

2 **Geographical and Statistical Notes on Mexico.**

to call attention to that country, and awaken a desire for reading other and better monographs and books on Mexico written by more competent men. I have borrowed from the descriptions of others, especially in what appears under the heading of Geology, Orography, and Fauna.

PART I.

GEOGRAPHY

I. GEOGRAPHY.

LOCATION, BOUNDARIES, AND AREA.

Location.—Mexico is situated between $14^{\circ} 30' 42''$ and $32^{\circ} 42'$ north latitude, and between $86^{\circ} 46' 8''$ and $117^{\circ} 7' 31'' 89$ longitude west of the meridian of Greenwich, embracing therefore $18^{\circ} 11' 18''$ of latitude and $30^{\circ} 21' 23'' 89$ of longitude. It has an area of 767,326 square miles. It is bounded on the north by the United States of America, on the southeast by Guatemala and Belize, on the south and west by the Pacific Ocean, and on the north and east by the Gulf of Mexico and the Carribean Sea.

Boundary with the United States.—The boundary with the United States is fixed by the treaties of February 2, 1848, and December 30, 1853, and begins at the mouth of the Rio Grande River on the Gulf of Mexico, follows the river for 1136 miles, to the point where it strikes parallel $31^{\circ} 47'$ north latitude, beyond El Paso, Texas, and from there runs along said parallel for a distance of one hundred miles, and thence south to parallel $31^{\circ} 20'$ north latitude; from there west along this parallel as far as the 111th meridian of longitude west of Greenwich; thence in a straight line to a point on the Colorado River, twenty English miles below the junction of the Gila; thence up the middle of the said River Colorado to the intersection with the old line between Upper and Lower California, and thence to a point on the Pacific Ocean, distant one marine league due south of the southernmost point of the Bay of San Diego on the Pacific; the total distance from El Paso to the Pacific being 674 miles. The whole extent of the boundary line between the two countries is 1833 miles.

The boundary line with the United States runs from southeast to northwest, the mouth of the Rio Grande being in $25^{\circ} 57' 14'' 74''$ north latitude; while the line reaches on the Pacific latitude $32^{\circ} 32' 1'' 34''$; the point where the boundary line strikes the Colorado River is farther north, reaching $32^{\circ} 42'$ of north latitude. Mexico has, therefore, on the western, or Pacific side, $6^{\circ} 34' 46'' 20''$ of latitude more than on the eastern or the Gulf of Mexico side.

Boundary with Guatemala.—The boundary with Guatemala is fixed by the treaties of September 27, 1882, and April 1, 1895, and runs from a point on the Pacific coast three leagues distant from the upper mouth of the River Zuchiate, and thence, following the deepest channel thereof, to the point at which it intersects the vertical plane which crosses the highest point of the volcano of Tacaná, and distant twenty-five miles from the southernmost pillar of the gate of Talquian, leaving that gate in the territory of Guatemala; the determinate line by the vertical plane defined above until it touches the River Zuchiate at the point of its intersection with the vertical plane which passes the summit of Buenavista and Ixbul; the determinate line by the vertical plane which passes the summit of Buenavista, determined by the astronomical observations, and the summit of the Ixbul hill from where it intersects the former to a point four kilometres beyond said hill; thence to the parallel of latitude which crosses the last-named point, and thence eastward until it reaches the deepest channel of the Chixoy up to its junction with the Usumacinta River, following that river until it reaches the parallel situated twenty-five kilometres to the south of Tenosique in Tabasco, to be measured from the principal square of that town; the parallel of latitude referred to above, from its intersection with the deepest channel of the Usumacinta, until it intersects the meridian which passes at one third of the distance between the centres of the Plazas of Tenosique and Sacluc, this distance being calculated from Tenosique; from this meridian, from its intersection with the parallel above mentioned to the latitude of $17^{\circ} 49'$; and from the intersection of this parallel with the latter meridian indefinitely toward the east.

The southern end of the Guatemalan line on the Pacific is in $14^{\circ} 24'$ north latitude, while the northern end, on the Caribbean Sea, is in $17^{\circ} 49'$ north latitude, being a difference of $3^{\circ} 25'$ in favor of the latter. The calculated length of the southern boundary is 642 miles.

