

BOOK IV.

CHAPTER I.

GEOLOGICAL AND GEOGRAPHICAL STRUCTURE OF MEXICO—
EXTENT.

ABSENCE OF ACCURACY — HUMBOLDT. — SUPERFICIAL EXTENT OF
MEXICAN TERRITORY. — PHYSICAL STRUCTURE OF MEXICO —
VOLCANIC MOUNTAINS — CLIMATES — TIERRAS TEMPLADAS, CA-
LIENTES, FRIAS. — POLITICAL DIVISIONS AND BOUNDARIES OF
MEXICO. — OLD SPANISH DIVISIONS — PROVINCES — INTENDEN-
CIAS — STATES — DEPARTMENTS. — NORTH BOUNDARY — PRES-
ENT STATES AND TERRITORIES. — RIVERS OF MEXICO. — RIVERS
AND LAKES OF MEXICO.

It is unfortunate that, notwithstanding the rich mineralogical and agricultural character of Mexico, no thoroughly accurate survey or geological examination has ever been made of the whole country. There is no complete map of the territory which may be confidently relied on. The enterprise of developing Mexico, since the foundation of the colonial government by Spain has been almost entirely abandoned to private enterprise, and, consequently the valuable information, collected by individuals, either perished in their hands after it had been used for their own benefit, or, if imparted to the government, has never been united and collated with other accounts and reconnoissances which were in the hands of national authorities. A great deal was done by Baron Alexander Humboldt, during his visit to New Spain early in this century, towards gathering the geographical, geological and statistical information which was then in existence, though scattered, far and wide, over the viceroyalty, in a thousand different hands. His voluminous work is an enduring monument to his industry and talent; but there is necessarily a great deal of it that was altogether transitory in its character both on account of the political and social revolution which has since occurred, and in consequence of the opening, by the republic, of Mexican ports to the commerce of the world.

Nevertheless, at the period of Humboldt's visit, the main bold geographical and geological features of Mexico were sufficiently well known for practical purposes, and as his descriptions have, in

most cases, stood the test of criticism during near half a century, we may still safely appeal to him, and to his industrious countryman, Muhlenpfordt,¹ as the most reliable authorities upon these topics.

According to Humboldt, Mexico presented a surface of one hundred and eighteen thousand four hundred and seventy-eight square leagues, of twenty-five to the degree, yet this calculation did not include the space between the northern extremity of New Mexico and Sonora, and the American boundary of 1819. Thirty-six thousand five hundred square leagues, comprising the States of Zacatecas, Guadalajara, Guanajuato, Michoacan, Mexico, Puebla, Vera Cruz, Oajaca, Tabasco, Yucatan, Chiapas, were within the torrid zone; while New Mexico, Durango, New and Old California, Sonora and a great part of the old Intendancy of San Luis Potosi, containing in all eighty-six thousand square leagues, were under the temperate zone.²

A more recent, and, generally, an accurate writer,³ has estimated the boundaries of Mexico, prior to the treaty of 1848, at Guadalupe, between the United States and Mexico, to have embraced an area of one million six hundred and fifty thousand square miles, including Texas. By the treaty just mentioned we acquired an undisputed title to Texas, and a territorial cession of New Mexico and Upper California.

Texas is estimated to contain,	325,520 square miles.
New Mexico “ “	77,387 “ “
Upper California “ “	448,691 “ “
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	851,598 “ “ ⁴

If we, therefore, deduct from the preceding estimate of one million six hundred and fifty thousand square miles, the sum of eight hundred and fifty-one thousand five hundred and ninety-eight square miles, we shall have, as the best approximate calculation, that we can now make, seven hundred and ninety-eight thousand four hundred and two square miles, for the total superficial extent of the Republic of Mexico, as at present bounded since the ratification of our recent international treaty. By that negotiation it consequently appears that we have obtained one half the former territory of Mexico and twenty-six thousand five hundred and ninety-eight square miles besides.

