MEMOIR

ON THE

PHYSICAL AND POLITICAL GEOGRAPHY

OF

NEW GRANADA.

DEDICATED TO THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY OF NEW YORK.

BY GENERAL T. C. DE MOSQUERA,

EX-PRESIDENT OF NEW GRANADA; HONORARY MEMBER OF LA SOCIÉTÉ AGRONOMIQUE PRATIQUE DE PARIS; CORRESPONDING MEMBER OF THE HISTORICAL AND GEOGRAPHICAL INSTITUTE OF BRAZIL; FOUNDING MEMBER OF THE ROYAL SOCIETY OF NORTHERN ANTIQUARIES OF DENMARK, &C., &C.

TRANSLATED FROM THE SPANISH BY

THEODORE DWIGHT.

NEW YORK:

PUBLISHED BY T. DWIGHT, 116 BROADWAY.

1853.

Introduction.

Before beginning a geographical description of the Republic of New Granada, I shall take the liberty to express my ideas respecting the technology of the words which have hitherto been used to denote the zones into which the earth is divided, the denomination of some of its grand divisions, and their number. Until the present time science has employed certain words, which do not signify what their etymology really indicates; and no association might more properly adopt a change, than the Geographical and Statistical Society of New York, to whom I propose to present this Memoir, in which I make use of such terms as seem to be demanded.

The earth is divided into five zones, which we will call the Intertropical, the Boreal, the Austral, the Arctic, and the Antarctic; while we will denominate the circles the Northern Polar and the Southern Polar, suppressing the names, Torrid, Temperate and Cold.

What is the Eastern Hemisphere, and what the Western? This is a question of meridians; and, if we are inhabitants of a place situated east from Europe, we may call Japan and China eastern. A single meridian should be named for science; and no better one could be chosen than that of the Island of Faroe, because it divides the earth in such a manner as best to place the continents in the eastern and western hemispheres, and preserves the names by which they have hitherto been called, viz., Eastern and Western.

We will not use the word Meridional as synonymous with Southern: because, although the ancient geographers might at first call mid-day south, yet, since the whole globe and its

form are known, it is improper for the inhabitants of the south, from the equator to the pole, to call mid-day south, as the sun culminates north of that part of the world at noon; and science, which is for all the earth, ought to be one in its language, and not employ a word signifying one thing in one place and another in another; and the more because there are cases in which the word mid-day must be used without any relation to the south. And, for the same reason, we should not denominate Meridional that which is so only in relation to a certain part of the earth.

Why should the earth be divided into five parts, and not into six? The present division is not natural, as we call America a single part of the world, though it contains two great continents separated by seas, and united only by the Isthmus of Panama. Europe and Asia might better be one part, than the two Americas; and this induces me to propose that we now begin to call South America the sixth part of the world, and give it the name of *Columbia*. That of America will then be reserved for the Northern Continent and the great nation which occupies it, while the other will bear the name of the illustrious voyager, Christopher Columbus, its discoverer.

Adopting, then, in my little work, the denominations which I have indicated, and which I respectfully submit to the New York Geographical and Statistical Society, I enter upon my task.

Part First.

GEOGRAPHICAL SITUATION AND BOUNDARIES, CONTINENTAL AREA, ISLANDS, PHYSICAL GEOGRAPHY, PRINCIPAL RIVERS, PORTS, BAYS AND LAKES, GEOLOGICAL NOTICE.

THE Republic of New Granada is situated in the sixth part or division of the world, and in the northwest of Columbia, extending from 12° 30′ North to 3° 35′ South latitude, in its extreme points, and from 65° 50′ 40″ to 83° 5′ W. long. from Greenwich. Thus it is an intertropical country of the western hemisphere. The boundaries are the Atlantic Ocean from the Peninsula of Goajira, commencing in the bay of Calabozo, in the Gulf of Maracaibo, on the frontier of Venezuela, District of Sinamaica, which was separated from Rio Hacha to be annexed to Venezuela under the Spanish government. The boundary follows the Atlantic coast to Cape Gracias a Dios, comprehending the provinces of Rio Hacha, Carthagena, Panama and Veraguas, and the territory at the mouths of the Toro, which includes Mosquitia and the coast of San Juan de Nicaragua, where Great Britain, disregarding the rights of America, wishes to sustain a Sambo as sovereign of a country, the dominion of which she has acknowledged as belonging to Spain, by public treaties. New Granada has offered, to the Republics of Nicaragua and Costa Rica, to enter into an arrangement, to cede a part of the rights obtained from Spain by her independence; and it is probable that her limits will

extend to the River Culebra or Dorces, in 81° 30′ W. longitude from Greenwich.

From that point the boundary of New Granada runs along the cordillera which divides the Province of Chiriqui from the Republic of Costa Rica, to the point Burica in Golfo Dulce, on the Pacific, which is to be determined between the two republics. From Golfo Dulce the line is the coast of the Pacific, (in which are several islands belonging to the nation, to be mentioned in another part of this memoir,) to the Gulf of Ancon, south of Cape Manglares, in N. Lat. 1°, where it meets the frontier of the Equator. From that point it follows the boundary of that republic along the branch of the western cordillera, which divides the waters of the River Mira and those flowing into the River Santiago of the Equator, to a point in the interior, where the Mira breaks the cordillera to flow into the Pacific. From that point the boundary passes along the cordillera to the summit of the Cumbal, Snowy Mountain and Chiles, where is the source of the River Carchi, which divides the two countries down as far as the mouth of the Quebrada of Potosi; thence up the stream to the summit of the great cordillera of the Andes, which is there the eastern cordillera of New Granada; thence by Mocoa and the rivers San Miguel and El Ovo, to the Lake of Guayabeno; and from that point to the summits of the high lands dividing the waters which flow into the Putumayo and Napo, large and generally navigable rivers, tributaries of the Marañon or Amazon; and at their confluence with that river ends the boundary between New Granada and the Ecuador. That of New Granada then proceeds with the boundary of Peru by the Amazon, to the western mouth of the rivers Yapua or Caquetá, and passes along that stream to the place where the Portuguese establishments were fixed in 1750; and a line was ordered to be drawn from Marachi towards the Rio Negro, by the 12th article of the treaty of San Ildefonso in 1777.

Thus it is, that, from that point the boundary of New Granada and Brazil proceeds by the Rio Negro, up the stream, to San José de Marabitana, where the boundary of Venezuela begins, and which lies along the left bank of the Rio Negro to the natural canal of Casiquiari, which continues to divide these two republics, the boundary running along by the waters of the Orinoco, to the mouth of the Meta, in north latitude 6° 22′, and longitude 67° 41′ west from Greenwich, then up that stream to 5° 50′ north latitude, and 69° 15′ west longitude, whence it makes a line parallel to the meridian, till it meets the river Arauca, passing the river Capanaparo and Lake Termino and the waters of that river, up as far as latitude 6° 40′ north. Thence it follows another line, crossing the river Sarare, to the waters of the river Macao, and the waters of the same to its head in the cordillera of the Andes, in north latitude 7° and north latitude, 72° 40′, in the paramos of Pamplona; and thence taking the head waters of the Tachira, to the mouth of the Quebrada Don Pedro, up its course to the head-waters of the Quebrada of La China, and down its course to the river La Grita and its waters to their confluence with the Zulia. From that point it takes a direction by the mountains which lead to the cordillera of Perija, and runs from south to north near 73° 10′ west longitude to the boundary of Sinamaica, in the bay of Calabozo, in the Gulf of Maracaibo, where we commenced our description.

CONTINENTAL AREA.

The continental area of the territory of New Granada, which we have fixed by the description of its boundaries, is 394,664 square miles of 60 to a degree.

ISLANDS.

This vast continental territory, whose natural limits secure the interests of the state, and discourage ambitious pretentions inspired by the rivalry of adjacent nations, by banishing every germ of discord, and consolidating peace so necessary to the progress of civilization, is not the only land possessed by New Granada. She owns many islands in both oceans. In the Atlantic, or Caribbean Sea, are those of San Andres and Providence, in 12° 35′ and 13° 30′ north latitude, and west longitude 80° 05′ and 80° 35′; in the Archipelago of the Balize del Almirante, called the Laguna of Chiriqui, are eleven, the principal of which is named Boca del Toro, whose name has been given to all the territory; others of little importance on the Mosquito shore, called the Cayos de Navio or Rei and Mangles, which the British government wish to belong to the so-called King of Mosquitia; two small islands in the Escudo of Veraguas and forty in the Archipelago of Mulatos and coast of Portobello, which are uninhabited. On the coast of Carthagena are about twenty small islands, from Baru to the Gulf of Marrasquillo and port Zispata, without counting those formed by the deltas of the Magdalena and Atrato, which we have considered as parts of the Continent. In the Pacific Ocean is the Archipelago of Pearls, in the Gulf of Panama, which contains about ten islands, the most important of which is San Miguel. In the bay of Panama are the island of Taboga, which is the most important, and other small ones, as Perico, Otoque and Flamenco. On the coasts of Veragua and Chiriqui is another Archipelago, of about seventeen islands, among which the most important is Coiba, containing 90 square miles. On the coast of Barbacoas are the islands of Gorgona and Tumaco, the latter of which alone is inhabited; and there are three small ones, called Las Palmas, in the Pro-

vince of Buenaventura, without counting those formed by the deltas of the rivers of that coast, which also we have considered as part of the continent. The number of square miles which the islands measure has not yet been ascertained.

The topographical aspect of New Granada presents a greater diversity than that of any other country of Columbia: high mountains, extensive plains, wide vallies, and table-lands raised among the cordilleras vary the physiognomy of the country in an admirable manner, presenting many attractions and beauties of the most poetical character. But we must suppress the feelings excited by the pictures offered us by virgin nature in those beautiful regions, to enter upon a description, more useful to science, which may afford a correct knowledge of the country.

PHYSICAL GEOGRAPHY.

The geographical position of New Granada having been determined, its boundaries traced, and its area calculated, we proceed to treat of its physical geography.

In none of the other countries of Columbia is to be found a more varied physical aspect. This is due to the triple number of Cordilleras and various ramifications formed by the great chain of the Andes in New Granada. All geographers well know that the Cordilleras of the Andes begin at the Strait of Magallanes, and extend through the continent to the Isthmus of Panama, following generally a line parallel to the Pacific Ocean, at greater or less distances, but the greatest does not exceed 150 miles in the Austral zone, while it is much less in the intertropical, until we find it, in some places, washed by the waters of the sea, in Ecuador and New Granada.

The great chain, which, in crossing Bolivia and Peru,

divides into three principal branches, when it reaches Ecuador, unites itself into one great mass, which forms basins, or high vallies, which show the crests of two chains, called the Eastern and Western; and in this form it reaches the south of New Granada, in the Province of Tuquerres. The elevation of that province is such, that there is hardly a terrace of equal extent in the world, at an equal altitude. Its principal towns are Ipiales, Cumbal, Guachucal and Tuquerres, which are at an elevation of from 1,550 to 1,614 toises, with only so much low land as has been carried down by the streams, to form the narrow basin, or valley of Guaitara, whose medial height is 854 toises above the level of the Pacific. The mass of the Cordilleras retains the same aspect as far as the territory of Pasto, where the two rivers Juanambu and Janacatu form another basin nearly parallel to the Guaitara, leaving in the centre a great mass, which unites, so to speak, the Eastern and Western branches, and in the centre of which is the lofty mountain of the Volcano of Pasto. Another high, cold, windy branch of the Cordillera extends from the paramo of Aponte, in the eastern Cordillera, which runs east to west between Juanambu and the river Mayo, and terminates at the confluence of those rivers with the Patia, where all united burst through the western Cordillera, to carry their waters to the Pacific. This is the point at which the Cordillera of the Andes loses, in its western branch, its magnificent aspect and Alpine elevation, and begins to form the variegated vallies of the interior of New Granada. From the Mayo the valley of Patia has its source, between the two Cordilleras to the little heights of Popayan, called the Cuchilla, which meet the two Cordilleras by a ridge from 900 to 1,000 toises above the level of the sea, in 2° 24′ N. lat. The great mass of the Eastern Cordillera has a direction from south to northeast, forming a spur, or great promontory from 1° to 1° 30′ N. lat. between 76° 20′ and 76° 40′ W. long.,

where another division of the Cordillera of the Andes has its origin, and the three great branches in New Granada are formed. That point is of great physical importance, as there are situated several lakes, the principal of which is that of Las Papas, which give rise to the rivers Caqueta, Magdalena, Cauca and Guachicono, whose courses are so different that we shall describe them, to give an idea of that important spot.

The Caqueta flows towards the south-east, which direction it keeps until it joins the Amazon, under the name of the Yapura, whose mouth we have mentioned in the description of the boundaries. The head streams of the Magdalena and of the Suása flow northeast, and begin to form the waters of the valley of Neiva. The Cauca flows north on the Cordillera, until it reaches the Sierra Nevada (or snowy range) of the Coconucos, on a high terrace called Paletara; and, its course being impeded, it turns, inclining to the west, to descend to Popayan, and give rise to the vallies of the Cauca. The Guachicono first runs northwest, and then west and southwest, to form the Patia, whose waters fall into the Pacific; while the Magdalena and the Cauca pass through the whole territory of New Granada, from south to north, and unite in the Province of Mompox, to bear their waters to the Caribbean Sea; those of the Caqueta, lost in the Amazon, flow into the Atlantic by the eastern part of the Continent; and those of the Guachicono, united with the Patia, fall into the Pacific. There is scarcely in the world so important a point in physical geography, as the great knot of the cordillera of the Andes, where its eastern chain divides in two, giving origin to the central branch, which separates the vallies of Cauca from those of Neiva and Mariquita. The eastern cordillera follows its direction towards the northeast, to the paramos of Pamplona, which we have mentioned as the boundary of New Granada and Venezuela, and where another branch separates itself, to form the sierra nevada (or snowy region) of Santa

Marta, and extends by Perija to the Peninsula of Goajira. The central branch, which begins to separate itself from the eastern in the Papas, completes its separation in the Volcano of Purace, and proceeds parallel to the waters of the Cauca and Magdalena, to the end of the valley of the Cauca, where it unites again with the western cordillera, in north latitude 4° 50′, and where the cordillera is cut by the basins of the San Jorge, the Cauca, the Atrato and the San Juan, giving all that country a peculiar aspect, which will be described in another part, and where are found the richest gold mines in New Granada. The branches which run between the Magdalena and the Cauca, are lost at the confluence of those rivers above Mompox. Others extend to the Gulf of Guacuba in Darien, the mouth of the Atrato; and the western branch, depressed, so to speak, by the waters of the Atrato, San Juan, Baudo, and San Miguel, loses its gigantic height, and offers, at different points, an easy passage from the Atlantic to the Pacific, the most remarkable of these being that of Panama, where a railroad has been partly constructed from Colon to Panama; as may be done from San Miguel or Cupica; between the Atrato and San Juan, which will be easily made, or between the Atrato and the Baudo; at which points the cordillera of the Andes absolutely loses its type, and is a mere agglomeration of hills, cut through by the waters. In passing through the Isthmus of Darien, and that of Panamá, the western cordillera inclines to the north, and parallel to the coast of the Atlantic extends through the States of Central America.

We have now given the form and direction of the three great branches of the cordillera of the Andes, in New Granada, the points at which they separate, and that where the central and accidental branches re-unite. The physical aspect of each branch may be said to be preserved in the central and eastern branches, for there are found the snowy regions of Chiles and Cumbal, in the Province of Tuquerres, the Volcano of

Pasto, whose summit reaches the region of perpetual ice; the paramo* of Sotara, a volcano almost extinct, whose top is covered with snow a portion of the year; the snowy cordillera of Coconucos, which consists of five large mountains, the most western of which is known as the Purace, and contains the volcano of that name, which in 1849 lost its summit and opened a crater 80 or 100 metres in diameter. Proceeding by the central branch, we find the snowy regions of Huila, Tolima and Ruiz, which we will attend to in the description of the provinces in which they are situated. The eastern cordillera, although it rises to the region of perpetual snow in some places, has no snowy regions in the interior, but only at its extremity, in the provinces of Santa Marta and Rio Hacha. The topographic committee which is now passing through the whole territory of New Granada, and which, while I was President of the Republic, was conducted by the skillful engineer, Col. Codazi, will form, within a few years, a complete work. In the meantime I have thought it useful to present this little memoir, which I have formed from my observations by comparing them with those of several Granadans and foreigners who have travelled in the country, on all which I have exercised my own judgment.

Let us now proceed to consider the territory of the Republic, forming large basins and high table-lands, to which the cordilleras give origin, and the great rivers, which, rising on their summits, cross the country in many directions.

The eastern cordillera of New Granada, from the heights of Mocoa above San Miguel and Rio de Oro, mentioned in the description of the boundaries, to the paramo of Pamplona, is the first element of the great eastern basins of the Caqueta,

* It has been found convenient in the translation, to transfer from the original the Spanish word "*Paramo*," which is commonly translated *desert*, but, as used in New Granada, has no exact equivalent in English. It signifies an elevated region, cold, windy, barren and uninhabitable.

Guainia and Meta, which join those of the Rio Negro, Amazon and Orinoco, taking in a larger sense the conformation of the continent in its central part. The basin of the Caqueta is surrounded from the southern part, by the branch of the cordillera which descends from the eastern, from the origin of San Miguel until it disappears in the Amazon, between the rivers Napo of the Ecuador and Putumayo of New Granada; by the east the cordillera of Aracuara, and by the north that of Tunahi, which rises in the Andes, and divides the basin of Guainia or Rio Negro. This basin bears these two names, because the Rio Negro is called the Guainia until its confluence with the natural course of the Casiquiare, and is separated from the basin of the Meta by the mountains of the river Guavire, in which the river Inirida has its source, and on the east by the mountains which give rise to the river Atabapo, which flows through only Granadan territory. The basin of the Meta, which is the largest, follows the preceding, and may be considered as a part of the great basin of the Orinoco; and I have given it the name of Meta, because that is the largest river in that part of the country, although the Guaviare forms the great plains of San Martin.

In the south, there is not, properly speaking, any basin except that of the Patia, formed by the eastern and western cordilleras, and the branches of the Cuchilla and Berruecos in the north and south. The basin of the Cauca forms two beauful vallies, from Popayan to Cartago, and is circumscribed by the central and western cordilleras, both which unite, as we have said, near the fifth degree of north latitude. This agglomeration of mountains possesses very peculiar forms, as it has neither table-lands like those of Tuquerres, Bogotá or Tunja, nor vallies by which the course of cordilleras may be determined. The extent of the territory which we have described is rather more than two degrees of longitude and three of latitude; which, with the chasms and elevations of

the land, give about 18,200 square miles, or at least 18,000, in the part comprehending the Provinces of Cordoba, Medellin, and Antioquia, which forms the mountainous basin of the Cauca, and in whose heights rise the rivers Samana or Miel, and Nare, tributaries of the Magdalena; the Nechi, and San Jorge, (or St. George,) tributaries of the Cauca; and the Guacuba, a tributary of the Atrato. On the western part is formed the mountainous basin of the Chocó, cut by the San Juan, Baudo and San Miguel, flowing to the Pacific, and the Atrato running into the Atlantic, mingling its waters in the Gulf of Darien, with those of the Napipi and Guacuba. This basin is completely covered with forests of the thickest vegetation, under which are rich mines of gold and platina, of which we shall speak in another part of this memoir.

Returning to the central division of the country, we will now speak of the basin of the Magdalena, formed by the great eastern and central cordilleras, where they separate in the paramo of Las Papas, until they reach the plains of the Atlantic, in the littoral provinces; and this basin comprehends the beautiful vallies of Neiva and Mariquita, and that of the lower Magdalena, all which are bathed by the river of that name and its branches. The rest of the territory between the eastern basin, and that we have described, is a continuation of elevated table-lands in the cordillera, until we reach the borders of Venezuela. The basin of Guanenta, formed by the rivers Suarez and Sogamoso, forms the territory northwest of Bogotá, between the great eastern cordillera, and the branch which springs from it and runs parallel to the Magdalena, and afterwards turns east, to mingle with the mountain of Perija, forming two small basins in the provinces of Ocaña and Upar.

The remainder of the territory of the republic consists of the plains of the Atlantic, between Goajira and the Gulf of Darien; the savannahs of Chiriquí, in the western provinces

of the Isthmus and the shores of the Pacific and Atlantic, where several branches of the western cordillera sink in the waters of the two oceans.

Such is the physical aspect, considered as basins and table-lands, formed by the cordilleras and large rivers, whose number and size we will now mention.

PRINCIPAL RIVERS

The principal rivers of the republic are first, the Caquetá, rising in the eastern cordillera, and flowing through the whole territory until its confluence with the Amazon. Its largest branches are the Pescado, the Caguan, and the Apoponi. The Guainia, which is the upper Rio Negro, and by the caño, or natural channel of Casiquiare, allows internal navigation between the Orinoco and the Amazon, has many branches in the territory of New Granada, but none of importance. The Putumayo, the most southern, pours its waters into the Amazon, where it is called the Solimoes, has for its principal affluent the Sotuya. Next, north of the Guainia, is the beautiful Guaviare, formed of it and the Guayavero; and its chief tributaries are the Inirida, which descends from the mountains of Tunahi, and the Atabapo, from the heights between the Orinoco and the Rio Negro, as an independent group of the chains of the cordilleras which we have described. Next this river is the Meta, which joins the Orinoco, and receives various affluents from the great cordillera, of which we will mention only the Chire, Casanare and Lipa. The river Vichada is the largest tributary of the Orinoco, not mixing its waters with the Meta or Guaviare.

The Magdalena is the stream which has the longest course in the republic; and it has for its tributaries, from the eastern cordillera, the Suaza, Rio Neiva, Cabrera, Prado, Fuzaga-

suga, Bogotá, Carare, Opon, Sogamoso, Surata and Cesar; and, from the central cordillera, the Plata, the Páez, Saldaña, Cuello, Guali, Samaná, or Miel, and Nare, which also is called Rio Negro, with others of little importance. The river Cauca receives the waters of the Piendamó, Ovejas, Palo, Amaíme, and Vieja, from the central cordillera, and of many small rivers from the western, among which we will name only the Jamundi. The Cauca, in flowing through Antioquia, receives many streams, of which we consider only the following worthy of notice:—The Porce, Nechi and San Jorge. In the western part we have already named the principal, the Guacubá and Napipí, which are tributaries of the Atrato and the Sucio, the Bebará, which is in its upper part, and the Quito. The Baudó has no branches, but the San Juan receives the Calima and the Noanamo, with many others of small size. In the Isthmus of Darien and Panama on the south, the longest streams are the San Miguel and Bayano, in the territory of Darien and Panama. The other streams are of small importance on both sides. We will mention only Chagres, on the Atlantic, which has hitherto been of great importance as the line of inter-oceanic communication, but the railroad has begun to deprive it of its consequence. The Zinú is the only river remaining to claim attention on the shores of the Atlantic between the Darien and the Magdalena.

