelo. |
| San José de Garcia. | " | San José de Garcia. |
| Los Tajos. | " | Los Tajos. |
| Noche Buena. | " | Noche Buena. |
| San Antonio. | " | San Antonio. |
| El Descubrimiento. | " | El Descubrimiento. |
| Santa Elena. | " | Santa Elena. |
| Limoncilla. | " | Limoncilla. |

141

MINING DISTRICT OF FRESNILLO.

This mining district is next in importance to that of Veta Grande, in the State of Zacatecas. The Cerro of Proano, which is the principal mining point, is worked since the eighteenth century; it is located south of the city of Fresnillo, and is about 850 metres long and 650 wide, and only 100 metres above the surrounding country, which is 2,368 metres above the sea. This little hill contains within its bosom more than 100 metallic veins; some of them have been worked to a considerable depth. In the same plain, at a distance of about two leagues from Fresnillo, are situated the hills of Animas, San Demetreo, and Bueno Aires, in which are found the mines of Plataros.

The principal mines of Proano are the following: Betena, Barranco, Obscura, Epasote, Salcedo, Colorado, Santo Domingo, Valdenegros, Barbosa, San Pedro, Valencia, Plateritos, San Nicolas, Espiritu Santo, Rosario, Amarilla, Tiro Nuevo, and Santa Ifigenia.

MINING DISTRICT OF SOMBRERETE.

This rich mining district was discovered by Juan de Tolsa in 1555. It has had its ups and downs, having been in bonanzas several times.

Until 1792 the rich products of the mines of Veta Negra and Pabellon gave the mining district great renown, placing it among the first in Mexico.

Sombrerete is situated in a *cañada* near the boundary of the State, on the road to Durango, 36 leagues northwest of the City of Zacatecas, at an elevation of 2,369 metres above the level of the sea, and comprises the following mining districts: Sombrerete and La Noria, El Chacuaco, Chapultepec, Minollas, Chalchiquihuite, El Manto and Colorado.

In the conical hill del Pabellon, which rises above the plain north of Sombrerete, in a southeast to northwest direction, almost in a parallel line, are found the veins of El Pabellon and Veta Negra. Many mines, mostly abandoned, have been opened, and from them gold, silver, lead, copper and iron have been extracted, besides many other substances such as sulphur, antimony,

arsenic and copperas, whose combination have presented to the miner great difficulties for the extraction of silver. The principal cause of abandonment of these mines has been the difficulties encountered to work their ores. The principal mines situated on the vein of Pabellon which has an extension of three kilometres are the following: La Concordia, Aranzaza, Arrete, Santa Gertrude, La Cruz, El Carmen, El Oriste, San Juan Bautista, Soledad, San Nicolas del Arroyo, Tiro General de San Francisco, San Nicolas de la Cruz, La Esperanza, Quebradilla, Santo Catuna, Refugio, San Amaro, Santo Domingo, La Joya, Cata Rica, Cruz de Moros, San José de la Llanada.

The temperature at Sombrerete averages 18° to 20°. Six mines are actually worked (1881) and seventy-seven are abandoned.

These mines produce gold, silver, copper, iron, lead, tin and copperas.

MINING DISTRICT OF CHALCHIHUITES.

This mining district was also discovered by Juan de Tolsa, about the same time as that of Sombrerete. It is situated south, eight and a-half leagues from the latter mining district. It contains numerous mines of lead silver, which metal is easily smelted. Its mines are the following:

Working—Arellana, Santa Teresa, La Purisima, La Trinidad, Las Canoas, Chuza, Sangre de Cristo.

Worked by searchers (*buscones*)—Santa Eduwigis, San Pedro, El Manzanillal, La Vidriosa, San Francisco el Duro, San Francisco el Blando, Candelaria, Manto, Guadalupe, Tajos de los Marciales, Colorado, Santo Domingo, Todos Santos, San Antonio, El Capulines, Guantes.

The ores of the above mines are worked in seven smelting works, and three *patio* or cold amalgamation works, all located within the mining district.

MINING DISTRICT OF NIEVES.