Boundary with Belize.—To the southeast of Yucatan extends the territory of Belize, occupied by a British settlement under a permit granted to them by the Spanish Government to cut wood within the limits mentioned in the treaty concluded between the Kings of Great Britain and Spain on November 3, 1783, and amended on July 14, 1786.

British Honduras, according to Mr. George Gil, F.R.G.S., in his book, "British Colonies," published in London in 1896, was declared a separate colony of Great Britain, under a Lieutenant-Governor subordinate to the Governor of Jamaica, in the year 1862, previous to which time it had been a dependency of Jamaica. In 1884 a Governor and Commander-in-Chief was appointed, by Letters Patent, and thus the colony became independent of Jamaica. On April 30, 1859, Great

Britain signed a treaty with Guatemala, within whose boundaries most of British Honduras was situated, defining the boundary of that colony.

The limits between Mexico and Belize are defined by a treaty signed at the City of Mexico on July 8, 1893, as follows: "Beginning at Boca Bacalar Chica, the strait which separates the State of Yucatan from the Ambergris Cay and its dependent isles, the boundary-line runs in the centre of the channel between the above-mentioned cay and the mainland, southwestward as far as the parallel $18^{\circ} 9'$ north, and then north-west midway between two cays, as marked on the annexed map (to the treaty), as far as the parallel of $18^{\circ} 10'$ north; then turning to the westward, continues across the adjoining bay, first westward to the meridian of $88^{\circ} 2'$ west, then north to the parallel $18^{\circ} 25'$ north, again westward to the meridian $88^{\circ} 18'$ west, and northward along that meridian to latitude $18^{\circ} 28\frac{1}{2}'$ north, in which is situated the mouth of the River Hondo, which it follows in its deepest channel, passing west of Albion Island, continuing up Blue Creek until the said creek crosses the meridian of Garbutt's Falls at a point due north of the point where the boundary lines of Mexico, Guatemala, and British Honduras intersect; and from that point it runs due south to latitude $17^{\circ} 49'$ north, the boundary-line between the Republics of Mexico and Guatemala, leaving to the north, in Mexican territory, the so-called River Snosha, or Xnohha."

Cession of Mexican Territory to the United States.—Mexico has ceded to the United States, by the treaty of Guadalupe-Hidalgo of February 2, 1848, and the Gadsden Treaty of December 30, 1853, 930,590 square miles, comprising over one-half of her former territory. The same cession is considered in the United States under three heads—first under the boundary treaty signed in Washington on April 25, 1838, between the United States of America and the Republic of Texas, under which Texas was annexed to the United States in 1845; second, under the cession of the Guadalupe-Hidalgo Treaty, and the third under the Gadsden Treaty.

As Mexico did not recognize the independence of Texas until the treaty of Guadalupe-Hidalgo was signed, we consider that she only gave her consent to that annexation by said treaty, and therefore that the cession of territory made then to the United States embraced also Texas.

Mr. S. W. Lamoreaux, former Commissioner of the General Land Office, published in 1896 a map of the United States, which contained in detail the different sections of territory annexed to the same in different periods from France, Spain, Mexico, and Russia, where the Mexican annexations are clearly defined. From official data of that office, I take the following figures representing the area of each of the Mexican cessions:

First, annexation of Texas, which embraces in whole or in part the following States and Territories :

	Sq. Miles.
Texas	265,780
Colorado, in part	18,000
Kansas, in part.....	7,766
New Mexico:.....	65,201
Oklahoma.....	5,740
Total	362,487

Second, cession by the Guadalupe-Hidalgo Treaty, embracing in whole or in part the following States and Territories :

	Sq. Miles.
Arizona	82,381
California	157,801
Colorado, in part.....	29,500
Nevada	112,090
New Mexico.....	42,000
Utah.....	84,476
Wyoming, in part.....	14,320
Total	522,568

Third, cession by the Gadsden Treaty, containing additions to the following Territories :

	Sq. Miles.
Arizona	31,535
New Mexico.....	14,000
Total	45,535

Grand Total in Square Miles..... 930,590

General Characteristics.—Mexico is bounded on the east by the long curve of the Gulf of Mexico and by the Caribbean Sea, and its eastern coast is 1727 miles long; on the west it is washed by the Pacific Ocean, its coast describing the arc of a still larger circle, for a length of 4574 miles; but after passing the latitude of the City of Mexico, about the meridian 19° of north latitude, going south, the continent makes a decided turn towards the east, the Gulf of Mexico forming the northern border, and the Pacific Ocean the southern border.