¹ Muhlenpfordt — Die Republik Mexico: Hanover, 1844, 2 vols.

² Ward, vol. 1, p. 7.

³ Folsom's Mexico in 1842, p. 29.

⁴ See maps and tables of areas of the several states of our Union accompanying the President's message of December, 1848.

The geological structure or physiognomy of Mexico is peculiar. The great Cordillera of the Andes, which traverses the whole of South America, from its southernmost limit, is exceedingly depressed at the Isthmus of Panama, where its gentle swells serve merely to form a barrier between the union of the Pacific and Atlantic. But, as soon as this massive chain enters the broader portion of North America, it divides into two gigantic *arms*, to the east and west along the shores of the Gulf and of the Pacific, which support between them a continuous lofty platform, or series of table lands, crossed, broken, and intersected by innumerable and abrupt *sierras*, some of which rise to the height of seventeen thousand feet above the level of the sea. This geological structure prevails throughout the whole of Mexico, as now bounded; for, at the Rio Grande, the southern limit of Texas, the land sinks to comparative levels, and affords channels for the numerous and important streams with which, Louisiana, Florida and Texas are abundantly irrigated. Whilst this is the case on the *northern* and *eastern* confines of Mexico, the *western* portion is still traversed by the main body of the gigantic Cordillera, which, penetrating California with its icy peaks of the Sierra Nevada, passes onward to the north until its rocky walls are lost, beyond Oregon, in the wilderness that bounds the Frozen Sea.¹

The reader who pictures to himself such a country will easily understand that all temperatures are gained in Mexico on the same parallel of latitude, — or that eternal heat and eternal frost are encountered in crossing the country in a straight line from Vera Cruz to the Pacific coast. It is a country hanging on the two slopes of a mountain, one of which descends to the Gulf and the other to the Western Ocean; and the traveller, in penetrating it, even by the road usually traversed by public conveyances, must attain a height of ten thousand six hundred and sixty feet, before he begins to descend into the valley of Mexico, which is, still, seven thousand five hundred and forty-eight feet above the level of the sea! Thus

¹ The high table land of Mexico which we have described, is said to owe its present form to the circumstance that an ancient system of valleys in a chain of granitic mountains, has been filled up to the height of many thousand feet with various volcanic products. Five active volcanos traverse Mexico from *west* to *east*, — Tuxtla, Orizaba, Popocatepetl, Jorullo, and Colima. Jorulla which is in the centre of the great platform is no less than one hundred and twenty miles from the nearest ocean, which is an important circumstance, showing that proximity to the sea is not a necessary condition although certainly a very general characteristic of the position of active volcanos. If the line which connects these five volcanic vents in Mexico be prolonged westerly, it cuts the volcanic group in the Pacific called the group of Revilla-Gigedo. — Lyell's Geology, American edition, vol. 1, p. 294.

it is, that throughout the table lands, the geographical position, as far as latitude is concerned, is entirely neutralized by the extreme rarefaction of the atmosphere obtained by ascending through loftier regions. Humboldt graphically declares that climates succeed each other in *strata* or *layers*, as we pass from Vera Cruz to the capital, or from the capital, descend to Acapulco or San Blas on the west coast, — beholding in our varied journey, the whole scale of vegetable life. The wild abundance of vegetation on the shore of the Gulf, — its beautiful palms whose stems are wreathed by a myriad of impenetrable parasites which grow with such rank luxuriance in the hot and humid air of the tropics, — are exchanged, as we begin to rise from the level of the sea, for hardier forest trees. At Jalapa the air is milder, though the vapors from the Gulf which concentrate and condense at about this height on the sides of the mountains, sustain the perpetual freshness of the verdure. Further on, the oak and the orange give place to the fir and pine. Here the rarefied air becomes pure, thin and perfectly transparent; but as it necessarily lacks moisture, which condenses below this region, the vegetation is neither so luxuriant nor so constantly vigorous. Great plains or basins, spread out in silent and melancholy vistas before the traveller, — many of them, cold, bleak and lonely moors, whose dreary levels sadden the heart of the spectator. The sun which comes down through the cloudless medium of an atmosphere unshielded by the usual curtain of vapor, parches and crisps the thirsty soil, whilst the winds that sweep uninterruptedly over the unbroken expanse, fill the air, during the dry season, with sand and dust. These high barren plains occupy a large portion of the centre of the country between Zacatecas, Durango and Saltillo; and such is in fact the character of large portions of the whole of Mexico, except when the comparatively level nature of the soil permits the small rivulets that filter from the Cordillera through the narrow vallies, to form themselves into rivers which may be used for irrigation. Wherever this is the case nature at once recovers her vigor under the influence of heat and moisture.