The rivers which water the territory between the bay of Buenaventura and the gulf of Ancon, in the Pacific, deserve to be mentioned, because there is hardly in the world such a series of streams, which, for an extent of forty-five leagues, of 20 to a degree, alternately unite their waters in the deltas, so as to make a littoral canal, which allows an interior navigation along the whole coast from Buenaventura to Ancon, without the necessity of entering the Pacific more than twice. The Dagua empties into the bay of Buenaventura, as well as

the Anchicaya, which unites by an arm with the Raposo, flowing into the Pacific; and passing in that part the gulf of Tortugas, of small extent, we enter the waters of the Cajambre, whose delta is passed to that of Yurmangui. That river is confounded with the Naya, and that with the Micay, which communicates with the Saija, and that with the Timbiqui, which joins the mouths of the Napi and Guapi; and this last, with that of the Iscuandé, which, by two channels, is connected with that of the Tapage, which, by the Sanquiánga, facilitates navigation with the deep Patia. From this we pass to the gulf of Tumaco, to enter the northern mouth of the river Mira, and by its delta pass to the gulf of Ancon de Sardinas, south of Cape Manglares, where terminates the territory of New Granada.

The mountains in which these rivers rise are as auriferous as those of Choco; and the largest of them is the Patia, which, as we have before said, breaks the western cordillera, and has for its branches the Telembi and Maguí, in the province of Barbacoas; Guaítara, Juanambú and Mayo, which fall from the table-lands of Túquerres and Pasto; and the Guachicono, and Quilcacé, which are its principal fountains in the eastern cordillera. Of those of the western cordillera the Sajandí hardly deserves notice.

Such are the names and descriptions of the principal rivers of New Granada.

PORTS, BAYS AND LAKES.

I will now proceed to give a notice of the Ports, Bays and Lakes of New Granada, following the same order which was adopted in speaking of the boundaries of the Republic,

on the coasts and frontiers. From the bay of Calabozo, in Goajira, situated in the Gulf of Maracaibo, until passing the peninsula, we find no regular ports, although in Cojoro and other points of the coast, they might be established. Bahia Honda is the first port on the northeastern coast of New Granada; and there the conquerors thought of founding a city by the name of St. Mary: but the want of potable water made them abandon their intention, because it would have been necessary to construct cisterns. That bay is a fine one, protected from the strong winds from the east and north, and situated in N. lat. 12° 20′ and W. long. 71° 44′. Next this bay is that of Portete, east of Cape la Vela, in lat. 12° 10′ and long. 72°. From that bay to Santa Marta there is no other favored by nature, only several roads, among which are Rio Hacha and Dibulla. In the former of the two places mentioned is the port of the province of that name, the city of Rio Hacha, one of those which have the greatest export trade in New Granada, notwithstanding the want of moles and the difficulties in loading and unloading, caused by the waves. Its geographical position is in lat. 11° 35′ and long. 73° 18′. The port of Dibulla is better than that of Rio Hacha, and is in lat. 11° 20′, and whose situation I cannot give confidently, and 73° 30′ W. long., following the coast towards the west Santa Marta is a beautiful port, in a deep and well sheltered bay, in which magnificent wharves may be built for the embarkation and debarkation of produce and merchandise. The coast, at that point, changes its direction, running to the east for a distance of twenty nautical miles, to the shores of Cienaga, where is the mouth of the lake of Santa Marta, the largest in New Granada, as its greatest extent from south to north is 25 miles, and from east to west 11, and is connected by deep channels with lake Pajaral, which contains about seven square miles, and that of Cuatro Bocas, two square miles. This beautiful lake is formed by the

waters of the Magdalena mingled with those of the Atlantic, and may be considered as within the delta of the Magdalena, as the channels of San Antonio, Renegado, Remolino and Clarin, are other arms of that river, which empty into that lake, commonly called Cienega. The waters which fall from the snowy region of Santa Marta, come from the east to the lake; and from the mountains which form the chain of the Upar, a ramification of the snowy region, flow other rivers of small importance. This lake is of little depth; and, with care, might be navigated by light steamboats, which are adapted to the navigation of the Magdalena. Beyond the centre of the delta of the Magdalena is the bay of Sabanilla, situated in lat. 10° 56′ and long. 75° 0′ 30″, according to King, and at one of the mouths of the river. This port will be most frequented in the course of time, for the interior navigation of the Magdalena, as we shall see when we come to the description of the province of Sabanilla. Next follows the magnificent port of Carthagena, in N. lat. 10° 25′ and W. long. 75° 29′ 45″, and whose beautiful bay is the best on the coasts watered by the Caribbean Sea in New Granada, and one of the best in all the Atlantic. All the western coast of the province of Carthagena has roads and landing places until we reach the gulf of Darien: but the most important are the ports of Zapote, in the bay of Zispata, and the gulf of Morrosquillo, on the coast of Tolu, the former of which is a port of foreign trade. When we come to speak of the gulf of Darien, we shall say that it contains the ports of Turbo, Guacuba and Candelaria, and, for small vessels and steamers, those of Quibdó, Napipi and Murindó being called to anticipate for them a commercial movement with the interior of the western provinces of the continent, and between the two oceans, rivalling the other interoceanic routes of the Isthmus of Panama and America.

The coast of the Isthmus, from where the delta of the Atra-

to terminates, to the port of Portobelo, has good roads and harbors all along the shore, which is inhabited only by the savages of Darien, the most important of which is Mandinga. The harbor of Portobelo is excellent, and was the most frequented of all in the two first centuries after the conquest: but in consequence of the difficulty of the land passage to Panama, it has lost its importance. Chagres ruined it, which is only a bad roadstead, and which will soon cease to be spoken of; for the Isthmus railroad, having fixed its terminus in the bay of Limones, called by some Navy Bay, that will be the principal port of the Isthmus on the Atlantic, in which it has been ordered that the new city rising there shall bear the name of Aspinwall, as a testimony of gratitude to the worthy merchant of New York, who led the enterprise commenced in 1849. The port of Aspinwall will become an important city in the commercial world.

In the western part of the coast of New Granada, there is no other port of any importance but the Bocas del Toro, in the bay of Almirante, commonly called the lake of Chiriqui.

Here conclude the list and description of the harbors and bays of the Atlantic coast; and we will now pass to those of the Pacific, beginning at the most western part of the coast of the Isthmus.

Alange and Montijo have been made ports of foreign commerce by the national government, in the provinces of Chiriqui and Veraguas. They are situated in the Archipelago of Montijo or Veraguas. As well on the coast of the main land as on the islands, there is good anchorage for ships, and the best of them is, perhaps, that of San Juan, in the island of Coiba. The bay of Panama, in the gulf of the Isthmus north of the Archipelago of Pearls, is of great extent and has also good anchorage, especially at the island of Taboga; but it would be very expensive to construct

wharves, necessary on account of the shallowness of the water, which extends to a distance of a mile from the city. It will be made a good harbor as soon as the completion of the railroad shall give Panama all its importance. On the coast of Chocó are the bay of Cupica and the ports of San Francisco Solano, Palmar, and Charambirá. The first of these and the two last, may be connected with the Napipi and the Atrato, to establish interoceanic routes. On none of these is there a town, and the port of Charambirá is visited only by small coasting vessels. When the bar of Charambirá is passed, its bay is a very fine one, at the mouths of the San Juan. This bay is succeeded by that of Malaga, which is protected by the island of Palmas, and might easily be brought into connection with Charambirá and Buenaventura. That magnificent bay is the best on the Pacific coast of Columbia, and lies in 3° 38′ N. lat. and 77° 10′ W. long. I have in another place described the coast and its natural canals, formed by the deltas of the rivers which bathe the shores of the Pacific. There are among them several harbors more or less deep, the principal of which are the Guapí, in 2° 35′ N. lat. and Izcuandé, in 2° 32′, the main entrance to which is by the river Tapaje. Farther south are the bay of Pasa-caballos, near the mouth of Satinga in lat. 2° 30′ north, and the port of Tumaco, in 1° 38′ north. In the northeast part of the island of Gorgona is an excellent harbor called Trinidad.

We have now to speak only of the Lakes, which are found in the interior of the Republic, to conclude this chapter on physical geography.

In the province of Upar are the lakes of Zapatosa and Adentro, formed by the waters of the river Cesar. The former is about a mile square; and the latter rather more. They are connected by an arm, or by the course of the stream named, and empty into the Magdalena in 9° N. lat. at the

bifurcation of that river at the mouth of the Loba, by which it connects itself with the Cauca, that still runs in that latitude parallel with the Magdalena. Between the Cauca and the Nechi are other lakes, the largest of which is that of Caceres in N. lat. 7° 45′ and W. lon. 75° 30′. In the interior are none worthy of notice except that of Tota, in the province of Tunja, which contains about six square miles, and those of Fuquene and Guatavita, in the provinces of Bogotá and Zipaquirá, the former eight square miles and the latter less than one, but celebrated as the place into which the Indians threw their treasures at the time of the conquest.

On the high table-lands of the Andes there are small lakes which are generally the sources of different rivers; and the most remarkable of them are the Paletara, eastward of the snowy region of the Coconucos, and those of Las Papas, which give rise to the rivers Cauca and Magdalena, and also to the Mocoa, the principal head-stream of the Caquetá, as well as to the Guachicono, which is that of the Patia. These lakes are several, surrounded by high crests, not rising to the region of perpetual snow, and called Paramo de las Papas.

On the coast of the Pacific is the lake of Chimbusa, which is on the delta of the Patia, and might serve to form a channel which would facilitate navigation from the gulf of Tumaco to the interior of the Patia, to reach the rich neighborhood of Barbacoas. The Cocha is in the cordillera of Pasto, which is considered as the head-stream of the Putumayo ; also that of Guayabeno, along which runs the boundary between New Granada and Ecuador, between the Putumayo and the Napo. These lakes, according to the reports of several travelers and officers of the army, may contain about nine square miles each. The other lakes known along the banks of the Guaviare and other rivers of the eastern basins, are not sufficiently known to allow us to speak of their dimensions and positions.

I ought to complete this description of the physical geography, with a geological notice; but it would require profound study and a scientific examination to do it justice; and I must limit myself to those general ideas which I have been able to form of the country, in the different journeys I have made, and a few excursions to the cordilleras.

Geographers and geologists know, that the great chain of the Andes must have been formed simultaneously by the cooling of the earth in that part of the world; and in all the lofty summits of the paramos and volcanos the primitive plutonic rocks are discovered, the gneiss prevailing, which shows the masses have been raised from the interior of the earth by means of the action of volcanos. Some geologists have thought, that the great movement of the earth, in forming the series of the cordilleras which run along the western coasts of the two Americas on the one part, and prolong themselves, on the other, to the Burman empire, following the direction of a great semicircle of the earth, produced the most marked characteristics, which are the results of the most recent catastrophes suffered by our planet. My mind ought to be satisfied with this theory, because wise and profound men have declared in its favor; but, on considering the geological formation of New Granada, I find that the great chain of cordilleras, which extends from Patagonia to California, does not pass through New Granada, indicating that there is the centre, whence part off the sub-Andine branches and mountains. Considering the groups of mountains which rise north of this great continent, it appears that the movement of the earth displayed itself by raising the first chain of mountains, whose summits are all the Antilles, and whose bases are a submarine cordillera, which serves as the limit of the Caribbean sea, and shows plainly that there was the beginning of the movement of the great cordillera of the Andes, which in my opinion is the eastern chain.

The snowy region of Santa Marta then comes as another culminating point of the great rising of the earth, and my theory is completed by the western rising, which gives origin to the mountains of the central and western chains of Chocó.

Assuming this movement of the earth from north to south, it is easy to see that the igneous currents, combined with the cooling of the land, might give origin to that continent, and that it must end in Patagonia in a sharp angle, in consequence of the diminution of the volcanic or gaseous forces which produced the phenomenon.

The primitive parts of New Granada being formed in this manner, and simultaneously with the mountains of Parima, and those which in the north gave origin to America, it only remains to us to examine the strata which cover this shell of the earth, and the advantages which may be derived from them by man.

Gneiss, granite, porphyry and basalt are the primitive rocks of the plutonic formation, which are discovered on our high elevations, and from which the movement of waters has not been able to separate other materials, which geologists call transition.

From Tuquerres by Aponte, Las Papas, to Bogota, and at many points in the Central Cordillera, as at Guanacas, Las Moras and Quindío, are seen rocks of gneiss, micaceous schistus, and specimens of a talcose slate, such as I have observed in the high mountains of Antioquia, near Marinilla. In the cordilleras of Pasto and Popayan, as in that of Neiva, above Villa Vieja and on the river Cabrera, are found masses of porphyry, trappe and basalt, on the declivities of the mountains, which are active volcanoes; and those rocks are so disposed as to show that they proceeded from the bottom of the volcano and were thrown out during an eruption of which there are no records, and no other indications than the marks left by the catastrophe, in the superposition of various rocks

whose bases are basaltíc trappes in Puracé, Pasto, Sotará and Huila. I have hardly been able to discover, on a few high mountains, fossil shells, which prove to be of calcareous earth, and perhaps of those called Devonian.

The high table lands, as those of Tuquerres, Bogota, Tunja and Pamplona, abound in calcareous and carboniferous soils, sandstone being very common. On those great table-lands is found rock salt; and above all on that of Bogota, in a very extensive region, from Zipaquirá to Cumarál, on the side of the eastern cordillera, which sends its waters to the Meta; and it may be said, that in an E. S. East direction, going from Zipaquirá, passing by Nemocon, Boitá, Salitre and Cáqueza, and thence to Cumaral, in San Martin. Those lands must have been submarine, before they were raised to the elevation of 1360 toises above the level of the sea; and on their side are carboniferous lands, which clearly prove the antiquity of the Columbian hemisphere.

The valleys of New Granada are covered with alluvions, ancient and modern; and we at the same time meet with tertiary formations at their bases, and in the beds of their rivers, which sometimes are seen to have divided the mountains until they have broken through even the granitic rocks, to bear their waters to the ocean.

To proceed further, and to give geological views of the country which we describe, would expose us to the charge of changing our plan, and of renouncing the task which we have undertaken. Materials so greatly abound, that this alone might claim the attention of the learned, to discover the secrets of nature, and the manner in which these continents were formed, which, after so many thousands of years, have become the habitation of man, whose investigating spirit is aroused, and every day discovers new secrets in the inert matter and the organic objects which surround him.

Part Second.

CLIMATE. VEGETATION. ANIMALS. MINERALS. THE HUMAN RACE.

The climate of New Granada is constant in respective places, in consequence of the intertropical geographical position, geological formation and the actual state of vegetation. There are no seasons like those of the boreal and austral zones: but those commonly called summer and winter may be denominated the Dry season and the Rainy. The configuration of the land and its geological formations, combined with the influence of the heavenly bodies, and the vegetation of the mountains, valleys and coasts, determine these seasons in a very distinct manner. In the territories comprehended by the table-lands and valleys which occur between the Eastern and Western Cordilleras, from the southern to the northern boundaries, and in the central part as far as the provinces of Antioquia, Medellín and Cordova, there are two dry seasons and two rainy ones, the dry commencing at the approximation of the solstices, and the rainy at that of the equinoxes. Each continues about ninety days. In the dry season the climate is more healthful; and that is the principal time when crops are harvested. Under the letter A, at the close of this Memoir, will be found an essay which I wrote in 1848, and which will complete the notices that I am able to give on the climate and certain atmospheric phenomena.

The eastern basins and the low lands of the provinces of the Atlantic only have one dry and one rainy season, each of

six months: the rainy commonly at the June solstice and the dry at that of December. In the Isthmus of Panama are the same dry and rainy seasons: but we may be assured, that the dry season does not begin until twenty days after the December solstice, and ends twenty days before that of July, whence the rainy season is longer than the dry. On all the coast of the Pacific from Cupica to the southern boundary of the Republic, as also in the interior of Chocó and Darien, from the south to the north, to Porto Bello, there is no dry season, and it rains all the year: which presents a contrast with the coasts of Peru, where it never rains. This seems to indicate, that the causes which have an influence in Peru to remove the vapors from the southward, cause in the north, in the territory of which we are treating, the constant rainy season. By considering the shape of the earth at the extremity of Columbia, above the Pacific, it will be plainly seen, that the clouds must be suspended in their course over the mountains of that country, and be converted into rain; and that those mountains impede the north winds from passing easily to the Pacific, and on the contrary increase the watery element of the atmosphere, to produce those constant rains, always accompanied with discharges of electricity.

It is also worthy of notice in the seasons spoken of, that, in the countries in which the two rainy and the two dry seasons exist, they are not uniform, except at a certain elevation.

It may be considered as fixed, that, from the elevation of 260 metres above the level of the sea to 3100, the seasons are divided as I have said: but, from 3100 metres to the highest points known, it is quite the contrary. When the dry season prevails in those places, the great elevations are covered with clouds and there are violent storms, accompanied with hail; it is the period when there are floods in the rivers which flow from the cordilleras; the level of the perpetual snows is raised on the snowy cordilleras: but in the time of the rainy

season, the cordilleras are dry, there are no storms, and the cold is more moderate.

The greatest heat in New Granada, medium rate, is 30° 2 centrigrade, or 86° 6 Fahrenheit; and in inhabited parts of the cordillera 7° centigrade, or 44° 6 Fahr.

A series of levels which I made, in the course of many years of observations, by means of barometrical pressures, have enabled me to form a table, which accompanies this Memoir, under the letter B, to which I have added different calculations by celebrated men, that they may be compared. There are certain remarkable differences, which obliged me to repeat my observations; but, always finding the same results, I have not reformed my works by those, although so much respect is due to learned men so distinguished as Humboldt, Caldas, and Bouguer. They themselves do not agree with one another.

The same may also be said of the observations which have served to fix certain latitudes and longitudes, which the reader will find in the tables. In this class of labors I have generally conformed with the notes which I possess, of certain observations made by the celebrated Caldas, my countryman, whose works were taken to Spain by General Enrile, after that learned man had been shot by the order of General Morillo, the re-conqueror of New Granada; and those precious manuscripts, doubtless now remain, in six large boxes, in the archives of Madrid.

This brief episode may be allowed in speaking of the geography of my country, for the knowledge of which that unfortunate philosopher performed important labors; who, before any other person, discovered the mode of measuring altitudes by means of boiling water, and whose first essays give a result similar to those most recently obtained by Europeans.

The hottest place which I have found, in my travels, is

Ocaña; where I have seen the thermometer at different times, in the shade and in the open air, on the bank of the Magdalena, at 40° centigrade, or 104° Fahrenheit.

VEGETATION.

The vegetation of New Granada varies with the degrees of heat in the climate, and the geological conformation of the mountains. According to the observations which I have made, and those of the celebrated Caldas, it may be decided that the limits of trees extend to 3,365 metres, or 11,040 English-feet; that of vegetation to 4,328.5 metres, or 14,217 feet; and barren sands from this point to the lowest of perpetual snow, 4,741.48 metres, or 15,557 feet.

In describing the different provinces, I shall give a general view of the vegetation of New Granada, regretting that I have not now the botanical notes sent me by the distinguished botanist, Don Juan Maria Céspedes, that I might arrange and publish them: but if I should have time, I will hereafter perform that labor, which will serve as a basis for those which may be undertaken by such Granadan young men as are devoted to that important science.

Magnificent palm trees are found in New Granada, from the shores of the ocean to the elevation of 2,600 metres, or 8,531 feet above the level of the sea. Cinchonas of different kinds exist in all parts of the country; but that most highly valued for quinine, cinchonine and quinidine grows between 2,600 and 3,000 metres, or between 8,530 and 9,543 feet above the level of the sea. My uncle and teacher, Dr. Manuel Maria de Arboleda, classified the Quinas of New Granada, in agreement with the celebrated botanist Mutis, and Colonel Caldas, in the following manner:

TABLE

of the names and properties of the Quinas of Commerce.

QUINA.

Orange-colored. Primitive.	Red. Secondary.	Yellow. Substituted.	White. Foreign.

IN BOTANY.

CINCHONA.

1a. Lancifolia. Oficinalis.	2a. Oblongifolia.	3a. Cordifolia.	4a. Ovalifolia.

IN MEDICINE.

BITTER.

Aromatic. Febrifuge. Balsamic. Antidote. Nervous.	Austere. Astrigent. Antiseptic. Policrest. Muscular.	Pure. Acivarado. Cathartic. Bitter. Humoral.	Severe. Soapy. Rhyptic. Prophylactic. Visceral.

COMMON PROPERTIES

Febrifuge.
Anti-putrid.
Tonic.
Strengthening.
Anti-emetic.
Tanning.

The Mosses are of various colors, and cover not only the trunks of the trees, but also the rocks, and mingle with the grasses. The country is extremely rich in this class of plants, and to it belongs the beautiful Bambusa, commonly called

Guadua. The Encinas are handsome and sightly; and by the side of the Cedrela, make an admirable contrast. The Lichens alternate with phanagamous plants, and grow almost up to the region of perpetual snow. The Caucho, which yields the gum-elastic, is abundant, and of three species. That which grows between 1° and 3° of north latitude is the best, and may be compared with that of Pará. In the Andes are seen the strawberry, or fragaria vesca of the Alps, willows, bigonias, cypresses and encinas, which resemble the northern vegetation; while on their acclivities grow the intertropical fruits, as bananas, sugar-cane and zapote; odoriferous gums and medicinal resins are abundant; and of the balsam commonly called Peruvian, we have the species Miroxylum and Mutis, which was classed by Mutis as Peruiferum, the Pubescens, called Tache; and that of Tolú, Miroxylum Toluiferum. Another variety called by Dr. Arboleda, Popayan or Popayaniferum, differs from all the others. There are magnificent trees for building-timber and cabinet-work, which cover the soil of New Granada. There are also trees, from a single trunk of which canoes are made, in one piece, large enough to contain 8000 kilogrammes (that is 17,504½ pounds) of sugar or honey.

New Granada has no sandy wastes nor barren cordilleras. It is entirely covered with vegetation; and we only find in the provinces of Pamplona, the paramo of Betas and the mines of La Baja, where the vegetation is very poor, in consequence of the geological formation being destitute of vegetable earth; and a portion of the Valley of Neiva, between Villeta and the river Cabrera, where the land is sandy, and covered with the debris of porphyry, which appear to have been brought down from the cordillera by water. The eastern basins are as rich in vegetation as Brazil and Guyana, with which countries they are confounded.

MINERALS.

New Granada is rich in minerals. It contains mines of silver, gold, platina, copper, lead, iron, mercury and antimony, among other metals; of lime, potash, soda, (among which are rich mines of rock-salt,) magnesia, and alumine, among the unmetallic alkalies; of silex, feldspat, silicated minerals with a base of glucine, (of which are the valuable emerald mines,) among the silicious and silicated; of native sulphur, fossil coal, bitumen, asphaltum and fossil resin, among the unmetallic combustibles.

There are other minerals which I do not particularly mention, although some of them deserve notice, as they exist in such small quantities, that it seems unnecessary to name them in this work. In the description of the respective portions of the country in the third part of this memoir, I shall give such notices as may be interesting to the commerce and prosperity of New Granada, while treating of the political divisions of the Republic.