This old mining district and town, seat of the same, is situated 45 leagues northwest of Zacatecas, at the foot of a range of mountains running from south to north, whose principal peaks are

those of El Calvario, Las Cabras, Colorado. This range of mountains is situated on the same plain, south of which extend the mineral lands of this district and comprises the veins of Potrero, El Tapon, El Rosario and Santa Rita, all running from east to west.

The following mines are situated in this district, but it is not known whether they are at present (1882) in operation, viz.: Santa Rita, Guadalupe, San Francisco, El Cristo, El Patrocinio, Seriollaga, San José, San Nicolas, San Joaquin, San Antonio, Dolores, La Cruz, San Pedro, San Cayetano, Collachi, Guadalupe, Marquito, San Antonio, Tiburona, Dolores and San Joaquin

MINING DISTRICT OF SAN MIGUEL DEL MEZQUITAL.

This mining district is situated 59 leagues N. W. of the city of Zacatecas.

Its mines are those of San José, Santa Catarina, Tajo de Berun, La Bejareña, El Pabellon, Las Navajas, Animas, Guadalupe, Pozo de Santa Ana, La Blanca, Tiro del Calvario, El Guije, La Prieta, El Burro, El Corral, Tapetes.

There is no definite information as to which of the above mines are at present worked or abandoned.

MINING DISTRICT OF MAZAPIL.

In the northeast portion of the State of Zacatecas, which adjoins Coahuila, and at a distance of 70 leagues from the capital, rise several chains of mountains which are considered of great importance, on account of the large number of metallic veins that they contain, whose ores can easily be worked at but little expense. The principal chains are the following: *Mazapil* in the center of this group of mountains; those of Zuloaga, Pozo, Guadalupe, Potrero and others that unite on the south with those of Piquita and Sierra Hermosa. In the above mentioned group of mountains are found old mining districts which have produced immense wealth. Such are Mazapil, Albarradon and Bonanza, in the northeast; Cedros in the west, Concepcion del Oro in the east, and El Rosario in the southeast. Besides the *cordilleras* or chains of mountains above mentioned, others are found more distant from Mazapil;

west of that of *Novillos*, and actually known and worked as the mine of *Pico de Teyra*.

The section of country above referred to was inhabited by the Chichimec Indians until the latter part of the XVI century, at which time it was occupied by the conquerors. In 1612 Mazapil was made an *Alcaldia Mayor* and in 1786 was created a district of the province of Zacatecas with the boundaries which it has retained to this day. In the district of Concepcion del Oro are two very rich mines, those of San José and Santa Eduwigis, producing gold and silver ores easily worked.

It is generally known that these mines produce silver, copper, lead and gold: the principal of these are: Animas del Norte, Malcriado; La Cruz, San Pedro, El Abra, Aranzaza, San Antonio, El Placer, Albaradon, San Gregorio, Cuevas, Purísima, Catasillas, Alicante, La Cata Oportuna in Cedros, El Potrero. And in the district of Concepcion del Oro, San José and Santa Eduwigis.

MINING DISTRICT OF PINOS.

About 30 leagues east of the city of Zacatecas is found the mining district of Pinos. Its principal mines are: Cata Nava, San Rafael, Aposentillo, Carmen, Santa Gertrudis, Quebradilla, Mina Grande, Santo Niño, Cara de Perro, Animas, Don Julian, Dolores, Cinco Señores, Ave Maria, Almirante, Sapó Pinto, San Ignacio, Santa Bríjida, Santa Anita, Sacramento, Purísima, Reyes, Zacatecas, San Matias, Aflijidos, San Miguel, Santiago, Restauradora, Valenciana, Cueva Santa, San Blas, Coyotes, San Antonio, Guapulito, Tinajas, Mala Noche, Cucurrasola, Popula, Gloria, Góngora, Campana, Tepozan, San Pedro, Mina Blanca, Concepcion del Oro, a very rich gold district, Guadalupe, Tunel of El Oro, Santa Margarita, San Luisito, San Felix, Patrocinio, Lobena, Doncellas, San Nicolas, Bernalejo, Trinidad, El Escarbadero, Estaño, Sacramento de Cascaron, San Francisco, Merced, Derrumbadero, de Ahualula, La Garriga, Maravilla, Refugio, Esperanza del Picacho, Guadalupe de Agostadero, La Providencia, La Luz, Ahualulco, Capulin, Peña del Colorado, Jocoqui, San Miguel de Agostadero, Maravillas de Agua Gorja, Los Narcisos, Purísima de Ahualulco, San José, Collazo, Angostura, San Pedro and San Pablo, San Juan, Santa Rosa de Ahualulco, Candelaria.