These physical features, and consequent diversities of temperature, have caused the division of Mexico, as it rises from the two Oceans, into three regions, or superficial strata, which are called, the *tierras calientes*, or *hot lands*; the *tierras templadas*, or *temperate lands*; and the *tierras frias* or *cold lands*. The *tierra caliente* covers chiefly that portion of the territory which lies on the borders of the Atlantic and Pacific; yet it is not confined exclusively to the coast, inasmuch as all those parts of Mexico in which there is heat and moisture enough to produce the fruits

and maladies of the tropics, are classed under this head. The *tierra fria* comprises the mountainous districts rising above the level of the capital up to the limit of constant snow; while the *tierra templada* embraces those milder middle regions not comprehended in the two other sections. Classing them by elevation *in feet*, we may suppose that the *tierras calientes* extend to between 3,000 and 4,000 feet above the level of the sea; the *tierras templadas* to between 4 and 8,000 feet; and that the *tierras frias* embrace all the remaining portions up to the region of eternal ice.

POLITICAL DIVISIONS AND BOUNDARIES OF MEXICO.

It is, perhaps, more of historical or antiquarian interest, than of actual present value, to recur to the ancient divisions of the viceroyalty of New Spain. Nevertheless, there are readers who are naturally anxious to trace the territorial aggrandizement as well as the recent curtailment of Mexico, and we have, therefore, thought it proper to present a picture of the limits and apportionment of the country at several periods.

The territorial limits of that region generally called NEW SPAIN, were comprised between the degrees of $15^{\circ} 58'$ and 42° of north latitude; and between $89^{\circ} 4'$ and $126^{\circ} 48' 45''$ west longitude from Paris, — calculating from the easternmost point of Cape Catoché, in Yucatan, to the extreme western limit of the land at Cape Mendocino, in California. The Gulf of Mexico and the Carribean Sea bounded this country on the east and south-east; the Pacific Ocean on the west; Guatemala on the south; and the United States, on the north. There was a multitude of islands comprehended under this territorial dominion. On the east coast of Yucatan were the isles of Holvas, Comboy, Mugeris, Cancun, Cozumel and Ubero; — in the Gulf of Mexico, the island of Bermejos and several smaller ones; — in the Pacific, the isles of Revilla-gigedo, of Maria, Cedros, San Clemente, Santa Catalina, San Nicolas, Santa Barbara, Santa Cruz, San Bernardo, San Miguel; — and in the Gulf of California, or Cortéz, the isles of Cerralvo, Espiritu Santo, San José, Santa Cruz, Carmen, Tortugas, Tiburon, Santa Iñez, and numerous insignificant islets or keys.