Mexico has the shape of a cornucopia, with its narrowest end tapering toward the southwest, its convex and concave sides facing

the Pacific and the Atlantic, respectively, and its widest end toward the north, or the United States. I look forward to the time, which I do not think far distant, considering our continuity of territory to the United States and our immense elements of wealth, when we shall be able to provide the United States with most of the tropical products, such as sugar, coffee, tobacco, india-rubber, etc.,¹ which they now import from several other countries.

The widest portion of Mexico is, therefore, its northern extremity, or its boundary with the United States. The narrowest point is the Isthmus of Tehuantepec, about one hundred miles from one ocean to the other; and after passing it the country expands again to the south-east towards Yucatan and Chiapas until it reaches the boundary with Guatemala and Belize.

Yucatan resembles but little in its configuration Mexico proper, as it is a level country formed by coral reefs and beds, and whose ruins show it to have been the seat of a high civilization and an advanced people.

Although the greater part of Mexico is on the North American continent proper, as the Isthmus of Panama divides North from South America, a large portion of it lies in Central America. Geographically speaking, Central America is the portion of North America embraced between the Isthmus of Tehuantepec and Panama, and of this vast territory Mexico holds about one-third. In a paper published in the *Bulletin of the American Geographical Society of New York*, of March 31, 1894, I dealt especially with this subject.²

The broken surface of Mexico formerly made travelling there very difficult, for which reason the country was but little known, even by Mexicans themselves, as its configuration did not allow of the building of good roads, and to travel any considerable distance it was necessary to go by mule paths, without comfortable inns, and running great risks, owing to the disturbed condition of the country. It required, therefore, time, expense, endurance, and an object in view to travel widely there. I was always desirous of knowing as much as possible of the country, and I have made long trips, many of them on horseback, solely for the purpose of studying certain regions, and I think that before the railway era, I was perhaps one of the Mexicans who knew

¹ In his *Notes on Mexico*, Lempriere, a distinguished traveller and historian, says: "The merciful hand of Providence has bestowed on the Mexicans a magnificent land, abounding in resources of all kinds—a land where none ought to be poor, and where misery ought to be unknown—a land whose products and riches of every kind are abundant and as varied as they are rich. It is a country endowed to profusion with every gift that man can desire or envy; all the metals from gold to lead; every sort of climate, from perpetual snow to tropical heat, and of inconceivable fertility."

² A copy of that paper is appended to this article.

most of the country and who could, therefore, most clearly realize the difficulty of knowing it thoroughly. From this it can be readily understood how difficult it would be for a foreigner, without any previous knowledge of the country and ignorant of its language, to know it by a few days' sojourn there. Yet many travellers who have been in Mexico only a few days write about it on their return home, just as if they knew it perfectly, making necessarily many serious and sometimes laughable mistakes.

The natural beauties of Switzerland are well known; but to me that country is hardly to be compared with Mexico, as everything in Mexico is on a much grander scale. In the latitude in which Switzerland is situated the snow line is quite low, and, therefore, most of the peaks of the Swiss mountains, while not so high as the Mexican mountains, are covered with perpetual snow, which embellishes the country, and which, melting in summer, supplies the beautiful lakes of that country with fresh water. Therefore, only in the beauty of many snow peaks, beautiful fresh-water lakes, good roads, and fine hotels has Switzerland the superiority over Mexico.

Historians, travellers, and writers of the present day compare Mexico with Egypt. There is no doubt that between the legends and romance with which the history of each of these countries abounds there is a striking resemblance. The pyramids and ancient relics in the form of buildings, images, and undeciphered hieroglyphics on stones, coins, etc., found in both countries, all contribute to the general belief that, centuries ago, the people of Mexico and Egypt were connected by some tie, were in some way of the same race and had the same ideas. To-day in Mexico, the manner of living, of cultivating the soil, and many other peculiarities in the manners and customs of the Mexican people forcibly remind the traveller of Upper and Lower Egypt.¹

¹ In a very bright article about Mexico by Mr. Charles Dudley Warner, published in *Harper's Illustrated Monthly Magazine* for June, 1897, I find the following sentence supporting my assertion:

"In the cities he is reminded of Spain, and often of Italy (since the Catholic Church prevails), but in the country and in small towns the appearance is Oriental, or rather Egyptian. This resemblance to Egypt is due to the color or colors of the inhabitants, to the universal use of the donkey as a beast of burden, to the brown adobe walls and mud huts covered with cane, to the dust on the foliage, the clouds of dust raised in all the highways, and to a certain similarity of dress, so far as color and rags can give it, and the ability of men and women to squat all day on the ground and be happy."