MINING DISTRICT OF NOVIA DE ANGELES.

This mining district is situated 22 leagues east-south-east from the city of Zacatecas and 12 leagues west of the Town of Pinos. Its principal mines are: Santo Cristo, San Antonio, Cata Rica, San Juan, El Niño, San José, Mina Grande, Aurora, Purísima, Jesus Maria, Mantos, Belen, Atanasia, San Francisco, Guadalupe, San Antonio, La Cumbre, Dolores; all situated in the Cerro de los Angeles.

MINING DISTRICT OF MEZQUITAL DEL ORO.

The only information we have of this old mining district is that it is situated 18 leagues south-west of the town of Tuchipila, founded in 1732, about the time a rich gold vein was discovered. Its owners obtained very profitable results up to the year 1741. The bonanza having given out, the inhabitants dedicated themselves to the pursuit of agriculture.

THE STATE OF CHIAPAS.

No mines appear to be worked at present, although several silver mines were worked to advantage in olden times. Trementon, native load stone (magnet) is found; also sulphur in the vicinity of the town of San Bartolomé and in several springs situated in the southern portion of the State. In the neighborhood of the capital of the State, San Cristoval, lead and iron ores are found; also a sort of transparent fossil formation called in Spanish *talco*.

IN THE STATE OF COLIMA.

The Mining District of Tuliapan.

THE STATE OF VERA CRUZ.

Somelahuacan, a rich copper mine.

THE STATE OF YUCATAN.

This State has never been well explored, but it is known that gypsum and a great variety of marbles are found in quantities.

THE TERRITORY OF LOWER CALIFORNIA.

This vast territory is rich in minerals as are also some of the islands situated along its coasts.

In the municipality of La Paz are 3 gold, 7 silver, 1 diamond and 2 copper mines.

In the municipality of San Antonio are 16 gold mines, 3 gold placers, 42 silver mines, 3 of copper, 1 of lead, and 2 of lime.

In the municipality of Todos Santos are 1 silver, 1 copper and 1 lime mine.

In the municipality of Santiago are 3 gold, 8 silver, 2 copper, 2 gypsum, 1 stone coal, 1 lime, and 3 sulphur mines.

In the municipality of San José del Cabo are found 1 silver mine and two other mines whose mineral products are not given.

In the municipality of Mulegé there are 5 silver, 28 copper, 1 lead, 2 marble, 3 gypsum, 1 sulphate of lime, and seven more mines whose products are not specified.

In the municipality of Comondu are 2 gold mines, 3 silver, 14 copper, 1 of gypsum, 1 of lime and 17 whose products are not specified.

In the municipality of Santo Tomas are 2 sulphur, 1 salt-peter, 1 fine quarry, 1 gold and 3 other mines whose products are not specified.

The following are the mines actually worked in the mining district of Santa Agueda in the municipality of Mulegé: Esperanza, Santa Rosalia, Fortuna, Reforma, Lucifer, Soledad, Providencia, A, Humboldt, Los Angeles, Nochebuena, San Juan, Fé, Gloria, Igualdad, Santa Rita, Título Octavo, Caridad, Ley, Libertad, Purísima, San Francisco, Purgatorio, Republicana, Porvenir, Abundancia and Hallazgo.

In old times Lower California was celebrated for its pearl fisheries, but it would take a whole volume to describe the placers and pearl fisheries of the territory. One pearl was sent to King Philip the Second that weighed 250 *quilates* and was estimated to be worth \$150,000.

STONE-COAL.

Coal of good quality is known to exist in the following localities which will some day, when reached by railroads, prove a great