The limit between the United States and New Spain was defined by a treaty negotiated between the Chevalier de Onis, then Spanish minister at Washington, and John Quincy Adams, American Secretary of State, after long and learned historical as well as legal discussions of territorial rights and limits, which the student will find,

at large, in the second and fourth volumes of "American State Papers," published by the government of the United States. This treaty was signed on the 22d of February, 1819, and, according to its third article, the boundary between Mexico and Louisiana, which was then ceded to the Union, commenced with the river Sabine at its entrance into the Gulf of Mexico, at about latitude 29° , west longitude 94° , and followed its course as far as its juncture with the Red river of Natchitoches, which then served to mark the frontier up to the 100th degree of west longitude, whence the line ran directly north to the river Arkansas, which it followed to its source at the 42° of north latitude,—whence another straight line was drawn upon the said 42° parallel, to the coast of the Pacific Ocean.

This line, it was supposed, would interpose a perpetual barrier of wilderness, tenanted only by Indians and wild animals, between the republic of the north and the treasured colonies of the Spanish crown. But subsequent events have shown in the course of little more than the quarter of a century, how rapidly the population of the old world and the new has swelled beyond the limits prescribed by statesmen, until the savage and the beast have been made to yield their hunting grounds and forests for the use of civilized man.

At the earliest period of which we have any authentic information, this territory of Spain was divided into the kingdoms of Mexico, New Galicia, and New Leon; the colony of New Santander; and the provinces of Coahuila, Texas, New Biscay, Sonora, New Mexico and the two Californias. This arrangement was extremely indefinite; but, in 1776, the country was divided into twelve intendancies: Merida, Oajaca, Vera Cruz, Puebla, Mexico, Valladolid, Guanajuato, Guadalajara, Zacatecas, San Luis Potosi, New Biscay, and Sonora; and the three provinces of New Mexico, and Alta and Nueva California. The intendancy of San Luis Potosi, included New Leon, New Santander, Coahuila and Texas, and San Luis Potosi, proper;—the intendancy of New Biscay embraced the provinces of Durango and Chihuahua; and the intendancy of Sonora took in the provinces of Sinaloa, Ostimuri, and Sonora. Each intendancy was subdivided into *subdelegaciones*. Another division cut off New Spain, proper, from the *Provincias Internas*. These last named provinces included all the territory lying north and northwesterly of the intendancies of Zacatecas and Guadalajara, or the kingdom of Nueva Galicia. The "*Provincias Internas del Vireynato*," must be distinguished from the "*Provin-*

cias Internas de la Commandancia de Chihuahua," which, in 1779, were comprised in a General-Captaincy. The two intendancies New Biscay and Sonora, then part of San Luis Potosi, belonged to the provinces of Coahuila and Texas. The interior provinces of the viceroyalty were the intendancy of San Luis Potosi, including the provinces of New Leon and New Santander. The *actual* kingdom of New Spain was composed of the intendancies of Mexico, Puebla, Vera Cruz, Guadalajara, Valladolid, Zacatecas, Guanajuato, Oajaca, Merida, and San Luis, proper, and the two Californias. In the year 1807, the "*Provincias Internas*" were divided into *western* and *eastern*, and two general commandancies created.

1st. The *Provincias Internas Occidentales*, or *Western*, were the intendancies of Sonora, Durango, with Chihuahua (new Biscay); the province of New Mexico, and the two Californias.

2d. The *Provincias Internas Orientales*, or *Eastern*, were, Coahuila, Texas, New Santander and New Leon.

Such were the main territorial divisions of New Spain during the concluding years of the Spanish government,—whilst the revolution was in progress,—and until the nineteen provinces of the empire of Iturbide were erected by the federal constitution of 1824 into the nineteen States of Chiapas, Chihuahua, Coahuila and Texas, Durango, Guanajuato, Mexico, Michoacan (Valladolid), New Leon, Oajaca, Puebla, Queretaro, San Luis Potosi, Sonora and Sinaloa, Tabasco, Tamaulipas, Vera Cruz, Jalisco (*Guadalajara*), Yucatan, and Zacatecas,—and the TERRITORIES of Old and New California, Colima, New Mexico, and Tlascal. In 1830 the State of Sinaloa and Sonora, separated into its natural divisions, since which each has been a distinct, independent State. In 1836, the revolution which destroyed this federal constitution, changed these STATES into DEPARTMENTS; by which name they were recognized until the month of May, 1847, when the old federal constitution of 1824, with some amendments, was re-enacted, and the departments once more converted into states; whilst provision was made for the creation of the new *state of Guerrero*, to be composed of the districts of Acapulco, Chilapa, Tasco and Talpa, and the municipality of Coyucan—the three first of which pertain to the state of Mexico, the fourth to Puebla, and the fifth to Michoacan,—provided these three states gave their consent within three months from the 21st of May, 1847, at which period the act reforming the constitution of 1824 was passed.