If the cordilleras and plains on the boundary of Brazil were well examined, it is not to be doubted that discoveries would be made of diamonds, and some other of the productions of that country, as the gold and other mineral substances are analogous; and in the animal and vegetable kingdoms are most of the species and genera there known, so that a treatise on the natural history of one country may be considered as belonging to the other. New Granada has, however, advantages over Brazil, in the variety of its climates, caused by the lofty mountains which cross it, and in its position on two oceans, the Atlantic and Pacific, upon which lie the Isthmuses of Panama, Darien and Chocó.

ANIMALS.

The animals belonging to New Granada are known in natural history. I will give a notice of those classes, families, and orders with which I am acquainted, in order to afford a general view; and, as the vulgar names give no idea of them, I shall present the scientific classification which they have received from naturalists, in the following table. It is not complete, as there are many animals still unknown, especially among the fishes, reptiles, mollusca and insects, in which the country is very rich, as well as in vegetation. Among Mammifera, I believe, we shall find no new order, although the genera and species are very far from being perfectly classified.

			Vulgar Names.	
1st CLASS. MAMMIFERA.	MONODELPHOS		Araguato ó Capuchino.	*Simia Ursina.*
	QUADRUMANA.		Mono miedoso.	*Simia Belzebuth.*
			Mono de Andaqui.	*Simia Lagothrix.*
			Mono Cari-pelado.	*Simia Chiropotes.*
			Machin.	*Simia Albifrons.*
			Mono colorado.	*Simia Variegata.*
			Mono carita blanca.	*Cebus Chiropus.*
			Mono Dañino.	*Genero Sajous.*
			Mico, Macaco.	*Cebus Robustus.*
			Titi verde de Andaqui.	*Simia Sciurea.*
			Titi amarillo.	*Callitrix Antomophagus.*
			Titi de Cartagena.	*Simia Oedipus.*
			Mono indio.	*Simia Melanocephola.*
			Mono mezclilla.	*Callitrix Incanescens.*
			Mono chico.	*Cebus Cinerascens.*
			Mono del Caquetá.	*Simia Lugens.*
			Mono leoncito.	*Midas Leoninus.*
	CARNIVORA.		Tigre, Jaguar.	*Felis Onza.*
			Tigre negro.	*Felis Nigra.*
			Pantera.	¿ *Felis Pardus ?*
			Tigre encaramado.*	¿ *Felis Leopardus ?*
			Leon, Puma.	*Felis Concolor.*
			Leon negro.	*Felis Discolor.*
			Gato Montes.	*Felis Pardalis.*
			Tigrillo.	*Felis Tigrina.*
			Nutria Pescadora.	*Lutra Brasiliensis.*
			Nutria del Magdalena.	*Lutra Insuloris.*
			Nutria del sur.	*Lutra Peruviensis.*
			Oso negro.†	¿ *Ursus Arctos ?*
			Oso frontino.	*Ursus Ornatus.*
			Perro Gozque.	*Canis Americanus*
			Perro Cazador.	*Canis Vertagus.*
			Lobo.	*Canis Mexicanus*
			Zorro colorado.	*Genero Canis.*
			Zorro negro.	*Genero Canis.*
			Cuati.	*Nasua Suborsus.*
			Comadreja.	*Mustela Cigogniari.*
			Huron.	*Mustela Huro.*
			Mapurito.	*Mephitis Americana.*
			Zorrillo.	A new genus, between *Mustela* and *Mus.*

* They have not been well determined. They are found in the east—Neiva and Mariquita.

† Smaller than the Oso Frontino, and inhabits low places.

CLASS I. MAMMIFERA.	INSECTIVORA.	Erizo.	*Genus Insectivorum.*
	CHEIROPTERA.	Murcielagos, varios.	*Vampirios, Molosse.*
			Noctilion, Nyctinonse, vespertilion.
	MARSUPIA.	Runcho, Chucha.	*Didelphis Marsupialis.*
		Rata de Monte.	*Didelphis.*
		Chucha de Agua.	*Didelphis Chironectes.*
	RODENTIA.	Ardita.	*Siurus Aestuans.*
		Chucurita.	*Maeroxus Variabilis.*
		Ratas, Ratones y Ratonsitos.	*Genero Mus,* more than 30 varieties.
		Nutria Anfibia.	*Genero Myopotamos.*
		Puerco Espin.	*Coendus.*
		Conejo.	*Lepus Brasiliensis.*
		Liebre.	*Lepus Capensis.*
		Lanchas.	*Hydroecherus Casibura.*
		Cui ó Curi.	*Anoema.*
		Guatines.	*Dasyprocta Acuschy*
		Guagua.	*Coelogenus Subniger.*
		Guagua, Conejo.	*Coelogenus Fulvus.*
	EDENTATA.	Perico ligero.	*Acheus Ai.*
		Armadillo.	*Dasypus Apar Colombianus*
		Oso Hormiguero.	*Myrmecophaga Jubata.*
		Oso Melero, ó colmenero	*Myrmecophaga Didactyla.*
	PACHIDERMATA.	Sahino.	*Dicotyles Labiatus.*
		Tatabro.	*Dicotyles Torquatus.*
		Danta.	*Tapirus Americanus.*
		Danta del Paramo.	*Tapirus Roulinii Panchique*
	RUMINANTIA.	Ciervo.	*Cervus Peronii.*
		Venado blanco.	*Cervus Mexicanus.*
		Soche.	*Cervus Colombianus.*
		Soche de Paramo.	A variety of the *Anticuanis* of Orvigni.
		Venado cachi-pelado.	*Cervus Nemoralis.*
		Venado cachienvainado	*Cervus Capreolus.*
	CETACEA.	Ballenas.	*Blaenoptera Gibbar.*
		Manati.	*Manatus Americanus.*
		Toninas.	*Delphinus Tonina.*
		Peje Espada.	*Monodon Monoceros.*
AVES ACCIPITORES. Order 1st.	DIURNÆ.	Condor.	*Vultur Gryphus.*
		Buitre Condor pardo.	Variety of the *Gryphus.*
		Aguila Real.	*Vultur Barbasus.*
		Aguila blanca.	*Vultur Albus.*
		Rei de los Gallinazos.	*Vultur Papa.*
		Guala.	*Vultur Aura.*
		Gallinazo.	*Vultur Jota.*
		Aguila.	*Falco Americanus.*
		Aguilucho.	*Falco Brasiliensis.*
		Gavilan.	*Falco Communis.*
		Halcon.	*Falco Aeruginosus.*
		Halconcito.	*Falco Gentilis.*
	NOCTURNÆ.	Gallina Antigua.	*Strix Cayanensis.*
		Lechuza.	*Strix Mexicana.*
		Mochuelo.	*Strix Clamator.*
		Lechuza blanca.	*Strix Nevia.*
AVES PASSERES. Order 2d.	Family 1st. DENTIROSTRES.	Dorotea.	*Genero Muticicapa.*
		Mirla.	*Turdus.*
		Pico de Plata.	*G. Motacilla.*
		Azomita, Azulejo, Cerraja.	*Insectivora* not well determined.
		Charo Arrendajo.	*Turdus.*
		Primavera.	*Tanagra Septicolor.*
		Verdacho de Panama.	*Tanagra.*
		Cardenal, Titiribi	*Tanagra Cardinal.*
		Azomita.	*Musicapa.*
		Cotinga.	*Cotinga Pompadour.*
		Cucarachero.	*Regulus.*
		Campanero.	*Ampelis Caranculta.*
		Trompetero.	*Coracina Scutata.*
		Gallito de Fuzagasuga.	*Pipra Rupicala.*
	Family 2d. FISSIROSTRES.	Golondrina Nocturna.	*Hirundo Nocturna.*
		Golondrina.	*Hirundo Flaiventer.*
		Golondrina de agua.	*Hirundo Fulva.*
		Tijereta.	Variety of *Hirundo Rufa*

Order 2d. AVES PASSERES.	Family 3d. CONIROSTRES.	Goriones.	*Fringilla.*
		Chicaos, Casiques.	*Cassicus.*
		Turpiales ó Trupiales, varias especies.	*Icterus Varius.*
			I. Chrysocephalus
			I. Flavescens.
			I. Dominicanis.
		Viudita.	*Viduus.*
		Canario.	*Fringilla Granatina.*
		Tordillo	*Oriolus Niger*
	One Family. SYNDACTYLÆ.	Tucucito.	*Merops Viridis.*
		Tornasol.	*Merops Nubicus.*
		Tornasilito.	*Merops Cyanopygius.*
	Family 4th. TENUIROSTRES.	Chupa flor.	*Trochilus.* There is a great variety of forms and lively colors.
		Esmeraldita.	
		Colibri.	
Order 3d. AVES SCANSORIÆ.	SCANSORES	Carpintero.	*Picus robustus.*
		Coli amarillo. Dios-te-de, dos dares.	*Ramphactus.*
		Chamon.	*Chrotophaga Mayor.*
		Judio.	*Chrotophaga rumindenta.*
		Maizero.	*Chrotophaga vagirostra.*
		Garrapatero.	*Chrotophaga Piririgua.*
		Guacamayo ó	
		Guacamaya, Verdes, Rosadas, Azules, Amarillas y de varios colores.	*Ara Glaucus.* *Ara Azuvert.*
		Papagayos.	*Psittacus Accipihinus.*
		Loros.	*Ps Domicella.*
		Pericos.	*Ps Menstruus.*
		Catarnicas.	*Ps. Melanopterus.*
		Periquitos.	*Ps. Passerinus.*
		De cada especie hai algunas variedades.	
Order 4th. GALLINACEÆ.	1st Division. Anterior toes united by a short membrane at the base.	Pauji.	*Ourax Alector.*
		Pauji de piedra.	*Ourax Pauxi.*
		Paba de Monte.	*Penelope Cristata.*
		Paba Gurri.	*Penelope Aburri.*
		Paba Gallina.	*Penelope Pipile.*
		Guacharaca.	*Ortalida Squamata.*
		Guacharaca de Montaña Pirú.	*Ortalida Goudotii.*
		Chumbipe, Pisco, Pabo.	*Meleagris Lin. Cynchramus*
		Chumbo-Guajolote Guanajo.	*Möhr. Gallo Pavo Briss.*
	2d. Division. Toes without an inter-digital membrane.	Torcazas.	*Colomba Montana.*
		Tortolas.	*Colomba Turtur.*
		Tortolitas.	*Colomba Risoria.*
		Abuelitas.	*Colomba Sinica.*
		Collarejas.	*Colomba Cyanocephala.*
		Codorniz.	*Colins.*
Order 5th. GRALLATORIÆ.	Family 2d. PRESSIROSTRES.	Pellares.	*Charadrius Nitidifrons.*
		Zarzetilla.	*Vanellus Cayanensis.*
		Grulla.	*Grus Americana.*
		Gallito.	*Psophia Crepitans.*
	Family 3d. CULTRIROSTRES.	Garzon azul.	*Cancroma Cancrophaga,*
		Garza blanca	*Ardea Alba.*
		Garza azul.	*Ardea Cerulea.*
		Garza morena.	*Ardea Agami.*
		Garza fina.	*Ardea Cyonocephala.*
		Garza baco.	*Ardea Stellaris.*
		Garzon.	*Mycteria Americana.*
		Garzon Gavan.	*Tantolus Suculator.*
		Pato Cuchara.	*Platalea Ajaja.*
		Tente Alcaravan.	*¿ Ardea Sexetacia ?*
		Cocli.	*¿ Scopus ?*
		Aruco.	*Palameda Cornuta.*
		Gallineta.	*Fulica Martinica.*
		Flamenco.	*Phoenicoptenus Ruber.*
	Family 4th. LONGIROSTRES. MACRODACTYLES.	Becasinas.	*Scolopax.*
		Pellarsitos.	*Recurbirostra.*
		Various other species not well determined,	
		Chorlito Alcaravan.	*Parra Tanaca.*

Order 6th. PALMIPEDES.	Family 1st. BRACHYPTERÆ.	Brachyptera.	*Podiceps Americanus.*
		Pato Cuervo.	*Carbo Graculus.*
		Cuervo.	*Carbo Pigmeus.*
	Family 3d. TOTIPALMES.	Pato Pescador.	*Plotus Melanogaster.*
		Alcatraz.	*Pelicanus Fuscus*
		Pajaro Bobo.	*Sula Fusca.*
	Family 2d. LONGIPENNES.	Gaviota.	*Proceuaria Puffinus.*
	Family 4th. LAMELLIROSTRES.	Pato Real.	*Anas.* Many sub-varieties.
		Pato Comun.	
		Pato Pintado.	
		Yguasas.	
		Zarzetas.	

BONY FISH.—Section 1.

The seas and rivers of New Granada abound in fish: the Pollack, Pardo, Lisa, Picua, Sabalo of the Atlantic, Lebranche, Ruffe, Patalo, Bonito, Porgo, Pardillo, Gold-fish, Arguja, Barbudo, Bocachico, Sardinata, Getudo, Guabina, Bagre, Sabalo of the South, Sabaleta, Doncella, Negro, Capitan, Flying-fish, Peje Sapo and Sardines, with the fish of the smallest size of all, the Titi or Chapisa, which measures only thirty millimetres, or little more than an inch.

CARTILAGINOUS FISH.—Section 2.

Among the fish which are enemies of man, we find some of the most remarkable, such as the Shark, Sawfish, Manta, and Tintorera, and the Rays, both of salt and fresh water.

Fishing is easy and productive; and in the time when shoals appear in the large rivers, the multitude of fish is so great, which go up their streams, that they communicate a disagreeable smell to the water and the air, in confined places where there is not sufficient ventilation.

REPTILES.

Family of Cheloniani.	To this family belong the Shell-tortoise, the Sea-turtle, the Galapagos, the Morrocoi, the Hicotea, the Terrapin, and the fresh-water Turtle.
Crocodile Family.	Of the Crocodile family there are two very well determined classes: the Caiman and the Baba. Some pretend to distinguish a third class.
Saurian Family.	To this family belong the Iguana, the Lizard and the Dragon.

SERPENT Family.

The Snakes and Serpents are found in temperate and warm regions. From the altitude of 1800 metres above the level of the sea, no venomous serpent is ever seen. The principal serpents are the Boa, the Traga, Venado, Berrugosa, Rattlesnake, Equis or Tara, Yaruma, Bejuco, Podridora, Coral, Cazadora, Guascauna, and Boba. Most of these are poisonous: but the Indians and Negroes are perfectly acquainted with the antidotes, and it is seldom that any person dies in consequence of their bite.

Family of BATRACHIANS.

There are different kinds of toads and frogs. There is a remarkable yellow frog, timid and inoffensive, from which the Indians of Chocó and Barbacoas obtain a most active poison, for their arrows and darts, from a humor which they perspire, when placed on hot embers. After subjecting the frogs to this species of torture, they set them at liberty to return to the woods, that they may serve them on another occasion.

In this department of the animal kingdom, little has been studied in the country; and I have no doubt that new species and genera will be discovered.

MOLLUSCA

The variety of Mollusca in New Granada is very great, and as yet very little known. The most remarkable obtained by fishing are those inhabiting the pearl-shell, which is abundant in both seas, but chiefly in the Gulf of Panama, the Archipelago of Montijo, and the coast of Buenaventura. The Calamar is the mollusca most esteemed for the table; and in the different species of oysters, are several small ones, which possess as high a flavor as those of Ostend.

INSECTS.

As in all inter-tropical countries, insects abound in New Granada. We cannot attempt, in this Memoir, to do more than notice a few of the best known. Among the MOLEDORES, in the Order *Coleoptera*, are the Cantharides, the Escarabajo, the Cocui of the woods, the Cocui of the sugar-cane, the Luciernaga or Firefly, and the San Juanito. In the Order *Orthoptera*, the Langosta or *Locusta*, which commits ravages in crops, the Grillo

and the Cucurachas. In the Order of *Nevroptera*, are several inoffensive species, as the Devil's Little Gentleman, Myrmelon Libelludoides, and Nemoptera Sinuata: but others, as the white ant, Termes Fatale and Termes Lucifugum, make great ravages in houses and stores. In the Order of *Hymenoptera*, are found different species of Bees: the Apis Mellifica, Apis Peronii and Apis Unicolor, which is the most common, and all make good honey: but the wax of none of them can be blanched, except that made by the eastern bee, which is the true honey-bee. We have also the *Avispus Clorion lobatum*, and the large bee *Bombas Dahlboni*. In the Order of the STERPSITERA there are few; and the most worthy of attention is that called Tabano bobo, which I believe to be the *Xenos Vesparum*. In the orders of DERMAPTERA and TRICHOPTERA few have been classified.

In the class of *Chupadores*, there is a great abundance, in all the climates. Of the Order LEPIDOPTERA, we have various species of the types *Papilio Evandres*, *P. Triopas*, *P. Belus*, *P. Paon*, *P. Torquatus*, and the Butterflies of Muso, *P. Sapphirus*, and *P. Spinelus*, whose brilliant color has procured it this name. In the Order of HEMIPTERA are two kinds of bedbugs——*Cimex lectularia*—but they do not live in situations higher than 5817 feet (1770 metres) above the level of the sea. To the same Order belongs the Cochineal (*Cocus cacti*) which produces the dye of that name. In the Order of DIPTERA are found the various Musquitoes which molest travellers on the rivers and coasts. In the Order of APTERA are various Fleas and Chigoes, (*Pulex*,) to which some naturalists, as Westwood, have given a distinct genus, calling them SARCOPHYLLA. According to my observations there are three kinds of Chigoes, (*Pulex Penetrans*). In the Order of APHANIPTERA are found the Louse, (*Pediculus capiti*,) and *P. Vestimenti*, which are common in all elevated places; and other species, belonging to the new genera of the *Epizoicos* and *Zoophagos*, as the Garrapato moth and Crab-louse (*Ricinus Hexapoda*).

MYRIAPODA.

In this class of Animals there are various kinds, vulgarly called "Milpies, or Cien-pies," (Thousand-feet or Hundred-feet). There are also the *Glomeris Marginata*, the *Tulus Lucifugus*, and the *Polydermus Mexicanus*, of the order of the *Chilogonata*, and the Venomous Centipede, *Scolopendra Morsitans*, of the CHRILOPODA.

CRUSTACEA.

There are several animals of this class. The most remarkable are the Crab, of the Order of DECAPODOS; *Lupa Pelagica*, of which are found three species; Lobsters and Langostines, *Homarus vulgaris*, a family of the *Astacii*, to which also belong the Shrimps (*Astacus Fluvialis*).

ARACHNIDES.

Of the Spiders the variety is great; the Scorpion (*Scorpius*,) the most terrible of which, for their bite, are the Alacran Negro, or Black Scorpion, (Scorpius Buthus); and the Grey, (S. Centrurus). There is a Spider which produces silk of good quality, and seems to me a species of the *Mygala Cœmentaria;* the Great Spider, (*Mygala Antipodracia;*) and the Spiders Braba, (*M. Avicularia*). Another very small one is known, called Coya, which is believed to be very venomous, and of which many tales are told, in my opinion quite fabulous, as, according to my examinations, I believe it to be a species of the *Sytodes Thoracica.*

WORMS.

This class of animals closely resembles those of other countries; and its geographical distribution and paleontology are the same.

Among the *Annelida* are found the Leech, (*Hirudo*,) which is smaller than the European, and, in case of medical application, from four to six must be applied to produce the effects of one of them. The *Syllis Maculatus*, the *Spirorbis Nautiloides*, the *Eumolpe Picta*, and various other classes, intestinal, terrestrial and aquatic.

ZOOPHYTES.

We have various classes of these animal-plants. The Eriso, (*Echinus Globiformis*,) which is edible and of agreeable flavor; the Sea-star, a variety of the *Comatula Mediterranea;* the Madre de Agua, (*Pelagia Noctiluca ;*) and various Corals, but not the *Corallina Rubra.*

EXOTIC ANIMALS.

I have said nothing of the Domestic or Naturalized Animals in the country, and I have, in this part, only attempted a description of what naturally belongs to it, in order to complete the physical geography. In the Third Part, in treating of political geography, with its statistical and commercial relations, I shall give such a sketch as the brief nature of this Memoir will permit, and my proposed plan and object require.

THE HUMAN RACE.

The race of men which inhabited New Granada before the fifteenth century, belongs to the American type. The nations on the Atlantic coasts, from Chiriquí on the coast of Veraguas to Goajira, were, without doubt, of the Carib race, which is very similar to the Brasilo-guaramensian, to which belong the nations in the east of New Granada, as far as the eastern cordillera, and the Mocoas, Sebondoyes, Pastuzos, Almaguereños and Patías. Those which inhabited the province of Túquerres belonged to the Ando-Peruvian race. The nations of Chocó, the interior of Antióquia, Cauca, Popayan and Neiva possessed, and still preserve, characteristics more resembling those of the Aztecs than any other race. The Muiscas differed from the rest; and their pusillanimous character most assimilated them to the Ando-Peruvians. Several nations are still found in the savage state, the principal of which are the Mesayas, Caquetás, Choquees, Mocoas, Omaguas, Enaguas, Amarizanos, Guipanabis, Macucúes, Guahibos and Andaquíes, in the eastern part of the republic; the Goajiros, Motilones, Guainetas and Cocinas, in the provinces of Rio Hacha, Upar and Santa-Marta; and the Dariens, Cunas and Chocoes, on the banks and affluents of the Atrato and coast of Darien. The other nations are insignificant hordes, or have

been reduced to the social state; but some preserve their languages, especially among the Noánamos in Chocó, the Coconucos in Popayan, the Paeses and old Pijaos in Popayan and Neiva, and the Sebondoyes and Mocoas in the territory of Mocoa. The Muiscas and Almaguereños, like the Calamares of Carthagena and Santa Marta, who are reduced to Granadan society, and of whom I have not spoken, have lost their original languages. According to data which I have obtained, the savage Indians in the territory of Mocoa and Canton, of San Martin, Province of Bogotá, must be between 70,000 and 75,000 in number, those of Goajira, 18,000, and 20,000 in Upar, Ocaña, Santa Marta and Opon; in Socorro 2,000 and 3,000; in the provinces of Chocó, Antióquia and Mompoz, 5,000 and 6,000; in Darien and the Isthmus, 4,000 and 5,000; and in Casanare, 8,000 and 10,000: total, from 108,000 to 120,000. But nothing certain can be said on this subject, because, notwithstanding the authority which I exercised as President of the Republic, and the information which I asked for of the political officers and all the missionaries, all their replies were deficient in positive information, and from which I obtained the results.

The Mesayas, in the territory of Mocóa, are cannibals; a few other hordes have the practice of eating the flesh of their enemies. Intercourse with the civilized people on their frontiers has improved their customs and softened their habits of ferocious brutality.