Mr. Theodore W. Noyes, of Washington, in a descriptive article on Mexico, published in December, 1895, makes the following parallel between Mexico and Egypt:

". . . The Egyptian shaduf finds its counterpart in the well sweep of Irapuato where strawberries are grown and sold every day in the year, and where irrigation is resorted to, systematized, and on a grand scale. In the absence of trees and rocks

I, myself, although I have only visited Lower Egypt, and that as a tourist in a very hasty manner and for a very few days, was greatly struck by the great similarity that I found between the two countries and between the habits of the native Egyptian and the Mexican Indians. The Egyptian plows are used by the Mexican Indians, and they are drawn in Mexico as in Egypt by oxen whose yokes are fastened to their horns, while in other countries they are fastened on their necks. Several of the agricultural products of Egypt and Mexico are exactly the same, and the way in which foods are prepared in both countries is, too, very similar; and I also found similar traits and race characteristics between the Egyptian Copts and some tribes of the Mexican Indians.

The great difference between Egypt and Mexico is that Mexico lacks "irrigation," which has made Egypt—that small corner of the earth—the most remarkable and productive country in the world. Owing to the great stretch of latitude from the Rio Grande to the Guatemala boundary, everything that grows in Egypt, and in fact in any other part of the world, can be produced in Mexico by the aid of irrigation.

the Egyptian shaduf is small, is composed of prepared timbers, and the counterpoise to the well bucket is an immense chunk of dried, hardened Nile mud. The Mexican shaduf utilizes a forked tree and swings across it a long tapering tree trunk or branch, and the counterpoise consists of a large sink stone or mass of stones fastened together. Although Mexico stretches farther south than Egypt, the two countries lie, generally speaking, between the same parallels of latitude, but the altitude of Irapuato is 5000 feet above the sea-level of the Nile, so that the same degree of undress is not expected or found in the Mexicans as in the Egyptian shaduf workers. I saw, however, in the neighborhood of Irapuato two Indians at well sweeps working side by side who were dressed only in white cotton loin cloths, who looked like the twin brothers of shaduf workers whom I have seen photographed on the Nile. . . . The water-carrier of Cairo is much like his brother of Guanajuato, where a long earthen jar is used. The groups about the fountains with jars of water bodily borne on the women's heads or on a protecting turban-like ring, or balanced on the men's shoulders, are also Oriental. Corn is ground between two stones in Asiatic fashion.

"Egyptian sand spouts are common. Also Egyptian types of domestic utensils of pottery. The Mexican woman with a baby at her back securely fastened in the reboso, which throws the infant's weight on the mother's shoulders, is to be compared with the Egyptian woman whose reboso covers her face while the child straddles her shoulders, holding to her head and leaving her hands unfettered as in the Mexican fashion. There are no Egyptian camels, but even more numerous donkeys, the patient burros. The Indian villages, either of adobe or bamboo, the thatched roofs and organ cactus fences, and alive with goats, donkeys, or snarling curs, are African in effect. There Aztecs picture writings resemble the Egyptian, the paper being made from the maguey instead of the papyrus. The Aztecs employed captives on great public works as in Egypt. Mexico thus has pyramids with much broader base than those of Egypt, though not nearly so high, and idols quite as ugly. Gold ornaments, beads, and other highly prized antiquities are found in the tombs as in Egypt."

GEOLOGY.