The war between Mexico and the United States was happily

terminated by the treaty negotiated at the town of Guadalupe, by Mr. Trist, on the 2d of February, 1848; and, by this compact, the limit between our respective territories was greatly changed from that which had been fixed by the treaty with Spain in 1819. According to the convention of Mr. Trist, the boundary between the republics commences in the Gulf of Mexico, three leagues from land, opposite the mouth of the Rio Grande, otherwise called Rio Bravo del Norte, or opposite the mouth of its deepest branch, if it should have more than one branch emptying directly into the sea; from thence it passes up the middle of that river, following the deepest channel, when it has more than one, to the point where it strikes the southern boundary of New Mexico, thence, westerly, along the whole southern boundary of New Mexico, which runs north of the town of El Paso, to its western termination;—thence northward, along the western line of New Mexico, until it intersects the first branch of the river Gila, or, if it does not intersect any branch of that river, then to the point on the said line nearest to such branch, and then in a direct line to the same;—thence down the middle of the said branch and of said river, until it empties into the Rio Colorado;—thence across the Rio Colorado, following the division line between Upper and Lower California, to the Pacific Ocean.

It will be perceived by inspecting the map that this new boundary cuts off a large portion of northern Mexico, and gives us the valuable territories of New Mexico and Upper California, together with an undisputed right to the enjoyment of Texas, which had previously been united to the North American confederacy by international contract, after the independence of Texas had been recognized by foreign nations and maintained by its own people.

The states of the Mexican Republic and its territories are, consequently, under the existing constitution, the following:

STATES.

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| 1. Coahuila. | 8. Puebla. | 15. Durango. |
| 2. Tamaulipas. | 9. Mexico, with the
Federal District. | 16. New Leon. |
| 3. Vera Cruz. | 10. Michoacan. | 17. Zacatecas. |
| 4. Tabasco. | 11. Jalisco. | 18. San Luis Potosi. |
| 5. Yucatan. | 12. Sonora. | 19. Guanajuato. |
| 6. Chiapas. | 13. Sinaloa. | 20. Queretaro. |
| 7. Oajaca. | 14. Chihuahua. | 21. Guerrero. |

TERRITORIES.

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| 1. Lower California. | 2. Colima. | 3. Tlascala. |
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RIVERS AND LAKES OF MEXICO.

I. ON THE EASTERN COASTS.

1st. The RIO GRANDE DEL NORTE, or RIO BRAVO, which is the largest of all Mexican streams, and rises, in about $40\frac{1}{2}^{\circ}$ north latitude, and 100° west longitude, from Paris, in the lofty sierras which are a continuation of the gigantic chain that forms the spine of our continent. It pursues a southeasterly direction towards the Gulf of Mexico, and traverses a distance of nearly eighteen hundred miles.

2d. The RIO DEL TIGRE, rises in the state of Coahuila, and passes, in a southward and easterly direction, through the states of New Leon and Tamaulipas, and finally, after traversing about three hundred miles, debouches in the Gulf of Mexico.

3d. The RIO DE BORBON, or RIO BLANCO. The sources of this stream are in New Leon, whence it runs towards the east, and, crossing the state of Tamaulipas, falls in the LAGUNA MADRE.

4th. The RIO DE SANTANDER, rises in the state of Zacatecas, crosses the state of San Luis Potosi, passes by Tamaulipas, winds to the north, and falls, near the bar of Santander, into the Gulf.