Generally speaking, it may be said, that they have no religious knowledge, and merely recognize the existence of a Supreme Being, the Creator of all things, and the influences of good and evil, attributed to the sun and moon. Their ideas on the immortality of the soul are imperfect; and they rather believe in transmigration, but that they will always be corporeal beings, capable of pain and pleasure, and requiring food: so that it may be said that they have no idea

of spirit. Other secondary ideas, which are found in other nations, have arisen from the religious conceptions of those who submitted to the regimen of the old missions established by the Colonial government. The nations which, like the Muiscas, had a regular government, had also their own worship. The sovereign resided at Tunja, and was called Saque; the Pontiff resided at Iraca, and divided the power with the Saque; they had subordinate princes, as the Zipa of Cundinamarca, who possessed wealth, and enjoyed great luxuries, having delicious baths, and led a pleasant and voluptuous life. Zué was the sun, and Chía the moon, which they worshipped; they did not, therefore, acknowledge as Supreme Beings, but as representing the Supreme Being. Like most other nations in a certain degree of civilization, they had their traditions, and among them one of a deluge, or an inundation of the world. The Pubenanos and Coconucos were governed at the time of the conquest, by a Cacique named Payan; and the Paeses or Pijaos by another called Calambás. In the language of the Coconucos are found the words *Manche*, which means spirit, *Palash*, heaven, *Pansig*, devil, and *Cuaí*, demon. The Spirit was the Supreme Being. They had a supreme chief, whom they called *Yasgüen*, which is equivalent to a king. The *Caciques* were the rulers of sections of the nations; under these were *Caschū*, which corresponds with governors; and by the word *Carabic* they denominated their inferior authorities, resembling alcaldes. This shows that they had a certain social organization. When the Spanish conquest commenced, these nations, united with those of Pasto, were defending themselves against the Incas, who had some time before undertaken to conquer them, without having yet succeeded. They cultivated maize (*zea mais*,) which they called *Burá;* arracacha, which they called *Huahúe;* the *Ullucus tuberosus*, to which they gave the name of *Ulluco*, as in the Quichua language; the Oca, (*Oxalis tuberosa;*)

and the potato, (*Solanum tuberosum,*) calling it *Papa.* It grows wild in the mountains of Paletará, where I have seen it in great abundance, some with roots destitute of tubercles, and others which had a few. The latter, by cultivation, produce potatoes of different varieties, and very good; and their culture was known to the natives of the country. They had their own agriculture, which proves a certain degree of civilization, without taking into account the fruits of trees which also they cultivated. In Bogotá the culture of the *Ulluco* was known, which in the Muisca language, was called *Chibia* and *Hibia.* Humboldt and Caldas saw it only at Quito. I have discovered these facts by a thousand inquiries, among the inhabitants of the forests of Coconucos, Polindaras, and Guambias, and by the divining a little of their language, which has never been written. This nation counted only by sevens, for the numbers *eight, nine* and *ten* they now use in Spanish, while speaking their own language. They made their calculations with cords and knots, like the Incas; and they still make use of them, calling their cords *Quipos,* and this shows that they were taught it by the Incas. They had instruments of stone for cultivating the ground, two of which I have in my possession. For laboring they were accustomed to chew *coca leaves* mixed with a little lime, which they obtained from an argillaceous carbonate of lime, and called *Pic* or *Mambí.* They still masticate those leaves with lime while laboring, and it is a practice common to the indigenous inhabitants of Bolivia and Upper Peru. I have met with a word in the language of those Indians, much resembling an English one, and with the same signification: *Indé,* meaning *indeed.*

I have occupied much time with this nation, because nothing has been written of them; and these facts ought to be collected, while there remain only a few inhabitants who have preserved their traditions. Being proprietor of a por-

tion of their lands, I have been able, with much labor, to engage in conferences with several men and women of moderate capacity, who have taught me a little of their language, and related the information which they possess of the conquest and of their ancestors; and two of them, Filipe Ol and Mauricio Melenge, men past eighty years of age, told me, in 1819, that the lands which I own belonged to the Cacique Mompotes, and those of Cobaló to the Caciques Guañaritas. In the highest part of these are found remains of an ancient fortress, made of earth, and some in a quadrangular form; and a zig-zag road, called in their language *Quíngos*, a wood found also in *Quichua* tongue. From all this, I believe, that this nation, although independent of the government of Atahualpa, still participated in some degree in the civilization of Peru.

These were the Indians who, to deliver themselves from the conquerors, destroyed all their crops, in order that both conquerors and conquered should die of starvation; hoping that they, being many, might have some survivors, who would again people the land: a heroic action, which clearly shows their love of liberty, although Herrera, in referring to it in his decades, attributes it to the council of the devil, to gain the souls of those Gentiles; an idea appropriate to the Spanish fanaticism of that period, to which we must attribute the loss of information of importance, concerning the races who inhabited the continent of Columbia.

The Coconucos at this day, although half-civilized and converted, still retain the ideas of a genius of good and one of evil, remnants of their ancient creed; and they attribute evil to *Púil*, which is also the name of the moon, and to *Panzig*, who is his demon; while they expect good from *Puitchr*, likewise the name of the sun. They distinguish the fixed stars from the planets in their language, calling the former *Sil*, and the latter *Silg* or *Süll;* and they know the constellation of the Pleïades by the name of *Sité-Silg*. Of

the other constellations I have not been able to find any names. They call a month Canapuil, which means one moon.

The barbarous nations which have been mentioned, are generally polygamists, and some of them, as the Guajiros, are bigamists, having one wife for the country or for war, and another for the house, who holds an inferior rank to the former. In the eastern plains of Mocoa, it is not uncommon to find connections in the direct line. Those nations, like the Cunas, Dariens, Chocós, Guagiros and Cocinas, who have more relations with civilized men, are beginning to become a little civilized, and to establish officers and fix laws. Among the other hordes there are generally independent groups or families, and the most powerful and independent governs the rest, directs their wars, hunting, and even fishing.

I have calculated the area of Mocóa at 167,454 square miles, that of San Martin at 38,262, Goajira at 3,527, and Darien at 7,110; and all this territory is inhabited by 120,000 at the maximum, and for 6,084 are civilized, but the greater part of them poor and ignorant. This superficies of 216,354 square miles, which is larger than Spain, and somewhat smaller than France, capable of containing fifteen millions of inhabitants, in proportion to the population of Spain, scarcely contains five and a fifth persons to a square league, or twenty-six to five square leagues.

This notice might well have been left for the following part of the Memoir: but I wished to complete this chapter on the Indigenous Human Race while speaking of it, in order to present under one point of view all that relates to it externally, in the country of which I was giving a physical description.

Part Third.

POLITICAL GEOGRAPHY.

HISTORICAL REVIEW, GOVERNMENT, TERRITORIAL DIVISION, RELIGION, GENERAL CENSUS, CLASSIFICATION OF PROVINCES, DESCRIPTION BY SECTIONS, AND CONCLUSION.

Christopher Columbus discovered terra firma in 1498, and, during his fourth voyage, on the second of November, 1502, found Chagres and the Bay of Limones, called also Navy Bay; for which reason it has been decreed that the city of Colon should be built at that port, where the point of departure of the Panama railroad has been established, which is to be completed within a year. As that work had not been begun when I became President of New Granada, I applied for an exclusive privilege for an American association, who have undertaken it and carried it onward with great perseverance.

Different governments having been established throughout the Granadan territory, while Spanish colonies, a vice-royalty was at length formed in 1732, of what are now the Republics of New Granada and Ecuador. I have already mentioned the condition of the aborigines; and up to the present time no monuments have been discovered, indicating civilization anterior to that of the indigenes who peopled the country in the fifteenth century, except those in the central cordillera, near San Agustin, about the second degree of north latitude, and another in the same on the Plata, in 2° 25′, which prove

to be the work of a genius superior to that of the Pijáos, Andaquíes and Paezes, who inhabited those regions at the epoch mentioned.

In 1810, New Granada separated herself from the Spanish monarchy, and maintained a constant war until 1824, when the Spanish army was conquered by the Republican, of which two-thirds consisted of Colombians. Bolivar, the most distinguished leader of the Spanish-American revolution, was the first proposer of the union of Venezuela and New Granada, in 1818; and when the Congress of Angostura met, early in 1819, the fundamental law was enacted which established Colombia, on the 17th of December of that year. Venezuela separated herself in November, 1829, and the Ecuador in May, 1830; and the central part of Colombia instituted itself the Republic of New Granada on the 21st of November, 1831.

In 1832, the Constitution of the State was sanctioned, under the form of a Democratic Republican Government, by dividing the supreme power into the Executive, Legislative and Judicial, under a central regimen, but giving to the provinces a municipal corporation, that each section might legislate in its local affairs.

The Republic was divided into provinces, these into cantons, and the cantons into paroquial districts.

The state recognized no national religion; but has declared that it will pay for the Catholic worship, and protect Granadans in its exercise. The law of Colombia which attributed to itself the law of patronage exercised by Spain, has continued in vigor to the present time.

The Republic was first divided into eighteen provinces; and they have since been increased to thirty-five: viz., Antióquia, Azuero, Barbacoas, Bogotá, Buenaventura, Carthagena, Casanare, Cáuca, Córdova, Cundinamarca, Chiriquí, Chocó, Mariquíta, Medellin, Mompoz, Neiva, Ocaña, Pam-

plona, Panamá, Pasto, Popayan, Rio Hacha, Sabanilla, Santamarta, Santander, Socorro, Soto, Tequenthama, Tundama, Tunja, Túquerres, Valle-Dupar, Velez, Veraguas and Zipaquirá; and the territories of Goajira and Mocoa.

The Constitution of 1832 was reformed in 1843, without any variation in the form of government.

Every man born in the Republic, who can read and write, is a citizen, without distinction of race or class; and also those naturalized and twenty years of age. Naturalization is very easy. A foreigner may apply for it; and in case he is neither a criminal or a vagabond, it is granted immediately.

In 1821 was passed the law of manumission of slaves; and no person has since been born in that condition. By a law of 1851, slavery was entirely abolished, by giving liberty to all who remained slaves on the 1st of January, 1852.

By the immigration law, tolerance of religion has been granted, and this provision has also been inserted in the treaty of peace and amity with the United States. Among the Spanish-American Republics only New Granada, Venezuela and the province of Buenos Ayres, in the Argentine Republic, have proclaimed liberty of worship. In the others there is only toleration: no public worship except the Catholic being permitted, which is the state religion of those countries.

Table C shows the population of New Granada. By the census of 1851 it appears, that the number of inhabitants was 2,243,054, not including the savage Indians spoken of in the second part. It also shows that the population in 1843 was 1,932,279. According to the census of 1835 it was 1,685,038. Within the last sixteen years it has increased 557,016, not by immigration, because the small number of persons who have come in, hardly equals that of the emigrants. In 1810, when the revolution commenced, there were scarcely 800,000 inhabitants; in 1826 there were 1,300,000

The first twenty-four years of that period were those of the war of independence, in which there was a very great loss of life. It appears that in 1835 the population has doubled. From that epoch to the present, sixteen years, it has increased 33 per cent or 16½ per cent every eight years. It will double every 36 years.

In the first part of this Memoir I said, that the Republic contains 394,664 square miles of sixty to a degree of latitude; and, in the second part, in speaking of the deserts occupied by savage tribes, I deducted from this area 216,354, leaving that of the inhabited provinces 178,310 square miles, comprehending the province of Casanare, which has very few inhabitants, as well as the cordilleras which divide the country in its greatest extent. From this calculation we deduce, that the civilized inhabitants are in the proportion of 12½ to a square mile, or 113 to a square league.

The political division of the Republic having been made by law, and the enumeration made in alphabetical order, it will be convenient, in order to give a general description of the country, before speaking of its divisions in particular, to divide the provinces into three classes, according to the increase of their population in eight years. Those which increase more than twenty per cent. we will place in the first class; those which increase more than ten and less than twenty, in the second; and those which do not reach ten, in the third. From this classification results the following order: 1st class, Chocó, Popayan, Soto, Medellin, Cordova, Túquerres, Pasto, Santander, Barbacoas, and Antioquia; 2d class, Valle-Upar, Cauca, Socorro, Buenaventura, Tunja, Neiva, Tandama, Mariquita, Velez, Mompoz, Pamplona and Zipaquira, Bogotá and Tequenthama; 3d class, Veraguas, Panamá, Chiriqui, Casanare, Rio Hacha, Carthagena, Sabanilla, Santamarta, Azuero, and Ocaña.

I will make another classification, according to the salubri-

ty of the country, in four classes: 1st, excellent climate; 2d, good; 3d, middling; and 4th, bad. In the first class I place the provinces of Pasto, Córdova, Popayan, (except the valley of Patia, and that part of the valley of the Cáuca which resembles it,) Medellin, Túquerres and the upper part of the province of Ocaña. In the second we must include Soto, Santander, Antioquia, Tunja, Tundama, Cundinamarca, Pamplona, Zipaquira and Bogotá. In the third, Chocó, Barbacoas, Cáuca, Socorro, Tequenthama, Buenaventura, Neiva, Mariquita, Velez, Pamplona and the Cantons of Calota and Quilichao in Popayan. In the fourth, Mompoz, Veraguas, Chiriquí, Carthagena, Panamá, Azuero, Rio Hacha, Casanare, Santamarta, the Valle-Upar, the Canton of Rapozo in Buenaventura, the northeastern part of Medellin, the valley of Patia in Popayan, the lower part of the provinces of Ocaña and Antioquia, the Canton of San Martin in Bogotá, and the territories of Goajira and Mocoa. None of these districts, however, are very unhealthy; and the worst known are the Bocas del Toro in Chiriquí and Chagres in Panamá.

In describing the Provinces, I shall adopt a new plan, combining their geographical positions with customs, wants, and relations, as I think them called to a social organization, in sections which shall become independent states, and shall form one federated nation, after the example of the United States: that opinion is very general in New Granada. Those sections will be: 1st, the Isthmus, composed of the provinces of Azuero, Chiriquí, Panamá and Veraguas; 2d, the South or Cáuca, formed of Barbacoas, Buenaventura, Cáuca, Pasto, Popayan and Túquerres; 3d, Antioquia, composed of Antioquia, Chocó, Cordova and Medellin; 4th, Cundinamarca, consisting of Bogotá, Cundinamarca, Mariquita, Neiva, Tequenthama and Zipaquirá; 5th, Boyacá, formed of Casanare, Tundama, Tunja and Velez; 6th, Guanenta, composed of Ocaña, Pamplona, Santander, So-

corro and Soto; and 7th, Magdalena, composed of Carthagena, Mompoz, Rio Hacha, Santamarta, Sabanilla and Valle-Upar. Mocóa, La Guajira and San Martin should be governed as territories by the federal government. Having named these seven great divisions, let us attend to a description of them by provinces, for as there are many things common to them all, we may thus avoid repetition.

SECTION I.—THE ISTHMUS.

The provinces of the Isthmus are situated, as shown by Table C, between 7° and 9° 45′ north latitude, and 77° and 83° 5′ west longitude, with a population of 138,107, classified by races and castes as will be seen in that table.

Cities. The principal city of the Isthmus is Panamá, which is the capital of the province of the same name. It was built for a strong place by the Spanish government, but the walls are in a bad condition. The buildings of the interior part are of stone and timber. It was almost ruined when the transit commenced from the United States to California; and, with the railroad now constructing, it will become an important place in the commercial world. It contains no edifice remarkable for its architecture. The city of Portobelo, the chief place of the canton of that name, is almost ruinous. It was the fortress on the Atlantic side in the time of the Spaniards. Los Santos, the capital of the province of Azuero, on the Pacific, and Nata, the principal town of the canton of its name, are of no importance for their buildings or establishments. The city of Santiago is the capital of the province of Veraguas; the city of David, that of the province of Chiriquí, and Penonomé the chief town of the canton of Soto, in the province of Panamá. Neither of these contain buildings distinguished for their construction. The town which is growing up in the bay of

Limón, at which commences the railroad that is to cross the Isthmus to Panamá, will be raised to the rank of a city, with the name of Aspinwall.

In the general description of the country I have enumerated the ports belonging to New Granada in this part of her territory. Aspinwall and Panama will be the most important, on account of the railroad.

The character of the inhabitants of the Isthmus is good; and, without having a police, there is sufficient security in all the towns in the interior. The attacks, which have been made on goods on the road from Panamá to Chagres, have been the work of foreigners and vagabonds, drawn to that country by the report of the gold of California; and the necessary security is now assured, by the care of a house under contract with insurers in New York. The national authorities occasionally give their aid.

The commerce of the Isthmus is still inconsiderable. The only articles of value for exportation are pearl-shells and pearls, which are fished in the gulf of Panamá and the archipelago of Montijo. Their value may be $90,000 or $100,000 annually.

Products of Agriculture.—Agriculture is very backward on the Isthmus; its products are not sufficient for the consumption of the country, whence arises the scarcity on the passage from Chagres or Aspinwall to Panamá. In Tables G and H of this Memoir, the reader will find a notice of the plants cultivated in the Isthmus, and those which grow spontaneously, and are made of any use. However, I must say, that the notice is incomplete; for much remains to be done in treating of the vigorous vegetation of those provinces. With regard to the timbers for building, cabinet work and other purposes, some notice will be taken of them in the same tables to give a general idea of their productions.

The provinces of the Isthmus have their place also as au-

riferous regions. In that of Veraguas, are found mines of gold and washings of very good quality. The products have been small: but it is certain that there are very rich veins. In the province of Panamá there are also very rich auriferous districts, although not equal to those of Veraguas.

Specimens of cinnabar have been found, and mines of fossil coal, which, with the prosperity of the country, will be wrought and prove of great value.

Cattle are abundant in Chiriquí, and there are good pastures in the other provinces; but there being no pasture ground to fatten the cattle which are consumed, the flesh is of inferior quality in Panamá, and in those places to which they must be driven, at great distances.

The rearing of horses is extremely neglected; and those which are used in the country are of so bad a quality, that it may be said to be the portion of the Republic where the manner of rearing and improving the breed is unknown. For this reason it has been necessary to import from other places the mules used in the transit between Panamá and Cruzes; and they perish by hundreds, in consequence of the bad and scanty pastures, and the difficult and toilsome road which they have to travel. On the completion of the railroad this business will be ended: for there can be no competition for freight, and no establishments have been formed for raising robust animals, able to endure labor for years.

SECTION II.—CÁUCA.

The provinces in the south of the Republic which form this section of this memoir, have, without doubt, the greatest advantages for future progress, if a beneficent administration breaks through the obstacles which chain down industry and

improvement. It is not now the most populous section in the view I have adopted and exhibited in Table E in the Appendix. It numbers only 276,249 inhabitants; and it is the only province which contains no savage Indians, as those who formerly belonged to it now inhabit the territory of Mocoa. Its geographical position is between 0° 45′ and 5° 22′ N. lat. and 75°30′ and 78° 45′ W. long. It contains lofty and mountainous lands, like those of Túquerres, Pasto, Almaguer and Popayan; the vallies of Patía and Cáuca, which are as rich as any to be found in the world; and a coast on the Pacific washed by large rivers, which have been described in the first part of this Memoir.

This portion of the country, while it is excellent for intertropical agriculture, produces cereal plants well in the mountains, and abounds in mines of gold, silver, copper, iron and coal. On its beautiful plains cattle and horses are easily raised, and sheep on the mountains. No section of the Republic possesses a more favorable combination of advantages. The inhabitants are among the most robust and healthy, and the endemic diseases of *cotos* and elephantiasis, which exist in other provinces, are here hardly known.

The principal towns in this section are the cities of Buga, Calí, Cartago, Pasto and Popayan. The last-mentioned contains fine edifices; among the private houses are some of the best constructed in all the Republic. It has several churches, of which the following deserve particular attention: the cathedral, built by the Jesuits, in a simple style, well executed and of the Ionic order; and the church of San Francisco, of the Corinthian order, erected at the expense of the missionaries of the Propaganda fide, and in a good state of preservation. There are other churches of inferior importance, which belonged to the regular orders of Dominicans, Ermitaños and Agonizantes; and two belonging to the monasteries of the Incarnation and El Carmen, the nuns of Santa Teresa

and Augustinians. There are three chapels, one of them belonging to the Charity Hospital. Among the public edifices should be mentioned a magnificent bridge, constructed by the city across the river Cáuca, of good architecture and perhaps the best in all the Republic, as it has but one arch for the passage of the water, nineteen metres in diameter, and three others, which serve only to preserve the level. In Pasto the same taste is not to be found in private houses; and in the churches, which are eight in number, is none well built on architectural rules. Two bridges over the river Pasto are of ordinary construction. Cartago, Buga and Calí are built in a similar manner; but the last mentioned has an advantage over the others, both in the construction and in the taste displayed in its houses, although there is none built in conformity with the rules of architecture. The church of San Francisco is remarkable among the public edifices, being scientifically built in the Ionic order. The parish church is as well constructed. There are several other smaller churches and a good bridge over the river Calí. In Buga and Cartago are no public buildings worthy of notice, the churches being inferior. The cities of Barbacoas, Yscuande, Caloto, Toro, Almaguer and Anserma, like the smaller ones, Ypiales, Palmira, Quilichão and Roldanillo, are of little importance, and some deserve only to be considered as towns, for their small population and their want of public buildings.

In Table G will be found the principal productions of agricultural industry in this section: but it should be stated that there is not in the whole Republic a more fertile soil than that of the valley of the Cáuca, where the sugar-cane grows in the same spot, eighty years, without the necessity of culture; and maize yields from 100 to 300 per cent. The plantain is so abundant, that an area of 10,000 square metres gives a product of 62,800 kilogrammes, which would sustain fifty-seven men for a year. The Coffee of Popayan is as rich

as that of Mocha; and the Cinchona barks of Pitayó are among the best known in commerce. The Cocoa of the Cáuca and Patia is superior to that of Guayaquil, Brazil and Maracaibo, and even equal to that of Caracas; only those of Soconuzco and the Magdalena are better. When a wheel road shall be opened from the interior to the port of Buenaventura, only twenty-two leagues distant from the bosom of the valley of the Cáuca, both Chili and California may profitably supply themselves with the inter-tropical fruits of that country which I have mentioned. In those regions, and on the very coast of the Pacific, India-rubber of the first quality is produced; and also sarsaparilla, various resins, and vanilla of the best kind.

Beneath the deep vegetation are mines of gold, which, during three hundred years, have yielded liberal returns, notwithstanding the small number of men employed in them. There are *placers* where gold is found in sand, the product of which is some times from ten to fourteen pounds from four yards square of land; while the mines are yet untouched, and many which have not been wrought. In the central cordillera are good veins of silver; and so abundant are the iron and coal mines, especially in the western cordillera, that they would be sufficient to supply the country and form a valuable trade.

The fish in the rivers and on the coast are very abundant; and between the island of Gorgona and the port of Buenaventura pearl-oysters abound; and the pearls are not inferior to those of the gulf of Panamá. The central cordillera contains snowy mountains: viz. those of Huila and the Coconucos, from which ice might be obtained to supply the country, if roads were formed, as is now done at Popayan and some other places; and in all parts of it are produced the grains and garden-vegetables of the northern and southern zones, of the best qualities.

The meats are rich and well-flavored; and the domestic fowls, fed on good grain and vegetables, may be compared with the best of Europe or the United States.

Manufactures do not exist; and only in Pasto and Túquerres a few ordinary cloths are made, but dyed with beautiful vegetable colors of the country, and with cochineal brought from Bogotá or Quito.

SECTION III.—ANTIOQUIA.

This section of the Republic is composed of what was formerly the provinces of Antióquia and Chocó. Its geographical situation is between 4° 30′ and 8° 50′ N. lat., and 74° and 77° 50′ W. long. It contains no beautiful vallies like the section of Cáuca; but yet is a continuation of the same country. The first who ever gave a geographical and statistical notice of Antióquia, was the distinguished Granadan, José Manuel Restrepo; and it has made little advance since his time.