The geology of Mexico has been but imperfectly studied. In the higher ranges the prevailing formations are granite, which seem also to form the foundations of the plateaus, above which rise the traps, basalts, mineral-bearing porphyries, and more recent lavas. Hence, Lyell's theory that Mexico consisted originally of granite ranges with intervening valleys subsequently filled up to the level of the plateaus by subterranean eruptions. Igneous rocks of every geologic epoch certainly form to a large extent the superstructure of the central plateau. But the Mexican table-land seems to consist mainly of metamorphic formations which have been partly upheaved, partly interpenetrated, and overlaid by igneous masses of all epochs, and which are chiefly represented by shales, greywacke, greenstones, silicious schists, and especially unfossiliferous limestones. All these formations are alike remarkable for the abundance and variety of their metalliferous ores, such as silver, silver glance, copper, and gold. Gneiss and micaceous schists prevail in Oaxaca and on all the southern slopes facing both oceans. But the highest ranges are formed mainly of plutonic and volcanic rocks, such as granites, syenites, diorites, mineral-bearing trachytes, basalts, porphyries, obsidian, pearlstone, sulphur, pumice, lavas, tufa, and other recent volcanic discharges. Obsidian (*itzli*) was the chief material formerly used by the natives in the manufacture of their cutting implements, as shown by the quarries of the Cerro de las Navajas (Knife Cliff), near Real del Monte and Pachuca in the State of Hidalgo. Vast deposits of pumice and the purest sulphur are found at Huichapam and in many of the craters. But immeasurably the most valuable rocks are the argentiferous porphyries and schists of the central plateau and of Sinaloa, unless they are destined to be rivalled by the auriferous deposits of Sonora. Horizontal and stratified rocks, of extremely limited extent in the south, are largely developed in the northern states, and chalk becomes very prevalent towards the Rio Grande and Rio Gila valleys. To this chalk and to the sandstones are probably due the sandy plains which cover vast tracts in North Mexico, stretching thence far into New Mexico and Texas. Here the Bolson de Mapimi, a vast rocky wilderness inhabited until recently by wild tribes, occupies a space of perhaps 50,000 square miles in Coahuila and parts of the surrounding States.

None of the horizontal layers seem to be very rich in ores, which are mainly found in the metamorphic, palæozoic, and hypogene rocks of Durango, Chihuahua, and the south. Apart from Sinaloa and Sonora, which are now known to contain vast stores of the precious metals, nearly all the historical mines lie on the south central plateau at elevations of from 5500 to 9500 feet. A line drawn from the capital to Guanajuato, and thence northwards to the mining town of Guadalupe

y Calvo of Chihuahua, and southwards to Oaxaca, thus cutting the main axis of upheaval at an angle of 45° , will intersect probably the richest known argentiferous region in the whole world.

Of other minerals the most important are copper, found in a pure state near the city of Guanajuato, and associated with gold in Chihuahua, Sonora, Guerrero, Jalisco, Michoacan, and elsewhere; iron in immense masses in Michoacan and Jalisco, and in Durango, where the Cerro del Mercado is a solid mountain of magnetic iron ore; lead associated with silver, chiefly in Oaxaca; tin in Michoacan and Jalisco; sulphur in many craters; platinum, recently found in Hidalgo; cinnabar, also recently found in Morelos and Guerrero; "steppe salt" in the sandy districts of the north; "bitter salt" at Tepeyac and many other places; coal at various points; bismuth in many parts; marble, alabaster, gypsum, and rock-salt in great abundance throughout the plateaus and the sierras.

MINING.

Mexico is, perhaps, the richest mining country in the world, and the production of silver—notwithstanding the imperfect methods and other drawbacks with which it has contended—represents over one-third of the product of the world, according to official statistics. Almost all the mountains of Mexico are of the metalliferous character, but those which seem richest in mining deposits are the western cordillera, extending from the State of Oaxaca to Sonora, a distance of about 1600 miles from northwest to southeast.

Humboldt gave as his opinion that Mexico would be "the treasure house of the world." Subsequent history has, in a great measure, confirmed the opinion of the great savant of his time. Still a more conservative authority has quite lately asserted that only one-tenth of the mining resources of Mexico is known. This last estimate, I am sure, is inside rather than outside of the facts. Mexico has always been considered the great silver producer, and, considering her area, and taking the century as a measure, she is the greatest silver producer of the world.

Silver.—The central group of mines in the three mining districts of Guanajuato, Zacatecas, and Catorce, in the States of Guanajuato, Zacatecas and San Luis Potosi, which have yielded more than half of all the silver heretofore found in Mexico, lies between 21° and $24^\circ 30' N.$, within an area of about 13,000 square miles. Here the Veta Madre lode of Guanajuato alone produced \$252,000,000 between 1556 and 1803.

In the beginning of this century Humboldt found two Guanajuato mines—the famous "Conde de Valenciana" and the "Marques de Rayas"—producing annually 550,000 marks, 4,400,000 ounces, of silver,