5th. The RIO DE TAMPICO, is formed by the union of the rivers PANUCO and TULA. The upper source of the PANUCO is in the neighborhood of the city of San Luis Potosi, the capital of the state of that name. Near half a league north north-east of this city, in the valley de la Pila, rises a spring which is protected by a basin of fine masonry, and conveyed by an aqueduct to town. Several other streams, coming from the south-west, unite with this source and form the PANUCO. West of the first of these streams, swells up the mountainous ridge which divides the waters of Mexico between the Pacific and the Atlantic. The Panuco courses eastwardly,—and, passing rapidly through the LAGUNA CHAIRÉL, unites with the TULA. This latter stream mingles the waters of the rivulets Tepexi, Tequisquiac, and Tlantla, in the northern part of the state of Mexico; and receiving, by the canal of Huehuetoca, the water of the Rio Quautitlan, it winds onward through the valley of Tula, and near the limits of the states of Quèretaro and Vera Cruz, until it joins the Panuco. These united rivers receive in the state of Tamaulipas, the name of the RIO DE TAMPICO, which debouches, finally, in the Gulf of Mexico.

6th. The RIO BLANCO rises in the state of Vera Cruz, near Aculzingo, at the foot of Citlaltepétl, or the mountain of Oriz.

It courses onward through a varying and rough channel among the mountains and plains, until it is lost in the lagunes near Alvarado.

7th. The RIO DE SAN JUAN. The sources of this river lie partly in the metallic mountains of Ixtlan, in the state of Oajaca, and partly in the neighborhood of Tehuacan de las Granadas. Many large, but wild streams, spring up in these mountain regions, and form the broad but shallow RIO GRANDE DE QUIOTEPEC. This river, after winding through the valley of Cuicatlan, receives, from the south, the large stream of LAS VUELTAS; and all these unite to form the RIO DE SAN JUAN, which pursues its eastern course until it approaches the coast near Alvarado, when it divides into two arms. One of these, named TECOMATE, joining the COSOMALOAPAN and PASO, form the large lagunes of TEQUIAPA and EMBARCADERO, — whilst the other arm, by a different course, also debouches in the same lagunes.

8th. The RIO DE GUASACUALCO, rises at about $16^{\circ} 58'$ of north latitude, and $96^{\circ} 19'$ west longitude, from Paris, in the mountains of Tarifa, and pours onward towards the east, receiving accessions from a great number of small mountain streams and rivulets, until it falls into the Gulf of Mexico.

9th. The RIO DE TABASCO, or RIO DE GRIJALVA, or RIO GUICHULA, rises in the mountains of Cuchumatlanes towards the centre of Guatemala, and falls into the gulf at the port of Tabasco.

10th. The RIO DE USUMASINTA, rises also in Guatemala, and debouches in the LAGUNA DE TERMINOS.

II. SMALL EASTERN COAST STREAMS.

RIO GARCES.	RIO ANTIGUA.
RIO DE TUSPAN.	RIO DE JAMAPA, or MEDELLIN
RIO DE CAZONES.	RIO AQUIVILCO.
RIO DE TENISTEPEC.	RIO DE TONALA.
RIO DE JAJALPAM, or TECOLUTLA.	RIO DE SANTA ANNA.
RIO DE NAUTLA.	RIO DE CAPILCO.
RIO DE TLAPACOYAN.	RIO DE DOS BOCAS.
RIO DE PALMAR.	RIO DE CHILTEPEC.
RIO DE MIZANTLA.	RIO DE SABOJA.
RIO DE MAGUILMANAPA.	RIO DE CHAMPOTON.
RIO DE YEGUASCALCO.	RIO DE CHEN.
RIO DE ACTOPAN.	RIO DE ESCATALLO.
RIO DE CHUCHALACA.	RIO DE SAN FRANCISCO.
RIO DE SAN ANGEL.	RIO DE SILAN.
RIO DE SAN CARLOS.	RIO CEDROS.