The vegetation is the same as that of the preceding section; and it would be useless to repeat what has been said; and as in Cáuca, under a stratum of vegetable earth, which in many places is three metres in thickness, are found rich mines of gold, which have been the most worked, and yield two-thirds of all the gold found in the Republic, both from sand and from veins, which have been wrought from time immemorial by the indigenes.

This mountainous country, the physical description of which has been given in the first part of this memoir, contains no elevation higher than 2,740 metres, or 8,990 feet.

The mines of this section are very various; the rivers, principally the Porce, Cáuca, Nechi, Bebara, Atrato, San Juan,

Quito, Murrí, Rio Sucio and Andagueda, like the streams which pour into them, are full of gold and platina sands; and on the mountains which rise in the territory, are the veins which have been mentioned. Some mines of silver have also been discovered, which have not been worked; and this metal is often in masses, combined with gold, which is the reason why gold is often impure: but there are others so pure that they reach to 22 and 23 carats. In the province of Cordova are mines of copper mixed with gold, which have not been wrought.

Of the precious stones, of which certain historians have spoken, it can barely be said that there are a few, of middling quality: rock-crystal and a few jaspers; but there are other mineral productions, among which should be mentioned the springs yielding salt charged with iodine, which is believed in that country, as well as in the Cáuca, to cure the disease of the coto, which prevails so much in the centre of the Republic.

The principal cities are Medellin, Antióquia and Rionegro, and those of inferior size, Marinilla and Santa Rosa. The three first are capitals of the provinces of Antioquia, Medellin and Cordova. The construction of the public edifices is pretty good, and much as in Popayan, Buenaventura and Cáuca. The churches are hardly of ordinary merit; and in Antióquia and Rionegro they are better; but none constructed according to the rules of art. The towns of Quibdó and Nóvita, in Chocó, are built of wood and palm-leaves, and appear more like the habitations of the aborigines, than constructions of the European race.

As will be seen in Table E, the population of this section amounts to 287,037, and here the increase has the highest rate. A short time before the revolution of 1810, Antióquia had 108,000 inhabitants, and Chocó 16,000; that is to say, 124,000; and now this amount has more than doubled in 41

years, at the rate of $11\frac{8}{3}$ per cent., which is equivalent to $2\frac{9}{10}$ per cent. annually, and it will double every 35 years.

The inhabitants are healthy, robust, and in general of a generous, laborious and economical character. Their habits are severe, and the women are excellent companions and good mothers of families.

All the western and southern part of New Granada is destined to become the most prosperous region of Colombia, and nothing is wanting but roads to break through the cordilleras, which impede the easy immigration from the old continent.

At the conclusion of this little Memoir, I will express my opinion concerning what may be expected of that country, by giving a general glance over the Republic, to complete the picture I have drawn, although imperfectly, and shall accompany it with a map, from which the preceding relation may be better understood.

SECTION IV.—CUNDINAMARCA.

This section, which is the most populous, is situated in the centre of the Republic, and, including the canton of San Martin, extends to the boundary of Brazil. It begins in N. lat. 1° 30′, at the extremity of the province of Neiva, and reaches to 5° 30′, the limits of Zipaquirá. On the east it commences in long. 68° 15′, and terminates in 75° 50′, on the central cordillera of Mariquita. The population is 554,955, as may be seen in Tables C and E, exclusive of the wild Indians of San Martin.

The capital of the province of Bogotá is also that of the Republic, and its population is from 42,000 to 45,000. It is built at the bases of two mountains, Guadalupe and Monserrate, and extends to the plain of the Funza. The principal

square is at the height of 2,644 metres, 18 centimetres, the temperature is uniform at 14° 76 centigrade (58° 56 Fahrenheit), medium rate. The public buildings have been much improved since the establishment of the independence; and some of the private houses are in good taste, with elegant furniture, brought from Europe, or made there of the beautiful woods of the country. The government house is a temporary one, and the capitol is building, which will serve for the official dispatch of the national powers and as the habitation of the President. I had the gratification of laying the corner-stone. There are several beautiful and well built churches; the cathedral is of the Corinthian order, and quite elegant, notwithstanding some architectural defects. The parish church of San Victorino, of the Doric order, built by the Capuchin monks, although small, is the most perfect; and that of Santo Domingo, in the same order, and the parish church of San Carlos, built by the Jesuits, are good and handsome edifices. There are other inferior churches in the convents of San Francisco, San Diego, La Candelaria and San Juan de Dios, and the monasteries of nuns of La Enseñada, La Concepcion, Santa Iñes, Santa Clara and El Carmen; the parish churches of Las Nieves and Santa Barbara; the chapels of Belen, La Peña, Egipto and El Humilladero, which was the first built in the time of the conquest. Besides these are churches of Tercera Orden: Las Aguas, the Foundlings, College of Rosario, and those connected with the convents of Regulars.

Of the public or national edifices, none deserve mention for their construction, unless the National College of San Bartolomé and the Astronomical Observatory, which owed its existence to the generosity and patriotism of Don José Celestino Mutis. It was begun on the 24th of August, 1802, and completed on the 20th of August, 1803. The architect to whom the work was entrusted, was Frai Domingo Petrez,

of the order of Capuchins. The form is that of an octagonal tower, 4 metres and 223 millimetres on each side, 13 metres and 191 millimetres high. The diameter, exclusive of the thickness of the walls, is 8 metres and 771 millimetres. It has three stories; the first with well-proportioned Tuscan pilasters, and the vaulted ceiling of this story makes the floor of the principal hall. The second story is Doric; and the upper ceiling hemispherical, open in the centre, and supports the upper room, which is for observations. The attic crowns the whole edifice, and serves at the same time as a parapet. The aperture in the second vault admits a ray of light, which marks the sun on the pavement of the floor, where a meridian line is drawn and a gnomon is erected.

Caldas fixed the latitude of this observatory, after repeated observations, at 4° 36′ 6″ N. lat., and respecting its longitude he says: "Though in the years 1806 and 1807 I made many observations of emersions and immersions of the first and second satellites of Jupiter, I received no corresponding notices from the observatories of Europe." But his first essays with the use of the calculus place the meridian of Bogotá at 4 hours, 32′ 14″ west of the Royal Observatory of the Isle of Leon. Caldas gives this edifice an elevation of 1,352.7 toises, or 2,636.412 metres above the level of the sea.

This observatory, which is the highest in the world, is the first ever erected in the intertropical zone, and is still the only one in the continent of Columbia, which is even tolerably well provided with instruments. How useful it may prove to astronomy! The names of Mutis and Caldas—the former on account of his generosity in establishing it, and the second for giving a commencement to astronomical observations—well deserve to be written in letters of gold in the scientific annals of the Republic, and to be placed, by the sages of the world, by the side of William IV., the Landgrave of Hesse Cassel, Frederick II. of Denmark, founders

of the first observatories of Europe, and of Tycho-Brahe, Lalande, Arago and Herschel. The political vicissitudes of the revolution caused the abandonment of that establishment; and, during my administration, I wished to distinguish it, by fomenting scientific studies, not only in astronomy and mathematics, but also in physics and natural history, by founding an institution, which in future might become of great benefit to the country and the civilized world. Those studies are now suspended: but I encourage the hope that they will soon be appreciated, and that advantages will be enjoyed which shall show good results from the erection of that temple consecrated to Urania, on an eminence so exalted, and in a central part of the intertropical zone, where astronomers can discover new planets and constellations, favored by an atmosphere far removed from the clouds of the north, and from which may be observed the stars which by setting in that part of space, escape the view of the learned observers of Europe and America.

We perhaps have occupied too much time in speaking of this establishment; but I think I may be excused by the intelligent cosmographers to whom I present this memoir, and we will not pursue the description.

Among the edifices which adorn the capital, should be mentioned the two beautiful bridges constructed across the Funza, on the northern and western roads, called Puente Grande and Puente del Comun. In the great square is placed a statue of Bolivar, cast in Munich, the work of Tanerani, and presented to the Republic by the citizen José Ignacio Paris, a monument precious for its excellence and the glorious recollections of our independence, connected with the name of Bolivar. On the 20th of July, 1846, the anniversary of the Republican era, the statue was placed, during my presidency and under my direction.

The other cities of this section are Zipaquirá, Chocontá,

Ubaté, Tocaima, La Mesa, Guaduas, Honda, Mariquita, Ybague, Neiva, Purificacion, Timaná, La Plata, Garzon, Guatavita, Ambalema, Guágua, Guamo and Chaparral, Cáqueza and others of less importance, but none of which, if we except Zipaquirá, contain good public buildings. Some of these hardly possess any historical celebrity by the antiquity of their foundation, while others are only the basis of something future, to grow with the country.

In Zipaquirá, the capital of the province of that name, are the principal mines of rock-salt, which yield to the nation near a thousand dollars a day, being worked according to the best rules of art. The mineral extends many miles, crossing the savannas and the branch of the western cordillera, whose crests divide the country, as has been mentioned.

The products of agriculture in this section are very numerous; but while there is in some parts as much fertility as in the sections of Cáuca and Antióquia, it is not everywhere equal, nor is there so favorable a situation for foreign commerce, by the vicinity of the ocean. The productions will be seen in Tables G and H, on vegetation, except those belonging to the coast, but there are few which may not be naturalized in valleys formed by the Magdalena and in the plains of San Martin, which extend to the Orinoco.

There are many places in which are raised cattle, horses, mules, sheep, (both common and Merinoes,) swine and domestic fowls, not only enough for internal consumption, but also for export, if we succeed in forming carriage-roads, which were commenced some years ago.

In this section are the silver mines of Santa Ana, the only ones which are now wrought, although they are none of the richest. There are some gold-washings in Neiva and Mariquita, and new mines in the eastern cordillera, which are not worked. There are found rich mines of copper, coal, lead and iron; and of these last, one is wrought, which yields

metal for the consumption of the country, to the benefit of the proprietors. Petroleum and feldspar abound, as do building stones.

The mountains of Fusagazugá abound in timbers, and especially in cinchonas of good quality.

In this section are the snowy regions of Tolima and Ruiz, both which mountains are volcanoes. That of Tolima is the highest, (see table B,) and that of Ruiz abounds in mineral springs, charged with sulphuric and chloridic acids, like those of Puracé in the same cordillera, which were analyzed by Caldas, Rivero, Boussangault, Lewy and other distinguished chemists. In this section are the celebrated bridge of Iconozo, and the cascade of Tequenthama, whose perpendicular height is 152 metres, (579 feet) and whose volume of water is very considerable.

SECTION V.—BOYACÁ.

This section is composed of the provinces of Casanare, Tundama, Tunja and Velez; and its geographical situation is between 3° and 6° 55′ N. lat., and 68° 20′ and 74° 60′ W. long. Although the entire population of the four provinces amounts to 414,210 persons: excluding the territory of Casanare, with its 18,573 inhabitants, a very small area remains in proportion to the other sections, and the most thickly populated of them all, in proportion to the extent. In general the climate is good; and, if the *coto* were not a common disease, it would deserve to be ranked among the best.

The agricultural productions and cattle of Tundama and Tunja are like those of the upper provinces of the section of Cundinamarca, as that is a continuation of the same high table-lands of the Andes. The province of Velez, which lies

on the west, and that of Casanare, on the east, present a physical physiogomy entirely diverse from the other provinces of the section and from each other. Casanare is chiefly a large plain, extending from the cordillera to the Orinoco, watered by magnificent and navigable rivers, which, being tributaries of that great river, will one day be navigated by steam vessels, which will penetrate from the shores of the Atlantic to within twenty leagues of the cordillera; and those interior countries will have an easy channel for the exportation of their products by the Méta and the Orinoco.

Velez, a mountainous region, crossed by several rivers, has favorable prospects, as it possesses much wealth in copper ores, and the mines of Moniquirá, which are worked, and are the most productive of that metal in the Republic. There are also the emerald mines, in the ancient town of Muzo, the only mines of real emeralds now known in the commercial world; for, although these precious stones have been known from time immemorial, other mines which yielded them have been lost.

Many writers on geography, and others on mineralogy, speak of the emeralds of Peru, but through a mistake, as there are none in Peru, and never have been any; the report having arisen from the ignorance which has prevailed till the present time, of the geography of America and Colombia.

The emerald mines of Muzo, which have been known ever since the conquest, have several veins of open mines. The principal are those of Camero, Perejil, Plasmera, Coronados, Juan Ignacio Camero, Hoyo Antiguo, Gerónimo Diaz, Quebrada Grande, Peñon, Quebrada Minera, Aguardiente, the Cerro, Miguel Ruiz, Agustin Camero and the Royal Vein. The extent of territory in which these mines are found is several leagues; and in the province of Tunja, in Somondoco, others were wrought in the time of the colonial government. The land is contiguous, geologically considered.

The chemical analysis of the Muzo emeralds is as follows, according to Klaproth:

Silica	0,685	(A. G.) S^3
Alumina	0,158	
Glucina	0,125	
Oxide of Chrome . .	0,003	
Oxide of Iron . .	0,010	

Transparent to translucent, with double refraction, D. 7, 5 à 8, 0, P. S. 2,73 à 2,76.

Emeralds are found in the mines of Muzo, associated with calcareous spar, and more frequently with quartz, on a basis of pyrites. The veins cross the mountains of Muzo, between hornblend slate and granite or slate. Many crystals of emerald are found among quartz crystals.

The emerald of Russia, Brazil, North America and Siberia is a different stone. It is a beryl, denominated emerald-beryl. Its analysis, according to Gmelin, is:

Silica	0,6,970
Alumina	0,1,683
Glucina	0,1,339

There are other stones confounded with the fine emerald, as the euclase, phainequite, chryso-beryl, leucophane, eudialite, zircon and torinia, of which there are some in New Granada—in Antióquia.

This explanation has been given, in order to make known the difference between real fine emeralds and the stones with which they are confounded, of the family of silicates with a base of glucine, zircon and torinia. These mines are the property of the nation, and the government rents them for a sum of money. By the existing contract it is $16,000 a year.

There are also mines of rock-salt in the cordillera, which

are a continuation of those of Zipaquirá. The great masses of that mineral, the calcareous formations with which they are covered, and numerous fossil shells, invite to a profound study of geology, to determine the antiquity of the continent.

Fossil bones also are found, of animals no longer existing. They are those of the mastodon and elephant, according to the classification given them.

The most important cities and towns of this section are Tunja, Leiva, Velez, Moniquira, Santarosa, Sogamoso, Garagóa, Soatá, Chiquinquirá, Guateque, Ramiriquí and Cocui. None of them contain buildings of importance; the most remarkable is the church of Chiquinquirá, which is of solid and handsome architecture, erected at the expense of the alms and erogations of Catholics, who venerate an image of the Virgin painted on canvas, to which the monks of St. Domingo give extraordinary credit, attributing to it miracles, most of which are ridiculous, but well calculated to draw large offerings and gifts from the fanatical vulgar. To the pilgrimages performed to that shrine, and to the concourse of people from all parts, was due the foundation of the town; and in this respect the sanctuary of Chiquinquirá has been useful to the country.

SECTION VI.—GUANENTA.

Ocaña, Pamplona, Santander, Socorro and Soto are the provinces composing this section, which is situated between the fifth and seventh sections and the Republic of Venezuela. Its climate is extremely varied, for the whole country is mountainous, and such valleys as are found in the territory are small, as those of Cúcuta and that of Piedecuesta or Bucaramanga. In whatever part we may wish to traverse this

section, branches of the cordilleras of the Andes are found. The extreme extent is from 6° 15′ to 9° 20′ of latitude, and from 72° 40′ to 74° 30′ of longitude. The population is 319,574. The people are active, laborious and well qualified for the army as infantry soldiers.*

The principal cities and towns are Pamplona, San Jil, Socorro, Piedecuesta, Barichara, Bucaramanga, Giron, Charalá, Concepcion, San José, Málaga, Rosario, Salazar, Oiba, Rosario and Ocaña. The three first of these are the best built, but none of them contains buildings constructed according to the rules of architecture, although among the churches are several pretty good edifices.

The vallies of Cúcuta have been celebrated for their cocoa, coffee and indigo, which are sent by the Zulia, to be exported from Maracaibo, and are known in commerce as from that part of Venezuela, although they come from New Granada.

The plants are very various; indeed, as there are low lands on the banks of the Magdalena and elevated heights reaching to the limits of vegetation, we may say that all the plants are found which are named in Tables G and H.

In minerals this section is one of much importance. The mines of Betas and Montosa, both the upper and the lower, are rich in gold and silver; and although recent labors have not been satisfactory, we may presume that they have not been well managed, and that the mines are very valuable.

The auriferous lands are important, especially in Zuratá, Giron and Cañaverales, where the gold, which is constantly dug out, is more than twenty-three carats fine.

Copper and iron mines are very abundant, although they are not wrought; and, with the exception of the cantons of Giron and Bucararnanga, the people are nowhere devoted to to this branch of labor.

The raising of cattle is rare, compared with other provinces

* See Table E.

containing pasture-lands; and the supply is not sufficient for the demand, so that it is necessary to bring in some from Casanare, by the way of Cocui. This fact, however, stimulates the spirit of enterprise in the Socorrans, for they are found in all parts of the Republic as agriculturists, and devoted to other branches of business. The inhabitants of the provinces of Soto and Santander resemble them in this respect, and those dwelling in the highest part are much like the inhabitants of Boyacá.

The indigenous race has almost disappeared, by being mixed with the white, so that this section is inhabited by a caste, which is in general energetic and intelligent. The district of Ocaña is distinguished, among others in the Republic for beautiful women.

SECTION VII.—THE LITTORAL SECTION OF MAGDALENA.

The littoral section of the Magdalena, which is composed of the provinces lying on the coast of the Atlantic, that are watered by the great river whose name I have given it, is a very important portion of the Republic. It extends from lat. 8° to 12°, exclusive of the islands annexed to it; and from long. 72°10′ to 76° 35′. The country is generally level and covered with woods, through which flow the rivers Magdalena, Cáuca, St. George and Zinú, while the deep Atrato confounds its waves with those of the ocean. In the east is the chain of Santamarta mountains, which rises to the region of perpetual snow, and whose majestic aspect is seen from the extremity of the Caribbean sea. High vallies and elevated table-lands are found in this chain, which we may be assured has hardly any connection with the cordillera of the Andes, and should be classed as a separate group, destined to con-

naturalize in its territory the men of the Caucasian race, who, on reaching the debilitating shores of Colombia, are unable to resist the intertropical climate. The roughness of the forests, which must be overcome before reaching a pleasant and fruitful elevation, has doubtless been the cause which has impeded the settlement; and these elevated regions are thinly inhabited by a few hordes of savages and some families of the semi-civilized nations of the Motilones.

The population of this part of the republic amounts to 249,921, without counting 23,600 savage Indians in the territory of Goajira and the deserts of the interior. The greater part of these inhabitants are a mixture of the indigenous Carib race with the white and Ethiopean, and are well-formed, patient of labor, and intelligent, and therefore well fitted for agriculture, as well as to navigate the rivers, by overcoming the difficulties presented by nature, with her leafy vegetation and the innumerable insects and reptiles which abound along the banks.

The principal city is Carthagena, a fortress of the first rank in the New World, and celebrated in the annals of the republic, as the first town which proclaimed independence, and for enduring a rigorous siege in 1815, by the Spanish army, submitting, not from want of bravery or patriotism, but because conquered by famine, after the death of many citizens and soldiers. To the hand which shall write the history of the republic, this topic must be left, to trace a page in letters of gold, which can here only be indicated, in mentioning that monumental city.

No other town in the republic contains houses built with equal solidity; and, if they are not constructed in the best style, they possess a certain merit, and are commodious and adapted to the climate. The whole city is protected by good walls, able to resist direct fires of artillery, and so solid that the neglect to which they have been abandoned, and the

power of the elements have not ruined them. Some of the churches are beautiful and well built, uniting solidity with elegance of architecture, as they were designed as a refuge to the inhabitants in case of a bombardment. Of this class are St. Domingo and San Juan de Dios, which was the Jesuit church. At a distance from the square is the castle of St. Philip; on the bay are those of St. Joseph and St. Ferdinand, at the entrance of Boca Chica; and at its interior is that of Pastelillo. The castles of Angel and Castillo Viejo are in ruins.

The other important towns are Mompoz and Santamarta, which are pretty well built, but not comparable with Carthagena. After these are to be named Rio Hacha and Cienaga, Barranquilla, Soledad, Sabanalarga, Corosal, Chinú, Lorica and Magangué; and but little inferior to these are the chief towns of the cantons, of which is the old city of Tenerife, which has lost its former importance.

The city of Carthagena has constructed a canal, which connects the waters of the Magdalena with the bay, and without which internal navigation would be incomplete. After it was finished the locks were injured, and it is now undergoing repairs. At the mouths of the Magdalena is the port of Sabanilla, which will become in the course of time of the greatest importance for the exportation of the products of the interior; but there is none to be compared with Carthagena, which is destined for a free port, and the general depôt of the commerce of the northern part of New Granada.

The vegetation of this section is rich on all the banks of the large rivers, abounding in building timber, woods for cabinet-work, balsams and precious gums. On the sea-coast are good salinas, sufficient to supply the nation and all the West India islands. Provision and cattle are abundant; and the breed of horses, although not large, is a fine one, and of incredible endurance, in travelling, not tiring nor failing after

going many leagues in a single day. Their motions are gentle, and in air, gusto and spirits they resemble Arabian horses, even though they have no care bestowed on the improvement of the breed. Those of Coajira and the savannas of the Corosal are the most celebrated.

In the interior, at the termination of the cordilleras of the Andes, are gold mines; and it appears indubitable, that there are silver mines in the Sierra of Santamarta.

Although this section is the most accessible to foreign commerce, it has not made the greatest progress since the establishment of independence; and its prosperity depends on perfecting internal navigation, by the rivers Magdalena, Cauca and Atrato, and a railroad from Rio Hacha to the interior of the provinces of Upar and Ocaña.

I have now completed the task proposed, viz., to give a brief geographical notice of New Granada; and nothing remains but to take such a general review of the country as may serve to complete the picture of that important part of the Columbian continent. to which we will proceed in the following

CONCLUSION.

It has not been my intention to write an elementary treatise on the descriptive geography of New Granada: for I do not consider myself sufficiently informed for such a work, nor have I the data and collection of facts indispensable for a complete memoir. During the first session of this Society, which I had the honor to attend, on the 8th of June last, I made known, through my friend, Mr. Dwight, what my profession has been, and that these notices are the fruit of observations and notes made during my travels and military campaigns in the country, while studying nature and draw-

ing comparisons with different books and records which fell into my hands.

Full of self-distrust, my opinion has occasionally been expressed: but, knowing that incorrect accounts have sometimes produced important errors in works in many respects most useful, from men whose names carry with them respect as authorities on the subject, I have been so bold as to present these notices, which have been received with so much courtesy by the Geographical Society of New York, and which had been prepared to be sent to Europe. In the hands of able geographers and statisticians they may perhaps serve as memoranda for ulterior investigations and the perfection of a science, which is not now, as in long past days, the simple description of the places in which certain men were found, and the identifying of the origin of particular people.