RIO CONIL.	RIO DE LA ASCENSION.
RIO BOLINO.	RIO SAN JOSÉ.
RIO NUEVO.	RIO HONDO.
RIO BACALAR.	

Many of these streams are, in fact, not entitled to the name of rivers, though a few of them are important, whilst all are valuable to some extent for agriculture, transportation, irrigation, or occasional water power.

III. RIVERS ON THE WEST AND SOUTH COAST OF MEXICO.

1st. RIO DE CHIMALAPA, sometimes called also, RIO DE CHICAPA, rises in the forests and mountains of Tarifa in about $16^{\circ} 43'$ north, $96^{\circ} 33'$ west from Paris, and debouches in the Pacific, after passing the village of Tehuantepec. The rivers OBSTULA, NILTEPEC or ESTEPEC, — DE LOS PERROS or JUCHUITAN, ARENAS, LAGARTERO, OTATES, are small coast streams falling into the lagunes that border the ocean.

2d. The RIO DE TEHUANTEPEC is formed by the union of two streams, one of which rises about fifty leagues west north-west of Tehuantepec, near the village of San Dionisio, whilst the other springs from the mountains of Lyapi and Quiégolani, in the lands of the Chontales. The two unite seven leagues north-west of Tehuantepec; and, passing by the village of that name, this river finally pours into the Pacific, near the small port of Las Ventosas.

3d. The RIO VERDE rises in the Upper Misteca, eight leagues north of Oajaca, and falls west of the Cerro de la Plata and of the Lagunas of Chacahua, into the Pacific. On the coast of Oajaca there are many smaller streams and rivulets, such as the CHACALAPA, the MANIALTEPEC, the COLOTEPEC, the SANTA HELENA, the CAPUTITA, the COMUN, the AYUTLA, the CHICOMETEPEC and the TECOYAMA, — the last of which is the boundary between the states of Oajaca and Puebla.

4th. The RIO DE TLASCALA, or RIO DE PAPAGALLO, has its source in the vicinity of the town of Tlascala, in the mountain Atlancatepetl; passes through the state of Puebla, receives the RIO MEZCALA, out of the state of Mexico, and enters the Pacific south of the village of Ayulta.

5th. The RIO DE ZACATULA, or RIO BALSAS, originates in the valley of Istla, in the state of Mexico, and after winding west south-westerly, it receives the RIOS ZITACUARO, de CHURUMUCO, and del MARQUEZ out of the state of Michoacan, and passes into the Pacific.

6th. RIO DE AZTALA rises two leagues south-west of the village

of Coalcoman, receives the AGAMILCO, MARUATO and CHICHUCUA, and flows into the sea between Cachan and Chocóla.

7th. RIO DE TOLOTLAN, or RIO GRANDE DE SANTIAGO. This is one of the longest and most important of Mexican rivers, formed by the junction of the LAXA and LERMA, near Salamanca, in the state of Guanajuato, and falls into the Pacific near San Blas after a course of about two hundred leagues. The Rio Bayóna or Cañas is an important stream on the coast near the boundary between Jalisco and Sinaloa.

8th. The RIO DE CULIACAN rises in the north of the state of Durango, where it is called RIO SANZEDA, thence it takes its course towards the north-west, receiving some smaller streams, and then passing by the town of Culiacan, falls into the Gulf of California. The RIO DE ROSARIO, RIO DE MAZATLAN, debouche in the same gulf. The rivers PIASTLA, ELOTA, TAVALA, EMAYA, MOCORITO, SINALOA or OCRONI, AHOME, are small streams on the coast of Sinaloa.

9th. The RIO DEL FUERTE has its source in the metalliferous mountains of Batopilas and Uruachi, in the state of Chihuahua, where it is known as the river BATOPILAS. It takes a westerly course across the state of Sinaloa about 27° north; — it receives a number of other streams, on the western slope of a range of the Cordilleras, and finally flows into the California Gulf.