Studious youth are preparing in New Granada, better to execute a geographical labor; and they must surely find, in the history of the country, illustrious names of citizens, who, in a time of ignorance, made the first steps in geography and the exact and natural sciences, intimately connected with the material and intellectual progress of New Granada.

After speaking of the geographical position of New Granada, the formation of its basins, and the direction of its cordilleras, as well as of its principal rivers; presenting some accounts of its mineral riches and vegetable productions, and extending our attention to a general view of the animals, climate and political geography, justice requires something more to be said of those illustrious names I have above mentioned. That brief list should undoubtedly be headed with the name of the celebrated Don José Celestino Mutis, the patriarch of Granadan savans. He was born in Cadiz in 1732, and in 1760 arrived at Carthagena, at the age of 28. Mathematics and botany invited his attention; and he was the first who gave lessons in these sciences in the royal college of the

Rosario in Bogotá. Linnæus and Caranillas introduced him to the world, as a savant by his writings.* With time he diffused in the country the love of science; and in 1782 he obtained the patronage of Charles III, who appointed him director of the botanical expedition; and he commenced the labors of the Flora of Bogotá. In 1794, there were young men distinguished for their love of science; and some of them, being persecuted for their liberal ideas, were taken to Europe. There Don Francisco A. Zea, a native of the province of Antioquia, distinguished himself as a botanist, and Don Jose Maria Cabal, a native of Buga, as a chemist. In the country shone the celebrated Caldas, a geographer, astronomer and botanist, as well as a good mathematician; Don Tomas Quijano, a chemist and mineralogist; Don Manuel Maria Arboleda, a naturalist; Don José Ignacio Pombo, a statistician: all four of them natives of Popayan; Don Jorge Tadeo Lozano, a botanist and naturalist; and Don Benedicto Dominguez, an astronomer: both these of Bogotá; Don Juan Maria Céspedes, a botanist, of Tulua; and Don Eloi Valenzuela, and Don José Joaquin Camacho, geographers and naturalists, of the province of Pamplona; Don José Manuel Restrepo, a geographer, of the province of Antioquia; and Don Manuel Maria Quijano, a naturalist, of Popayan.

These are the names which deserve to be mentioned as those of men prominent in the study of the natural sciences, but who, for different reasons, have left but few memorials or records relating to geography and other branches. The

* In memoriam Josephi Cælestini Mutis, Americes summi botanici, qui historiam plantarum americanarum, imprimis palmarum pulcherimum parat, et plurima nova huic opusculo communicavit. Lin., suppl. pag. 57. Nomen immortale quod nulla ætas unquam delebit.—Lin.

In honorem sapientissimi viri (J. C. Mutis) qui jure merito botanicorum in America princeps salutatur, debetque etiam inter primates Europas collocari.—Cavanilles.

Spanish sword took the lives of Caldas, Cabal and Camacho, perhaps the most prominent, because they were among the leaders of independence; and of these remain only Restrepo, Dominguez and Quijano, the survivors of a valiant band of youth, who were the basis of the liberty of Colombia.

I had the pleasure of knowing and conversing with several of these men in my younger days; and, stimulated by their example, the day when the nation called me to direct its affairs, made me resolve to patronize the branches of learning useful in public improvement, and I promoted the establishment of the schools of exact and natural sciences in the three universities, by bringing professors from Europe, two complete chemical laboratories, and many philosophical instruments. I induced civil engineers to go to New Granada, to undertake the work of several carriage roads, and to survey the ground on which they were to be made; and entrusted to the skillful engineer, Colonel Codazzi, the task of constructing the geographical chart of New Granada. I cherished the navigation of the Magdalena by steam, and the completion of the Carthagena canal, opened different ports, and concluded the arrangement for forming an association for the construction of the Panama railroad, under influences which must prove favorable, by a treaty which as President I celebrated with the United States: all these being indispensable to the progress of New Granada. The short period of my presidency did not permit me to do more: but I left the chair with a quiet conscience, as I had been able to lay the foundation of future prosperity for the nation.

What other country in the world possesses a more advantageous position than New Granada? I believe none. With ports on the Atlantic and Pacific oceans, mistress of the Isthmuses of Panama and Darien, by which she will unite them, at no very distant day, by canals, while in the mean time by railroads she will facilitate the commerce of the world; a

country at once of mines and agriculture, and so varied in its climates and productions, as the vallies, basins, table-lands and mountains which form the whole, and the description of which has been given in this Memoir.

The morality of the Granadan people, after fourteen years of continual struggle in the war of independence and frequent political commotions in the last twenty-eight years, is such, that journies are made in all parts of the country without arms, and gold and merchandise are transported, without the occurrence of robberies or attacks upon property. The couriers carry goods without escorts; and out of two millions and a half of inhabitants, no band of robbers has ever been formed on the highways. The crimes which have been committed on the Isthmus are exceptions; but the work of abandoned men from other countries, attracted that way by the temptation of the gold of California.

No people pay smaller taxes than the Granadans: for the legislature is prudent in imposing them, while the obstacles opposed by gigantic nature in the mountains forbid facility of transport and immigration.

If my fellow-citizens, forgetting political passions which destroy Spanish-American republics, would devote their efforts to giving an impulse to the opening of roads and the internal navigation of the rivers, that country would become one of the happiest in the world.

Gold is very abundant in the southern and western sections; rich mines of salt, copper, iron and coal, emeralds and other precious stones, silver, platina and lead form its principal mineral wealth.

Sugar, coffee, cocoa, indigo, cotton, elastic gum, dye-woods, quinas, balsam tolu, balsam of Peru, sarsaparilla, building and ornamental woods, vanilla and cochineal abound in New Granada, with many other productions of the vegetable kingdom. Nothing is wanting but roads, to permit foreign coun

tries, especially Chile and California in the New World, to see their ports supplied with intertropical productions, and America and Europe to receive them by the Atlantic.

Pearls, pearl and turtle-shell, are abundant in the waters; and hides and wools could be exported with profit from the pasture lands on the beautiful and lofty savannas.

This combination of various products and wealth in all the kingdoms of nature is such, that it seems like a poetical picture to one who has not visited those vast regions.

New Granada possesses the vigorous vegetation of Brazil, rich gold mines like those of California, and silver mines like those of Peru. Its emerald mines are unique; and it has climates adapted to every race, without exposure to the cold of the north nor the debilitating heat of Senegal.

THE END.

Appendix.

A MEMOIR ON VARIOUS METEOROLOGICAL OBSERVATIONS MADE BY GENERAL T. C. DE MOSQUERA.

TRANSLATED BY THEODORE DWIGHT.

It is well known in science, that the greater or less heat produced on the earth by the source of it, the sun, determines the seasons in the temperate and the cold regions. Its almost uniform action in the zone which is improperly called the torrid, keeps up one continued season, if we may so call the perpetual spring with which the poets have painted our climate. This idea, the product of ardent imaginations, should be investigated and explained by the naturalist; and I will attempt to elucidate it, as I have observed some celestial phenomena.

Not being a man of science, but only one fond of the study of nature, I write this Memoir for the use of those who devote their time to such investigations.

The treatises on meteorology which I had consulted gave me no satisfaction with my observations; and I therefore conferred with M. Dulong in Paris, in 1831, on a phenomenon produced by caloric, and the mode of determining by means of the thermometer, the hygrometrical states of the atmosphere between the tropics. He thought my observation worthy of new experiments, and recommended to me to continue them and to communi-

cate them to him, as they had not been made by learned men in the temperate zone, where has always been the temple of science.

In 1819 I began to make these observations, to determine the mean temperature of the air in Popayan, Pasto, and several other places in the cordillera of the Andes, between about the latitudes of 1°, 2° and 3° north, and at different elevations above the sea. I observed that the mean temperature of the different months varied, and that a series of regular observations was necessary to ascertain the mean annual temperature. The celebrated travellers Humboldt, Bonpland, Lacondamine and others, had limited their observations to short series, being but a little time in the torrid zone; and I have not found that either of them attempted to find the mean terms of each class of observations: that is to say, the maximum and minimum of the lowest heat in the observations at morning, noon and night, and the relations it may have with the different states of the atmosphere. The motion of the earth, and the situation in which it is placed with respect to the sun, decidedly influence the seasons in the extra-tropical zones, and the caloric increases and diminishes by degrees. I endeavored to ascertain the increasing or decreasing progression of the temperature, and observed that, as there is no difference of seasons in the intertropical zone, the increasing progression was marked in the rainy season, and the decreasing in the dry; the mornings and the nights were colder in the dry than in the wet seasons, although I then experienced a cold or indisposition. I wished, therefore, to determine the truth by meteorological observations.

At Popayan the water of the springs varied several degrees in temperature in certain months of the year, being noted as coldest while approaching the solstices in June and December. The air also was colder; and as the phenomenon was similar it could not be the effect of the position of the earth, as at the former epoch it was near the tropic of Cancer, and at the other, the tropic of Capricorn. The greatest heats were marked in the months of April and November: that is to say, one and two months after the equinox, and in opposite circumstances. The mean terms of temperature were analogous, taken between the maximum and minimum of the diurnal observations; for, when the thermometer was lowest in the morning

at sunrise, it rose highest at 2 P.M. Hence I concluded, there being no seasons in the intertropical zone, that the causes influencing the maximum and minimum temperature in the morning, were not due, in the different months of the year, to the position of the earth with respect to the sun. When the thermometer sunk lowest at the morning observation, in certain months or days, it was followed by dry and serene weather; and when it sunk least it was in the rainy season: that instrument then gave some results which indicated the hygrometric state of the atmosphere. When the thermometer did not fall to the regular degree in the morning, I felt a pressure upon the brain, when in good health, which I attributed to the pressure of the atmosphere; and the same sensation was experienced by one of my sisters. I soon learned that it was the effect of an abundance of electricity; for, as soon as the clouds were discharged by a storm, my head was relieved. I then consulted my meteorological instruments, the thermometer and barometer. It never happened that the rising or falling of the latter instrument aided me in knowing whether there would be a storm, wind or rain; and the barometrical aphorisms of European philosophers were nothing to me. That instrument was of little use to me in meteorological observations, and I attributed the failure of their indications to a possible state of imperfection. I then confined my attention to the thermometer, and because I could not observe its daily movements with much regularity, for the want of time to devote to science, I was barely able to ascertain, that the investigations made by certain travellers were not sufficient to allow them to write on that department of meteorology, or that their works had never reached me. I was positive the barometer gave no certain indications for determining good or bad weather, rain, high winds or storms. Such were the ideas which I then communicated to M. Dulong in Paris, who gave me some suggestions concerning the isothermal lines which I ought to form into an isothermal zone, in the regions where I should make my observations, and where the medium temperature is the same. He communicated to me his observations on vapor and its effects, which might influence my experiments with boiling water, and the rules which I must observe to obtain some results by

my observations. But he said nothing respecting my doubts, requesting me to send him a series of meteorological and barometrical observations on atmospheric pressure in the intertropical zone, compared with the expansion of mercury in the thermometer, by means of boiling water. My first essays I communicated to him; and soon after, the death of that learned man deprived me of his counsels.

During the continuance of my thermometrical observations, I found that caloric, radiating from the earth, passes to the higher regions, when there are no vapors or clouds, with great facility; and that, the atmosphere being then clearer, all solids and fluids on the earth have less caloric, the thermometer naturally falling to its minimum in the morning, the time when the earth has been longest without receiving heat from the sun, and the want of it is most felt. This phenomenon doubtless differs in the extratropical zones, where the sun acts in different degrees, according to the position of the earth, and gives no clear result respecting the state of the atmosphere. The clouds, according to the observations of scientific men, by obstructing the radiation of caloric, impede the formation of dew, and reflect the caloric, according to their density. This phenomenon produces an effect contrary to that which I have stated when the atmosphere is clear; and hence the result, that the thermometer sinks less in the morning when the atmosphere is charged with vapor.

Having scrupulously pursued my observations, I think I have found, that a place like Bogotá, in 4° 35′ N. lat. sinks the thermometer, at 7 metres height from the ground, to 5 centigrades, when there is least heat, and 13 when most. The former degree marks pleasant weather, and the latter rain; 9 and 10 mark variable; from 10° 50′ to 13° rain; below 9° to 7° good weather and clouds; below 7° dry and clear. The tables of my meteorological observations give these results with few exceptions, in which, nevertheless, I have not been able to determine the phenomena which may have changed the principle which I adopt, to substitute the thermometer for the barometer, because it does not clearly mark the diurnal variations. I am hardly able to show that the thermometer has

fallen to 6 degrees in one day, and that it has rained hard at two in the afternoon, with thunder and hail: but I judged that the storm was produced by causes not proceeding from the atmospheric state of the place, and that the northwest winds carried it over a space in which the atmosphere had no vapors in the morning to impede the radiation of caloric to the elevated regions. On comparing my observations with the hygrometer of Saussure, they differed greatly, that instrument some days showing at 5 A.M. 100° of greatest moisture, and 5° at 1 o'clock, without rain. On another day there was heavy rain, when scarcely 75° had been indicated, and at the lowest grade of humidity, it was only 5°.

I think the hygrometric states of the atmosphere are more certain when obtained by thermometrical observations, between the maximum and minimum of heat at sunrise, than by Saussure's hygrometers, and that they better determine the indications of the weather than the barometer. On this I intend to speak hereafter.

The inter-tropical climates are constant, the differences being small between the coldest and the warmest months. Their variation consists in the greater or less elevation above the sea. It may be regarded as decided, that 29° is the mean on the Pacific coast, and 29° 5′ on the Atlantic, according to the observations I made at Chagres, Carthagena, Santamarta, Barranquilla, Ciénaga on the Atlantic; and at Panama, Buenaventura, Guapi, Iscuandé and Tumaco, on the Pacific. In all places in the interior of New Granada I can give assurance that the mean terms are in the following proportion: at 360 metres, 26°; 667m. 25°; 874m. 24°; 900m. 23°; 1,000m. 21°; 1,500m. 20°; 1,770m. 19°; 2,000m. 18°; 2,500m. 16°; 2,660m. 14°; 2,700m. 13°; 3,211m. 10°; 3,500m. 9°; 4,000m. 7°; 4,500m. 5°; 4,800m. 1° 5′. At the depth of one metre the mean temperature is found with much regularity.

In general the latitude and height above the level of the sea are the principal causes which determine the mean temperature of a spot of ground: but the influence of these two causes must be modified by many accidental circumstances, and is greatest in the extra-tropical zones from 21°, as well in the northern as in the southern hemisphere, comparing places in the same latitudes North and

South. This same phenomenon is observed in some intertropical places; and it may be said, that, from latitude 10° South, the influences of the seasons ceases to be perceived, the temperature varying greatly between winter and summer, when in the same latitude North, no variation is distinguished but that of the hygrometric state of the atmosphere. Nor would I venture to assert that the positions of the planets with respect to the sun, have no influence on the metereological state of the atmosphere, as, on the contrary, they are alike at the solstices and equinoxes in certain places: but it is also certain that, at some points, the dry season continues from the solstice of December till that of June, and in other places from that of June till that of December: for example, the lower part of Magdalena and the Atlantic coasts, and both the coasts of the Isthmus of Panama enjoy the dry season from the approach of the December solstice; and on the coast of the Ecuador it commences near the June solstice; but, notwithstanding, the rainy or wet season and the dry and clear season in the intertropical climates are in general constant.

The isothermal lines then might be determined between the tropics, especially in the Colombian territory, by isothermal lines from the cordilleras, with only a secondary regard to the latitude, on account of the result which we have announced respecting the mean temperature at different elevations. And this appears to me the more exact, from the observations made on the intertropical vegetation, which is alike at the same altitudes above the ocean, attributing the variety of species of the same genus more to the height from the sea, than to the geological formation of the ground; but, with respect to the genera, there is a great zone. Agaricus Umbilicatus, Leskea involvens, Peperomia foliosa, Dendrobium elegans, and Epidendrum geminiflorum, are found in the cordilleras of Quindío, Guanacas, Almaguer, Pasto and the sides of Chimboraso, between 1940 and 2100 metres above the level of the sea. Other genera embrace a greater zone: as the Melastomas, from 190 to 2000 metres: but in the species the varieties succeed each other, according to the elevation above the sea, so that, if Melastoma capitellatum grows from 190 to 1730. the varieties are not everywhere

alike, but differences are found. For this reason we might allow the influence of the atmosphere in its meteorological state, which so much contributes to the propagation of plants, and to the ascent and descent of sap, and most remarkably in the intertropical zone on this account, more than by the influence of the relative position of the heavenly bodies.

By such observations, then, the determination of the isothermal lines might be made, in the horizontal bands, along the cordilleras and the vallies, at the distance of 500 metres at the most; although it appears to me, that repeated experiments, according to my observations, might go on increasing, commencing the first band at the level of the sea, up to 50 metres; the second from 50 to 125, the third from 125 to 200, the fourth from 200 to 360, in which would be found a grade of difference. Between 360 and 667, two bands; two more between 667 and 874, only one between this and 900, and between 900 and 1000; and between 1000 and 1500, four bands. From 1500 to 1770, one band, and another from 1770 to 2000. From 2000 and 2500, four; from 2500 to 2660, one; from 2660 to 2700, one; from 2700 to 3211, four; from 3211 to 3500, one; from 3500 to 4000, two; from 4000 to 4500, two; and from 4500 to 4800, four. I have fixed the last band at 4800 metres' elevation, which is the most constant of the elevations of perpetual snow, as, if mountains are found covered with snow at 4200, it is very uncommon, and the effect of hailstones, which continue for several weeks; and it commonly happens, up to 3700 metres, that a hail-storm continues several days, if the atmosphere is clear, until the heat, reflected by clouds, melts the hail, which assumes the consistency of ice. In the paramo of Puracé I have observed, that when the air is at 5°, the snow had a degree of cold, with a bright sun and the wind from the northeast, and while the sky was unclouded, there was no thawing. Although I was unable to determine the elevation, for the want of a barometer, I made an experiment with boiling water, which gave me 86 centigrades. The water had not been distilled: I used melted snow, and calculated that I might be 4400 metres above the level of the sea. I made my observations at 4 o'clock P.M., October 25th, 1835.

Wishing to rectify my observations, the 30th of same month I went up to the volcano, and, at a much greater elevation was unable to kindle a fire for several reasons; but I enjoyed a phenomenon very peculiar in meteorology. At the distance of about two miriametres West from the snowy region of Puracé, on the hills of Pusna, there was the appearance of a storm. There were two horizontal bands of clouds, the lower black, and charged with vapors, and the upper illuminated by the rays of the sun. The winds appeared to be contrary, from the motions of the clouds. As soon as the principal masses became parallel, the storm began; and I observed that there was a horizontal electrical current in the upper band of clouds, and flashes proceeded from it, which lighted it and sent rays to the earth, accompanied with the roar of thunder; and in other parts the electricity went up from the lower to the upper band, without thunder. The forms presented by that electrical phenomenon were various, but always angular and zigzag. I could not determine whether there was any fall of rain: but, on descending from the páramo, where not a single drop of rain had fallen, the sun being bright and the temperature at 4°, I found the storm had been accompanied with much hail, though not of great size. The largest which I found were four or five millimetres in diameter, and, when broken in the middle, showed a radiated structure from the centre; while the smallest had two or three coats, one transparent and one opaque, and milk-white.

Reflecting on that phenomenon, I ventured to conclude, that the two bands were positively and negatively electrified, and their mutual repulsion and attraction carried the molecules of vapor from one to the other, and the upper stratum, by absorbing the caloric, produced gelation. The rotation of the hailstones gave some a spherical form, and others a spheroidal, and sustained them in the air, while the force of gravity was compensated by the impulse given by the horizontal electrical currents.

I have much doubt of the judgment I formed of this phenomenon; and, in writing this part of my observations, I have only the intention of submitting them to intelligent men, that they may be useful to science.

In the second part of this memoir, I shall treat of the barometer and atmospheric pressure, and of the levels which I have been able to take in New Granada.

PART SECOND.

At the time when I was making the observations above treated of, I consulted the barometer; and I was never able to discover any variations in the height of the mercury, but those given by the hourly variations. The learned men of the extratropical zones have fixed them at 9 o'clock A.M., noon, 3 P.M. and 9 at night. In the intertropical zone I have observed that the maximum of elevation varies between 9 and 10 A.M., the minimum between 3 and 4 P.M., and that the medium is at noon. At 11 P.M. and 4 A.M. there is another constant variation of maximum and minimum, whatever may be the state of the atmosphere, so that I have never been able to ascertain by the barometer whether there would be good or bad weather, storms or high winds. There are, however, continual variations, which keep the barometer in continual oscillation, above and below the medium annual height. Comparing the effects on different barometers, I have observed that those of Fortin are the most sensitive, and those of Bunten and Gay-Lussac are less sensitive to oscillations, although the differences are very small.

I wished to compare anterior observations with the atmospheric pressures deduced from those made with boiling water, by availing myself, as a guide, of the memoir of our lamented countryman, Colonel Caldas, written in the year 1801, and printed in Bordeaux in 1818, before the scientific men of Europe had considered the theory which is now so well known to the learned. In Popayan a barometer of Gay-Lussac gave me 620^{mm} 35, and boiling water 94° 46. In Coconuco, 570^{mm} 22, and boiling water 92° 5. In Cobalo, the summit of the cordillera above Coconuco, where is a spring of boiling water at 58°, the barometer gave me 551^{mm} 92, and boiling water 91° 25. At the distance of about 5 killometres, near another spring of tepid water, which has the temperature of 26°,

the barometer and boiling water gave me the same pressure as in Cabalo, viz. 551^{mm} 92, and 91° 25, with no other difference than the hours at which I made the observations, as the former were 1h. 30m. P.M., and the latter at 2h. 50m. P.M., when the barometer, by horary variation, ought to have fallen 1 millimetre.

Colonel Caldas, after different observations, in which he took for exponent 0° 974 of Reaumur's thermometer, corresponding with 12 lines of the barometrical scale, found some few variations between his calculations by boiling water and the barometrical pressures observed, as may be seen in the memoir which I quote. Some of the observations having been rectified by me. I also found very small differences, which I attributed to horary variations of the barometer. This showed me that his exponent was scarcely approximate; and that, although his discovery was important and original, it ought to be proceeded in with attention to bring it to perfection. I made an effort in Paris, in 1831, to obtain some instruments, and the engineers Pixi and Chevalier, whom I applied to to ascertain whether they had constructed barometrical thermometers, informed me that they had not. I then had one made by M. Chevalier, according to the system of Caldas, which has served me many times, although I do not think it very exact, because the scale commences at 40°, and by comparing it with others, some small differences are discovered.

From the observations which I have quoted above, it may be seen that there is much relation between the facts obtained by the barometer and the thermometer, to ascertain the atmospheric pressure by boiling water: but, as a thermometer is required of considerable size, and giving decimal divisions of each degree, it would be necessary to construct one, with a receiver of sufficient diameter to make the degrees in the capillary tube larger, and to add length to the scale, to calculate the pressures. Only in this way, after a long series of observations, could it be definitely established, whether there is an exact proportion between the scales of the barometer and the degrees of heat in boiling water at different places. The exponent of Caldas, 0° 974 for 12^{l} is good for elevations between 620 and 562 millemetres; but from the time when it reaches one of 545^{mm}, 91° as that of Quito, the difference between the barometer

and the calculation by boiling water is 2,65^{mm}; and when the pressure is increased to 703.48^{mm}, as in the valley of Patía, the difference of the calculation is 3.47^{mm}.

Some observations made by Baron Humboldt at Quito and Bogotá, give 90° 1 and 90° 9 to boiling water, which correspond with the atmospheric pressures of 527 and 544^{mm}, according to the calculations of that learned naturalist: but, by the observations of Caldas, water boiled at Quito at 90° 35, and his barometer rose to 545.91; at Bogotá boiling water 91° 90, and his barometer 562.62. My observations in that city give me 91° 9 and 92; and Fortin's barometer 561.75 and 562+2.9, correction for the capillarity of the tube=564.9.

With the different barmometers with which I made a series of observations in the intertropical zone, the variation between the maximum and minimum in each place has never exceeded 3^{mm}, and hence I infer, that the barometer is a much more certain instrument in those regions, to calculate the real atmospheric pressure, than in the extratropical zones, where there are so many variations, proceeding from the meteorological state of the atmosphere; and that, to use the thermometer to calculate atmospheric pressure by the density of the vapor of water, it is not only necessary to construct instruments which shall give the decimal parts of a degree, but a scientific journey should be made from the highest of our snowy cordilleras to the coasts of both oceans, in order to calculate the exponent of a general formula, or to ascertain whether there is an arithmetical proportion, as I believe, between the relation of the degrees marked by the thermometer according to the density of vapor and the atmospheric pressures calculated by the ascent of mercury in a well constructed barometer.

For my own part I believe, that most of the barometers brought from Europe arrive in an imperfect state, although they may not be broken; and that it is indispensable to clean them of the mercury, and to boil it again; for I cannot attribute to any other cause the differences which I have noticed in my observations compared with those of the illustrious traveler, Baron Humboldt. I generally find that the observations of that learned man give one degree of

pressure less than those I made in the same places; and it appears that the rising of the mercury in my barometers to a greater height, proves that the tube of the barometer is more exhausted, and that there is no pressure from the vapors or air. As barometers from Europe reached me broken or out of order, I found myself under the necessity of reconstructing them with longer tubes, and by using well purified mercury. I may hereafter publish the tables of my barometrical observations, as they may prove useful to young men now devoting themselves to natural science, may serve in making comparisons, and afford materials in preparing for certain public works.

To calculate the tension of the vapor of boiling water I ordered a small vessel to be constructed, with a double concentric bottom, and the space to be filled with charcoal, that the thermometer, placed in a cylinder of the vessel, might show the degrees of heat contained, without the necessity of introducing it into the water, whose strata do not give the medium degree: the lowest of them being very hot, where the pressure is greatest, and, therefore, the ebullition the least. But when the water evaporates every atomic molecule of vapor carries with it, to the cylinder of the little vessel, heat equal to that of the stratum from which it proceeds; and its irradiation shows in the result, that it all has the same degree of heat. By operating in this manner, I believe a good result may be obtained with greater certainty, in comparing the density of vapor by the thermometer, and atmospheric pressure indicated by the barometer.

I believe that, at small expense and in a short time, these studies might obtain a very desirable degree of perfection; and that students, commencing their scientific pursuits in the Institute of New Granada, will make indubitable progress. This affords me much gratification; and, desiring to stimulate my young countrymen to pursue studies so important, I publish these notes, with the hope that they will be corrected by other observers.

TABLE B.

Of the geographical position of numerous places in New Granada, their medium temperature, height above the level of the sea, and names of those by whom the observations were made.

PLACES.	Latitude north.	Longitude from Greenwch	Temperature Fahr.	Temperature Cent.	Height above the sea. Metres	Height above the sea. English feet.	Observers and Notes.
River Carchi	0° 45′	77° 40′ 00″	55° 4	13°	3070	10,072	Mosquera.
Chiles (páramo)	0° 47′	77° 58′	50°	10°	4347	14,203	Do.
Ipiales (town)	0° 45′	77° 15′ 45″	“	“	“	“	Bouguer.
,,	0° 48′	“	“	“	“	“	Caldas.
,,	0° 46′ 30″	77° 28′	53° 6	12°	3083	10,115	Mosquera.
Cumbal (town)	0° 49′	77° 27′ 45″	53°				Bouguer.
Cumbal (páramo)	0° 54′ 30″	77° 53′	41°	5°	4500	14,764	Mosquera.
Carlosama (town)	0° 50′	77° 45′	53° 6	12°	3100	10,171	Do.
Pastaz do.	0° 49′ 32″	77° 44′	51° 8	11°	3100	10,171	Do.
Pupiales do.	0° 50′ 30″	77° 41′	51° 8	11°	3150	10,335	Do.
Guachucal do.	0° 55′	77° 39′	50°	10°	3141	10,305	Do. and Humboldt, ht.
Sapuyes do.	0° 58′	77° 39′	53° 6	12°	3125	10,255	Do.
Rio Guaitara	1° 1′	77° 22′	68°	20°	1664.4	5460.8	Do. do. do.
Chillanquer (town)	1° 2′	77° 40′	55° 4	13°	2713	8901	Do. do. do.
Cuarchu	1° 2′ 30″	77° 28′	57° 2	14°	2650	8692,6	Do.
Tuquerres (town)	1° 3′	77° 32′	55° 4	13°	3038	9967.7	Do.
Taindala	1° 3′ 30″	77° 23′	55° 4	13°	2713	8901	Do. do. do
Yacuanquer	1° 6′	77° 22′	57° 2	14°	2616	8583	Do.
Tambores	1° 8′	77° 20′	53° 6	12°	3100	10,171	Do.
Los Ajos	1° 9′ 50″	77° 24′	53° 6	12°	3060	9843	Do.
Anganoi	1° 11′	77° 25′	55° 4	13°	2700	8858.7	
Pasto	1° 13′	77° 20′ 45″	57° 2	14°	2615	8579.8	Humboldt.
Do.	1° 12′ 30″	77°	57° 9	14° 4	2692	8602.8	Mosquera.
Do.	1° 13′ 30″	76° 56′ 45″	57° 9	14° 4	2605.6	8546	Bouguer and Caldas.
Aranda	1° 14′	77° 15′	53° 6	12°	3098	10,164	Mosquera, Humboldt, height
Meneses	1° 16′	77° 18′	59°	15°	2600	8530.6	Do.
Buesaco (town)	1° 17′ 30″	77° 10′	64° 4	18°	1900	6233.9	Mosquera, Humboldt.
Juanambu (river)	1° 24′	77° 12′	71° 6	20°	1504.6	4935.6	Do. do. height.
Tablon (town)	1° 21′	77° 3′	64° 4	18°	2101	6893.4	Do. do. do.
Janacatú (river)	1° 23′	77° 4′	71° 6	20°	1504.6	4936.6	Do. do. do.
La Erre (farm)	1° 24′ 30″	77° 6′	64° 4	18°	2286.8	7501.02	Do. do. do.
Puruguai	1° 27′	76° 45′	55° 4	13°	2868.9	9412.9	Do. do. do.
La Cruz	1° 40′	76 °40′					
Las Papas	1° 30′	76° 20′	41°	5°	4350	14,272.3	Do.
Valle de Jayo	1° 50′	“	53° 6	12°	2179	7142.7	Humboldt.
Paramo de Achupallas	1° 54′	“	41°	5°	3109	10,200.6	Do.
Almaguer (city)	1° 54′	76° 54′ 45″	60° 8	16°	2268.63	7433.4	Do. and Mosquera.
Do. (paramo)	2°	76° 50′	50°	10°	3305	10,843.7	Do. do.
Pilatumba (paramo)	2° 10′	“		9°	2878.8	10,045.3	Do.
Pancitara (town)	2° 12′	76° 48′	53° 6	12°	2900	9505.9	Do. do.
Socoboni	2° 3′	76° 46′	59°	15°	2450	8038.4	Do.
La Vega (caserío)	2° 15′	76° 51′	60° 8	16°	2225.75	7302.7	Do. do.
La Ascencion (town)	2° 18′	76° 45′	66° 2	19°	2034.75	6674	Do. do.
Guachicono (river)	2° 19′	76° 45′	69° 8	21°	939.41	3073.2	Do. do.
La Asequia Esmita	“	“	“	“	1169. 4	3835.8	Do.
La Horqueta (caserío)	“	“	“	“	1380	4527.8	Do.
Quilcacé (river)	“	“	“	“	1126.7	3696.7	Do.
Alto de Quilcacé	“	“	“	“	1949	6394.7	Do.
Hato-frio (farm)	“	“		14°	1031	7263.7	Caldas.
Timbio (town)	2° 24′	76° 35′	64° 4	18°	1799	5902.5	Mosquera.
Chirivio (farm)	“	“	“	13°	2120	6955.7	Caldas.
Sachacoco	“	“		18°	1800	5907.8	Mosquera.
Poblazon (farm)	2° 25′ 30″	76° 33′	60° 8	16°	2301	7549.5	Mosquera and Caldas.
Coconuco do.	2° 26′	76° 28′	60° 8	16°	2360	7743 2	Mosquera.
Popayan (city)	2° 26′ 17″	76° 39′ 45″	66° 2	19°	1775.5	5825.4	Humboldt.
Do.	2° 27′	76° 34′	“	“	“		Bouguer.
Do.	2° 26′ 30″	76° 38′	66° 2	19°	1771	5810.6	Mosquera.
Do.	2° 26′ 30″	76° 19′		18° 8′	1770	5807.3	Caldas.
Purace (town)	2° 27′ 17″	76° 25′	59°	15°	2642	8665.7	Mosquera.
Cascada del Vinagre	2° 27′ 17″	76° 25′	57° 2	14°	2670	8760.2	Humboldt.
Paletara	2° 25′	76° 22′	44° 6	7°	3600	11,811.6	Mosquera, 1837.

PLACES.	Latitude north.	Longitude from Greenwch	Temperature Fahr.	Temperature Cent.	Height above the sea. Metres	Height above the sea. English feet	Observers and notes.
Cobaló (boiling water)	2° 26′	76° 23′	55° 4	13°			Mosquera. 1837.
Chiliglo (tepid water)	2° 25′	76° 23′	55° 4	13°			Do. 1837.
Hato viejo	2° 25′ 30″	76° 28′ 30″	55° 4	13°	2634	8642.1	Do. 1850.
Rio vinagre	2° 25′ 31″	76° 29′	62° 6	17°	2143	7031.1	Do. do.
Carpintero	2° 25′ 32″	id.	59°	15°	2271	7451.1	Do. do.
San Isidro (farm)	2° 27′	76° 31′	60° 8	16°	2196	7205	Do. do.
Placer	2° 27′	76° 34′	64° 4	18°	1900	6233.9	Do. do.
Purace (Nevado summit)	2° 26′	76° 22′ 30″	23°	5°	5184	17,008.7	Caldas.
Do. crater of the volcano	2° 26′	id.	20° 2	1°	5000	16,405	Mosquera, 1850.
Do. (Old mouths)	2° 26′	76° 23′	30° 2	1°	4432	14,541.4	Do.
Do. do	"	id.	id.	id.	4412	14,473.7	Humboldt.
Do. do	"	id.	id.	id.	4450	14,600.4	Caldas.
Do. (sands)	2° 26′	id.	42° 8	6°	4412	14,473.7	Mosquera.
Do. Pajonales	2° 26′	id.	44° 6	7°	4100	13,452.1	Do.
Do. Montaña	"	"	"	"	3118	11,214.4	Humboldt.
Alto Palace (river)	"	"	"	"	1851	6073.1	Do.
Totoro (town)	2° 28′	76° 33′	57° 2	14°	2560	8409.3	
Malvazá (farm)	2° 30′	76° 1′	46° 4	8°	3038	9967.6	Mosquera.
Guanacas (paramo)	2° 32′	76° 16′	40°		4100	13,452	Caldas.
Do.	2° 32′	76° 10′ 2″	41°	5°	3635	11,926.4	Mosquera.
Do.	2° 34′	"	"	"	"		Bouguer.
Inza (town)	2° 28′	76° 4′ 17″	64° 4	18°	1750	5641.7	Mosquera.
Patico	2° 25′	76° 48′ 42″	74° 3	23° 5	1380	4527.7	Do.
La Plata (city)	2° 23′	75° 33′ 51″	74° 7	23° 8	1288.5	4227.5	Caldas and Mosquera.
Carnicerias (town)	2° 30′ 18″	75° 21′ 33″	"	"	1103.8	3621.5	Do. do.
Iquira (town)	2° 38′	75° 24′	"	"	1318	4424.3	Mosquera.
Do. (river)	2° 40′	"	"	"	1068.8	3506.7	Do.
Retiro (town)	2° 45′	"	"	"	1119.5	3673.06	Do.
Almorzadero (house)	3° 10′	"	"	"	1061.8	3482.7	Do.
Neiva (city)	3° 23′	75° 30′	87°	30° 5	768.8	2511.4	Do.
River Magdalena Neiva	"	id.	"	"	765	2509.9	Do.
Patá	3° 24′	75° 15′	88° 5	31° 4	627.18	2058.1	Do.
Natagaima	3° 25′	75° 15′	88°	31° 11	587	1925.9	Do.
Guaguarco	3° 30′	75° 22′	79°	26° 11	560	18,50.48	Do.
Ilarco	3° 35′	75° 5′	90°	32° 2	608	1994.8	Do.
Chirilo	4° 10′	75°	74° 5	23° 6	514.2	1687.09	
Batatas	4° 15′	74° 50′	84° 75	29° 3	531.2	1742.86	
Limonal	4° 23′	74° 45′	85°	29° 44	596.8	1852.7	
River Fuzagazuga	4° 25′	74° 40′	78° 25	25° 7	494.56	1622.6	
Agua de Dios	4° 28′	74° 41′	79° 25	26° 25	551.88	1810.7	
Peñon de Tocaima	4° 32′	74° 40′	93°	33° 9	581.64	1908.3	
Tocaima	4° 32′	74° 40′	81° 5	27° 5	489.4	1805.7	Caldas.
Anapoima (town)	4° 37′	74° 32′	83°	28° 33	894.2	2934	Mosquera.
Juntas, (rivers Apulo and Bogota)	4° 38′	74° 35′	72°	22° 22	581.25	1802.4	
La mesa	4° 30′	74° 30′	74° 5	23°	1445.9	4738	
Barro blanco	4° 38′	74° 20′	57° 2	14°	2740.6	8991.7	
Bogota (city)	4° 35′	74° 13′ 45″	61° 4	16° 24	2661	8730.7	Humboldt.
Do.	4° 36′	74° 14′	61° 17	16° 15	2644.7	8677.2	La Condamine and Lewy.
Do.	4° 35′ 30″	74° 14′ 15″	59°	15°	2644.18	8655.5	Mosquera.
Do.	4° 36′ 12″	74° 14′ 15″	62° 6	16° 7	2635.9	8648.3	Caldas.
Guadalupe	4° 35′	74° 14′ 17″	"	"	3267.9	10,887.5	Humboldt.
Guadalupe	4° 35′	74° 14′ 17″	"	"	3364.7	11,039.5	Caldas.
Moncerrate alto	4° 35′	74° 14′ 10″	51° 8	10° 75	3233.9	10,610.4	Lewy and Mosquera.
Do. (chapel)	4° 35′	74° 14′ 10″	50°	10°	3215.8	10,660.9	Humboldt.
Do. do	"	"	49° 55	9° 31	3192.7	10,476.3	Lewy and Mosquera.
Facatativa	4° 45′		57° 88	14° 38	2630.2	8699.6	Lewy.
Do.	4° 39′	74° 29′	57° 2	14°	2590	8487.7	Mosquera, 1842.
Alto del Roblo	4° 36′	74° 30′	"	"	2763.46	8870	Humboldt.
Do.	"	"	56° 75	13° 75	2767.9	9081.6	Lewy.
Aserradero	"	"	64° 61	18° 12	2409.1	7904.2	Do.
Muchal	4° 41′	"	66° 2	19°	1371.5	4498.8	Mosquera.
Escobal	4° 40′	74° 33′	64° 4	18°	1856	6089.5	Do.
Alto de Gascas			64° 4	18°			
Mave	6° 12′	74° 40′	75° 7	24° 5	1246.7	4188.2	Lewy.
Villeta (town)	4° 40′	74° 40′	77°	25°	790.83	2635.12	Mosquera, 1842 and 1849.
Do.	"	"	74° 21	23° 45	837.5	2747-8	Lewy, 1848.
Do.	"	"	"	"	1083.6	3555.2	Humboldt, 1801.
Alto del Trigo	5°	"	64° 4	18°	1871.1	6139	Mosquera, 1849.
Do.	"	"	68° 45	20° 25	1943.3	7415.9	Lewy, 1848.

PLACES.	Latitude north.	Longitude from Greenwch	Temperature Fahr.	Temperature Cent.	Height above the sea. Metres	Height above the sea. English feet.	Observers and notes.
Guaduas	5° 4′	74° 47′ 45″	73° 63	23° 13	1008.6	6309.2	Mosquera.
Do	5° 4′	74° 47′ 45″	74° 58	23° 66	995.7	3266.8	Lewy.
Do	5° 4′	74° 47′ 45″		“	1149.9	3781.7	Humboldt.
Sargento	5° 7′	74° 50′	68° 9	20° 5	1401.2	4597.3	Mosquera.
Do	“	“	81° 9	27° 5	1372.9	4504.4	Lewy.
Do	“	74° 50′		“	1676.1	5497.2	Humboldt.
Bodega of Bogota	5° 12′	74° 52′ 38″	85° 1	29° 5	188.24	617.94	Mosquera.
Do	“	“	85° 1	29° 5	185.8	609.6	Lewy.
Honda	5° 11′	74° 52′ 45″	82° 4	28°	219.11	718.8	Mosquera, 1842–49.
Do	5° 11′	74° 52′ 45″	83° 33	28° 52	221.6	792.6	Lewy.
Do	5° 11′	74° 52′ 45″		“	253.4	831.4	Humboldt.
Conejo	5° 25′	74° 50′	86°	30°	182.5	598.7	Mosquera.
Guarumo (town)	5° 30′	74° 50′	81° 6	27° 6	177.16	581.2	Do.
Do					199		Humboldt.
Buenavista (town)	5° 40′	74° 45′		32°	164.91	441	Mosquera.
Do	“	id.	77° 9	25° 5	168.4	552.5	Lewy.
Nare (town)	6° 12′	74° 40′	80° 2	26° 8	162.5	533.6	Do.
Do	6° 12′	id.	93° 2	34°	154.3	506.2	Mosquera (Noon.)
Angostura de Carare fin	6° 13′	74° 39′	86° 25	30° 15′	141.7	464.9	Id. (in 10 obs. in 4 days, 1849
Garrapatas	“	“		“	155.9	511.5	Humboldt.
Do	“	“	86°	30°	140	459.3	Mosquera.
San Bartolome (town)	6° 42′	74° 18′	88° 7	31° 5	137.5	451.1	Do.
Chucuri	6° 54′	74° 15′	87° 8	31°	111.5	364.8	Do.
Sa i Pablo (town)	7° 32′	74° 8′	86°	30°	92	241.8	Do.
Vadillo do	8°	74° 9′	95°	35°	69.2	227	Do.
Puerto Morales	8° 23′	74° 2′	91° 4	33°	57	187.6	Lewy.
Puerto de Ocaña	8° 21′	74°	104°	40°	63.72	209.06	Mosquera.
Mompox	9° 14′	74° 30′	86° 36	30° 2	39.3	128.9	Mosquera.
Do	“	“	87° 4	30° 8	37.5	123.03	Lewy.
Plato	9° 48′	74° 40′	83° 2	34°	30	101.51	Mosquera.
Remolino	10° 41′	74° 40′	87° 8	31°	28.51	93.54	Do.
Barranquilla (town)	10° 59′	74° 50′	84° 2	29°	25.16	82.54	Do.
Do. (river)	“	“	86°	30°	19.16	62.86	Do.
Puerto Sabanilla (sea)	10° 56′ 30″	75° 0′ 30″	85° 6	29° 8	00.0		Do.
Cartagena	10° 25′	75° 29′ 45″	86°	30°	0		Do.
Santamarta	11° 18′	74° 15′	83° 3	28° 5	0		Lewy.
Chagres	9° 20′	79° 48′	86°	30°	0		Mosquera.
La Esperanza	4° 44′	76° 5′ 45″	79° 7	26° 5	395.8	1298.6	Lewy.
Mariquita	5° 12′	75° 1′ 45″	80° 6	27°	926	3048.2	Humboldt.
Do			81° 95	27° 75	997.6	3273.2	Lewy.
Santana	“	“	78° 8	26°	780	2559.1	Humboldt.
Do. (mines)			72° 95	22° 75	997	3271.1	Lewy.
Ibagué	4° 27′	“	68°	20°	1364	4475.2	Humboldt.
La Palmita	“	“	68°	20°	2198.5	7213.2	Do.
Toche	“	“		“	2042	6699.7	Do.
Los Volcansitos	“	“		“	3192	10,472.9	Do.
Paramo of Quindio	“	“		“	3504	11,496.6	Do.
Tolima (lower snows)			32°	0°	4785	15,699.5	Do.
Do					4807	15,771.7	Caldas.
Tolima Nevado	4° 46′		23°	5°	5583.9	18,320.7	Do.
Do					5494	18,123.8	Humboldt,
Inciensal			77°	25°	2412.9	7916.7	Do.
Boquia	“	“		“	1793	5882.8	Do.
Cartago	“	“		“	974.5	3197.3	Do.
River Cauca at Cartago	“	“		“	877	2877.4	Do.
San Pedro	“	“		“	916	3005.3	Do.
Buga	3° 55′	76° 10′	71° 6	22°	1000	3281	Mosquera.
River Cauca at Buga	“	“	78° 8	26°	901	2956.18	Humboldt.
Frisoles	“	“	74° 66	23° 7	1025	3363	Mosquera.
Palo (river)	3° 13′	76° 35′	75° 2	24°	1040	3412.2	Do.
Bolsa (farm)	3° 11′	“	74° 66	23° 7	1020.4	3266.9	
Matarredonda ó Cupresia	3° 6′ 29″	76° 36′	68° 23	20° 14	1089	3573	Mosquera in 1837.
Quilichao	3° 2′	“	68°	20°	1185	3887.9	Humboldt.
Piendamo	2° 26′	“	64° 4	13°	1972	6470.1	Do.
Berruecos	1° 29′ 20″	77°	57° 2	14°	2615	8579.8	Mosquera.
Mercaderes	1° 45′	77° 10′ 30″	78° 8	26°			Mosquera.
Guachicono (river)	2°	77° 3′	77°	25°	682	2237	Caldas.
Herradura	2° 1′	77° 3′	78°	25° 56	701	2299.9	Do.