10th. The RIO MAYO is the boundary stream between the states of Sinaloa and Sonora; at its mouth in the Gulf of California is the small port of Santa Cruz de Mayo, or Guitivis.

11th. The RIO HIAQUI, or YAQUI, rises on the west slope of the Sierra Madre, near the village Matatiche in the state of Chihuahua, whence its course is west south-west, across the state of Sonora; it receives the RIO GRANDE DE BAVISPE which rises in the state of Chihuahua, and also the RIOS OPOSURA and CHICO, and, finally, is lost in the Gulf of California, at about $27^{\circ} 37'$ north latitude.

12th. RIO DE GUAYAMAS. This river rises at San José de Pimas, in latitude $28^{\circ} 26'$ north, its course is west south-west, and its mouth in the Californian Gulf, at the fine and favorite harbor of San-Jose de Guayamas in latitude $27^{\circ} 40'$.

13th. The RIO DE LA ASCENSION rises at about $31^{\circ} 40'$ north and $112^{\circ} 37'$ west longitude. On its south-westerly course it receives the tributary waters of the RIO DE SAN IGNACIO and falls at about $30^{\circ} 20'$ north into the Gulf of California.

14th. RIO DE COLORADO. This important stream is formed of the river RAFAEL in about $40^{\circ} 15'$ north, and $110^{\circ} 50'$ west longitude from Paris, on the western declivity of the Sierra de las Grul-

las, whence it takes a south-west course and receives, at the foot of the Monte de Sal Gemme, the RIO DE NUESTRA SEÑORA DE DOLORES, which springs about $1^{\circ} 30'$ west of the RAFAEL, in the Cerro de la Plata; and, thus, receiving the accretions of a number of other streams, it courses onward until it is lost at the head of the Gulf of California. The whole length of the COLORADO is estimated at about two hundred and fifty leagues. For about fifty leagues it is navigable by small sea going vessels; and, for about a hundred leagues higher, it may be traversed by large boats. The sea is said to ebb and flow between thirty-five and forty leagues beyond the mouth of this river. The sources of the ARKANSAS and of the RIO GRANDE DEL NORTE lie very near those of the COLORADO; so that the waters of the Gulf of Mexico and of the Gulf of California are nearly united by these streams across our continent.

15th. The RIO GILA rises in the Sierra de los Mimbres, and descends to the south, through a small and mountain bound valley until it unites with the Colorado.

IV. LAKES, LAGUNES, &c.

1. TIMPANOGOS and TEYUGO or SALADO.
2. LAGUNAS DE BAVISPE, SAN MARTIN, DE GUZMAN, DE PATOS, DE ENCINILLAS and DE CASTILLA in the state of Chihuahua.
3. The LAGUNA DE CAYMAN in the BOLSON DE MAPIMI.
4. The LAKES of PARRAS and AGUA VERDE on the west boundary of Coahuila.
5. The LAKES of CHARCAS, CHAIREL and CHILA in the state of San Luis Potosi.
6. Nine small SODA LAKES in Zacatecas.
7. The large and important LAKE of CHAPALA and others in Jalisco.
8. PAZCUARO, CUIZCO, ARARON, HUANGO, TANGUATO, and HUANIQUE in Michoacan.
9. The five large LAKES of TEZCOCO, CHALCO, XOCHIMILCO, SAN CRISTOVAL and ZUMPANGO in the valley of Mexico.
10. The LAKES of ATENCO, COATETILCO, and TENANCINGO in the valley of Toluca.
11. A number of small ones in Oajaca.
12. The LAKES of TAMPICO, CATEMACO, ALIJOYUCA, TENANGO, CHIAPA on the gulf coast or near it.
13. The LAKE of YURIRAPUNDARO in Guanajuato.