PLACES.	Latitude north.	Longitude from Greenwch	Temperature Fahr.	Temperature Cent.	Height above the sea. Metres	Height above the sea. English feet.	Observers and Notes.
Bordo	2° 10′	"	"	"	900	2852.9	Id.
Acequia de Esmita	"	"	"	"	1169	3835.4	Humboldt.
River Blanco	2° 28′	76° 34′	68°	20°	1842	6643.6	Mosquera, 1850.
Palace	2° 30′	76° 36′	69° 8	21°	1778	5833.6	Do.
Cofre					1778	5833.6	Do.
Cajivio	2° 34′	76° 35′	64° 4	18°	1936	6342	Do.
Do. quebrada	2° 34′ 30″	id.	66° 2	19°	1901	6237.18	Do.
River Piendamo	2° 35′	id.	66° 2	19°	1661	5449.7	Do.
Height of Piendamo	2° 36′	id.	62° 6	17°	2001	6565.2	Do.
House of Cipriano Paz	2° 36′	76° 36′	60° 8	16°	1959	6427.4	Do.
Corrales	2° 40′	76° 37′	60° 8	16°	1857	6093	Do.
Matarredonda	2° 48′	76° 36′	62° 6	17°	1802	5852.3	Do.
Do. in 1837	2° 48′	76° 36′	71° 6	22°	1752	5748.3	Do.
Almorzadero	2° 50′	76° 37′	71° 6	22°	1752	5748.3	Do.
Height of Aganche	2° 55′	76° 38′	73° 4	23°	1669	5475.9	Do.
River of Obejas	3°	76° 38′	77°	25°	1217	3992.9	Do.
Height of San Ignacio	3° 01′	76° 37′ 50″	73° 4	23°	1535	5036.3	Do.
Height of San Gregorio	3° 02′	id.	71° 6	22°	1501	4924.7	Do.
San Ignacio	3° 03′	76° 37′	68°	20°	1447	4817.6	Do.
River Teta	3° 04′	id.	77°	25°	1399	4790.1	Do.
Ensolvado	3° 05′	id.	80° 0	27°	1462	4896.8	Do.
Height of Piendamo	3° 06′	id.	69° 8	21°	1588	5210.2	Do.
Height of Izquierdo	3° 07′	id.	71° 6	22°	1601	5252.8	Do.
La Teta	3° 09′	76° 38′	75° 2	24°	1350	4582.1	Do.
River Teta	3° 11′	id.	77°	25°	1185	3887.9	Do.
Quebrada San Miguel	3° 14′	id.	78° 6	26°	1112	3648.4	Do.
River Cauca	3° 16′	id.	78° 6	26°	1104	3622.2	Do.
Height of las Cañas	3° 16′ 40″	76° 39′	68°	20°	1133	3717.3	Do.
River of las Cañas	3° 16′ 50″	id.	73° 4	23°	1098	3602.5	Do.
Plain of Cañaverales	3° 17′	76° 38′	77°	25°	1050	3445.05	Do.
River Claro	3° 18′	76° 37′ 50″	77°	25°	1046	3431.9	Do.
Jamundi	3° 20′	76° 37′	78° 8	26°	1058	3471.4	Do.
River Jamundi	3° 21′	76° 37′ 10″	80° 6	27°	1052	3451.5	Do.
Height of la Viga	3° 21′ 40″	id.	75° 2	24°	1139	2737.05	Do.
Quebrada Cañasgordas	3° 17′	76° 38′	73° 4	23°	1065	3497.2	Do.
Do. Melendes	3° 23′	id.	71° 6	22°	1033	3387.2	Do.
Do. Cañaverales	3° 24′	76° 38′ 50″	71° 6	22°	1055	3461.4	Do.
Cali	3° 25′	76° 39′ 45″	71° 6	22°	1078	3536.9	Do.
Cauca (river)	"	"	75° 2	24°	939	3277.7	Do.
Sta. Rosa	3° 24′	76° 39′	77°	25°	1095	3592.6	Do.
First height of San Antonio	3° 26′	76° 41′	69° 8	21°	1771	5810.6	Do.
Second do. do	3° 26′ 50″	76° 41′ 30″	69° 8	21°	1814	5885.5	Do.
Hacienda do	3° 26′	76° 41′ 40″	69° 8	21°	1792	5877.5	Do.
Heights of la Cruces	3° 28′	76° 41′	66° 2	19°	2247	7372.4	Do.
Tocotá	3° 29′	76° 40′	64° 4	18°	1535	5036.3	Do.
Alto de Platanales	3° 40′	76° 43′	69° 8	21°	1216	3969.6	Do.
River Dagua	3° 48′	76° 43′	75° 2	24°	1094	3589.4	Do.
Hacienda de Dagua	3° 50′	76° 44′	75° 2	24°	1028	3372.8	Do.
Height of las Hojas	3° 52′	76° 44′	73° 4	23°	1302	4271.8	Do.
Quebrada Naranjo	3° 53′	76° 45′	73° 4	23°	1062	3484.3	Do.
Do. Jimenez	3° 54′	76° 46′	69° 8	21°	952	3123.3	Do.
Height of Cañasgordas	3° 54′	76° 47′	68°	20°	1156	3792.8	Do.
La Puerta	3° 54′ 58″	76° 48′	75° 2	24°	778	2552.6	Do.
Juntas	3° 55′	76° 48′	78° 8	26°	388	1273	Do.
Saltico	3° 56′	76° 50′	84° 2	29°	273	895.7	Do.
La Bodega	3° 51′	77°	84° 2	29°	141	462.6	Do.
La Cruz	3° 50′	77° 11′	87° 8	31°	49	160.7	Do.
Buenaventura	3° 48′	77° 12′	86°	30°	00	00	Do.

TABLE C.

ACTUAL division of the territory of New Granada, the population, and increase or decrease, compared with the preceding census, and the extreme latitudes and longitudes of the provinces.

PROVINCES.	Latitude north.	Longitude west.	Population.		Increase in 8 years.	Decrease in 8 years.	Increase per cent.
			1843.	1851.			
Antióquia	6° 22′ á 8° 50′	75° 20′ á 76° 40′	61,427	75,053	13,626		22.18
Azuero	7° 15′ á 8° 18′	79° 50′ á 80° 20′	35,885	34,643	"	1210	3.37
Barbacóas	0° 50′ á 3° 20′	77°y78° á 78° 45′	21,778	26,519	4741		12.58
Bogotá	4° á 5° 10′	68° 15′ á 74° 45′	123,432	144,592	21,160		17.1
Buenaventura	3° 10′ á 4° 30′	76° 23′ á 77° 20′	26,877	31,150	4273		15.9
Cartagena	8° 0′ á 10° 40′	74° 50′ á 76° 35′	97,588	103,783	6195		6.35
Casanare	3° 0′ á 6° 55′	68° 20′ á 73° 30′	17,836	18,573	737		4.13
Cauca	3° 20′ á 5° 22′	75° 30′ á 76° 25′	60,860	70,748	9888		16.18
Córdoba	5° 0′ á 6° 30′	74° 30′ á 75° 32′	69,232	90,841	21,609		31.21
Cundinamarca	5° 0′ á 5° 15′	72° 30′ á 74° 10′	70,939	81,215	10,276		14.48
Chiriquí	8° 0′ á 9° 45′	81° 5′ á 83° 5′	15,706	17,279	1573		10.
Chocó	4° 30′ á 8° 50′	76° 0′ á 77° 50′	27,360	43,649	16,289		59.5
Mariquita	4° 0′ á 6° 12′	74° 45′ á 75° 50′	74,894	86,894	12,000		16.
Medellin,	5° 20′ á 8° 0′	74° 0′ á 76° 0′	58,875	77,494	18,619		31.6
Mompox	8° 30′ á 9° 35′	74° 6′ á 74° 50′	24,926	30,207	5281		21.18
Nieva	1° 30′ á 4° 0′	74° 0′ á 75° 50′	92,575	103,003	10,428		11.25
Ocaña	7° 45′ á 9° 20′	73° 0′ á 74° 30′	23,902	23,450	"	452	1.8$\frac{1}{2}$
Pamplona	6° 40′ á 7° 15′	75° 30′ á 73° 0′	57,741	62,990	5249		9.21
Panamá	7° 30′ á 9° 35′	77° 20′ á 80° 0′	37,873	52,322	14.449		38.15
Pasto	1° 0′ á 1° 45′	77° 0′ á 77° 40′	26,333	27,620	1287		4.89
Popayan	1° 25′ á 3° 22′	76° 0′ á 77° 30′	67,132	77,105	9973		14.86
Riohacha	10° 45′ á 12° 0′	72° 10′ á 73° 40′	16,734	17,247	513		3.
Sabanilla	10° 35′ á 11° 5′	74° 40′ á 75° 18′	45,292	48,167	2875		6.35
Santamarta	9° 20′ á 11° 20′	73° 40′ á 74° 50′	34,101	36,485	2384		6.6
Santander	7° 15′ á 8° 20′	72° 40′ á 73° 5′	15,562	21,282	5720		36.75
Socorro	6° 15′ á 7° 10′	73° 10′ á 73° 55′	138,937	157,085	18,148		12.
Soto	6° 55′ á 8° 25′	73° 0′ á 74° 5′	39,337	54,767	15,430		39.2
Tequenthama	4° 5′ á 4° 40′	74° 0′ á 75° 0′	47,912	56.126	8214		17.1
Tundama	5° 30′ á 6° 40′	72° 30′ á 73° 30′	132,625	152.753	20,128		15.1
Tunja	5° 15′ á 5° 35′	73° 5′ á 73° 55′	121,131	133,463	12,332		10.18
Túquerres	0° 45′ á 1° 30′	77° 0′ á 77° 40′	35,724	43,107	7383		20.4
Valley of Upar	9° 20′ á 10° 25′	73° 0′ á 73° 50′	11,576	14.032	2456		21.2
Velez	5° 40′ á 6° 15′	73° 40′ á 74° 40′	96,303	109,421	13,118		13.5
Veraguas	7° 0′ á 9° 10′	80° 0′ á 82° 0′	30,266	33,864	3597		11.8
Zipaquira	5° 0′ á 5° 30′	73° 55′ á 74° 45′	71,120	83,125	12,005		16.88
Territory of Goajira	11° 20′ á 12° 30′	71° 15′ á 72° 10′	"	"	"		"
Territory of Mocoa	3° 5′ S. á 4° N.	65° 50′ á 75° 30′	2,543	3,000	457		18.
Total			1,932,279	2,243,054	312,437	1662	16.62

TABLE D.

ABORIGINES AND SAVAGES.	Minimum.	Maximum.
Territory of Mocca and canton of San Martin, contiguous	70,000	75,000
Territory of the Goajira, comprehended in Riohacha	18,000	20,000
In the deserts of Upar, Ocaña, Santamarta and Opon (Socorro)	2,000	3,000
In the deserts of Chocó, Antióquia, and Mompox	5,000	6,000
Do. do. of Darién, Chiriquí & Veraguas (Isth's)	5,000	6,000
Do. do. of the province of Casanare	8,000	10,000
	108,000	120,000

TABLE E.

GENERAL table of the Census, by sections, provinces and territories, and number of legislators.

Position.	Provinces and Territories.	Senators.	Deputies.	Civilized Population.	Sections.	Total.
In the Isthmus of Panama.	Azuero,	1	1	34,643	1st. Istmo.	138,108
	Chiriquí,	1	1	17,279		
	Panamá,	1	1	52,322		
	Veraguas,	1	1	33,864		
In the south between the central cordillera and the Pacific.	Barbacóas,	1	1	26,519	2d. Cáuca.	276,249
	Buenaventura,	1	1	31,150		
	Cáuca,	1	2	70,748		
	Pasto,	1	1	27,620		
	Popayan,	1	2	77,105		
	Túquerres,	1	1	43,107		
In the west, between the Magdalena, the Pacific, and the Gulf of Darien to both seas.	Antióquia,	1	2	75,053	3d. Antióquia.	287,037
	Chocó,	1	1	43,649		
	Córdoba,	1	3	90,841		
	Medellin,	1	2	77,494		
In the central part of the Republic, extending east to Venezuela.	Bogotá,	2	4	144,592	4th Cundinamarca.	554,955
	Cundinamarca,	1	2	81,215		
	Mariquita,	1	2	86,894		
	Neiva,	1	3	103,003		
	Tequenthama,	1	1	56,126		
	Zipaquirá,	1	2	83,125		
In the northeast to Venezuela.	Casanare,	1	1	18,573	5th. Boyacá.	414,210
	Tundama,	2	5	152,753		
	Tunja,	2	4	133,463		
	Vélez,	1	3	109,421		
In the north to Venezuela.	Ocaña,	1	1	23,450	6th. Guanentá.	319,574
	Pamplona,	1	2	62,990		
	Santander,	1	1	21,282		
	Socorro,	2	5	157,085		
	Soto,	1	1	54,767		
On the Atlantic.	Cartagena,	1	3	103,783	7th. Magdalena.	249,921
	Mompox,	1	1	30,207		
	Riohacha,	1	1	17,247		
	Sabanilla,	1	1	48,167		
	Santamarta,	1	1	36,485		
	Valle de Upar,	1	1	14,032		
	Territorio Mocoa,	1	1	3,000		3,000
		39	65	2,243,054		2,243,054

TABLE F.

TABLE of the population, classified by races and castes, and savages.

Analogous Sections.	Common White Race.	American Civilized Races.	Savage Races.	Ethiop'n Negro Race.	Quadroons.	Mestizos.	Mulattoes.	Zamboes	Total.
1st. Isthmus	14,000	8,000	6,000	3,500	1,300	97,658	12,250	1,400	144,108
2d. Cáuca	49,000	25,000	"	38,000	14,600	33,049	114,600	2,300	276,249
3d. Antióquia	50,000	7,000	5,000	15,600	4,000	155,037	54,000	1,400	292,037
4th. Cundinamarca	137,790	127,290	10,000	5,100	3,000	252,533	28,000	1,240	564,955
5th. Boyacá	102,210	95,710	10,000	740	200	189,452	3,600	2,300	424,210
6th. Guanentá	67,000	20,000	400	3,500	1,100	204,174	22,500	1,300	319,974
7th. Magdalena	30,000	16,000	3,600	13,500	5,800	46,421	48,200	90,000	253,521
Territory of Goajira	"	"	20,000	"	"	"	"	"	20,000
Territory of Mocoa	3	2,000	65,000	60	54	673	150	60	68,000
		301,000	120,000		30,054	998,997	283,000	100,000	
Total by races and castes	450,003	421,000		80,000	1,029,051		383,000		2,363,054
	Caucas'n.	American.		Ethiopi'n Negro.	White Mixed.		Colored Mixed.		
Total by colors.									
White*	450,003				1,029,051				1,479,054
Mixed†		421,000							421,000
Copper colored‡							383,000		383,000
Negro§				80,000					80,000
									2,363,054

* Intelligent, active, laborious, moral.
† Indolent, enduring, suspicious, frugal.
‡ Strong, voluptuous, intelligent, brave.
§ Weak for labor, enduring, suspicious.

TABLE G.

THE MOST COMMON ALIMENTARY PLANTS, ROOTS, GRAINS AND FRUITS.

Achras sapota, ... Medlar.
Alfonsia oleifera, ... Oil palm.
Allium sativum, ... Garlic.
Allium cepa, ... Onion.
Alpinia, ... Achira.
Amygdalus persica, ... Peach.
Anethum fœniculum, ... Anise.
Annona squamosa, ... Custard tree.
Annona manirote, ... id.
Annona Humboldtiana, ... Chirimoya.
Annona muricata, ... Guanábana.
Annona palustris.
Annona aromatica, ... Scented custard tree.
Apium graveolens, ... Apio.
Arachis hipogea, ... Mani.
Artocarpus incissa, ... Bread fruit tree.
Asparragus sativa, ... Asparagus.
Attalea amygdalina, ... Almond.
Bactris gachipaes, ... High palm.
Beta vulgaris, ... Beet.
Bixa orellana, ... Annotta.
Brassica napus, ... Rape.
Brassica oleracea botrytis, ... Cauliflower.
Brassica oleracea, ... Cabbage.
B. O. laciniata viridis, ... Brocoli.
Bromelia ananas, ... Pine apple.
Bromelia karatas, ... Piñuela.
Cactus melocactus, ... Pitahaya.
Cactus nopal, ... Purple Indian fig.
Cactus opuntia, ... Indian fig.
Canna indica ..... Achira.
Caparis, ... Purging cassia.
Capsicum, ... Aji, different spices.
Capsicum annum, ... Red pepper.
Carolinea princeps, ... Bread tree.
Carica, ... Little papaw.
Carica aromatica, ... Higuillo.
Carica papaya, ... Papaw.
Cassuvium pomiferum, ... Marañon.
Ceratonia siliqua, ... Sweet tare.
Cherropodium quinoa, ... Quinoa.
Chrisobalanus icaco, ... Hicaco.
Chrysophilum caimito, ... { Green and purple caimito.
Chrysophilum excelsior, ... Yellow caimito.
Chrysophilum pungens, .. C. of the mountain.
Cryptocarya canelilla, ... Guasiman.
Cicer arietinum, ... Chick-pea.
Cicorium endivia, ... Chicory.
Cirius, ... Teazle.
Citrus, ... Lemon.
Citrus aurantium, ... Sweet orange.
Citrus limeta, ... Lime.
Citrus mali, ... Citron.
Citrus medica, ... Do.
Citrus vulgaris, ... Sour orange.
Cocoloba uvifera, ... Grape.
Cocus lodoicea, ... Cocoa.
Cocus mauritia, ... Bread palm.
Cocus nucifera, ... Cocoa.
Cocus butyracea, ... Wine palm.
Cocus nucifera Gorgona, ... Pacific cocoa.
Collea arabica, ... Coffee.

Conium arracacha, ... Arracacha.
Conium esculenta, ... Arracacha white.
Conium xanthroriza, ... Arracacha purple.
Convolvulus batata, ... Sweet potato.
Coriandrum sativum, ... Coriander.
Cucumis melo, ... Melon.
Cucurbita sitrullus, ... Watermelon.
Cuminum cynimum, ... Cummin.
Daucus carrota, ... Carrot.
Dipteris odorata, ... Sarapia.
Discorea alata, ... } Names, of three species.
„ sativa, ... }
„ bulbifera, }
Dolichlos lablad, ... Quinchonchos.
Dyospiros obtusifolia, ... Black zapote.
Epidendrum vainilla, ... Vainilla, Bejuquillo.
Ervum lens ..... Lentil.
Faba vulgaris, ... Bean.
Ficus carica, ... Fig.
Ficus cactus, ... Indian fig.
Fragaria vesica, ... Strawberry.
Fragaria chilensis, ... Chili strawberry.
Genipa americana, ... Yagua.
Geoffrea superba, ... Gigua.
Hibiscus suculentus, .. Candia, Quimbombó.
Hordeum vulgare, ... Barley.
Inga lucida, ... Guamo.
Inga pungens, ... Guamacho.
Jubdea spectabilis, ... Coquito of Chile.
Lactuca sativa, ... Lettuce.
Lathyrus sativus, ... Vetch.
Laurus persea, ... Large pea.
Lodoicea, Cocos nucifera., ... Cocoa nut.
Lucuma serpentaria, ... Zapote.
Lucuma Bomplandia ..... Lúcuma, Maco.
Lupinus sativus, ... Lupin.
Malum, ... Apple.
Malum sidoneum, ... Quince.
Malpighia punicifolia, ... Cherry.
Mammea americana, ... Mamei.
Mangifera domestica, ... Mango.
Marantha, ... Sulú, Lairences.
Martinezia siliata, ... Chontaduro.
Matisia, ... Sweet zapote.
Melicoca bijuga, ... Mamon.
Melicoca olivaformis, ... Zapotillo.
Mentha sativa ..... Yerbabuena.
Morus celtidifolia, ... Mulberry.
Musa coccinea, ... Guinea plantain.
Musa discolor, ... Black plantain.
Musa monoscarpos, ... Plátano santafereño.
Musa paradisiaca, ... Plátano harton.
Musa regia, ... Plátano dominico.
Musa rosacea, ... Tahiti plantain.
Musa violacea, ... Plátano maqueño.
Myristica otoba, ... Nuez moscada.
Myrtus jambos, ... Pomarrosa.
Myrtus psidium, ... Sour Guava.
Ocymum basilicum, ... Sweet bazil.
Oredoxa regia, ... Palmito.
Origanum majorana, ... Sweet marjorum.
Origanum majoranoides, ... Oreganum
Oriza sativa, ... Rice.

Oxalis acetosa,.....Sorrel.
Oxalis cornuta,.....Vinagrillo.
Oxalis tuberosa,.....Oca.
Palma mauritia,.....Moriche.
Palma meiocoton,.....Pichiguas.
Pasiflora ligularis,.....Granadilla.
Pasiflora cordifolia,..... { Green granadilla / parcha.
Pasiflora quadrangularis,.....Pumpkin.
Pasiflora quixos,.....Granadilla de Quijo.
Phaseolus,.....Tapiramo.
Phaseolus vulgaris,.....Kidney bean.
Phaseolus nanus,.....French bean.
Phenix dactylifera,.....Date.
Pisum sativum,.....Pea.
Portulaca oleracea,.....Perslain.
Psidium champito,.....Minchinche.
Psidium pomiferum,.....Guava.
Psidium pyriferum,.....Little guava.
Punica granatum,.....Pomegranate.
Raphanus sativus,.....Radish.
Saccharum officinarum,.....Sugar-cane.
Sesasum orientale,.....Sesame.
Sinapis juncea,.....Mustard.
Solanum esculentus,.....Lulo.
Solanum licopersicum,.....Tomato.
Solanum melongena,.....Eggplant.
Solanum tuberosum,.....Potato.
Solanum Ulloa,..... ...Tree-tomate.
Sonchus,.....Millet.
Spinacea oleracea,..... .....Spinach.
Spondia ciruela,.....Plum.
Spondia lutea,.....Hobo.
Spondia mombin,.....Yellow plum.
Spondia purpurea,.....Red plum.
Sychos celulis,.....Gourd.
Sysimbrium nastursium,.....Watercress.
Tamarindus indica,.....Tamarind.
Theobroma arborescens,...Strawberry-tree.
Theobroma cacao,.....Cacao.
Theobroma silvestris.....Wild cacao.
Tropœolum tuberosum, ...Majua.
Ullucus tuberosus.....Ullucos.
Uva,.....Grapes of different kinds.
Uva acerba,.....Sour grape.
Yatropha manihot,.....Yuca.
Zea mais,.....Maize. Different sorts.

TABLE H.

PLANTS useful in the arts and medicine, trees for building-timber and cabinet-work, and in general the most common plants which grow spontaneously in the various climates.

Acacia cornigera.
Acacia fœtida,.....Fœtid.
Acacia niopo,.....Niopo.
Achras zapota,.....Zapote.
Acœna elongata.
Agave americana,.....Magué, Cabuya.
Agrostis,.....A fine herb for soups.
Aiphanes aculeata,.....A beautiful palm.
„ pràga,.....Little palm.
Alchemilla aphanoides.
„ nivalis.
„ rupestris.
Aloe,.....Sábila.
Alpinia occidentalis.
Alstrœmeria glaucescens.
„ torta.
Alternanthera lupulina.
Allionia violacea.
Amelns sembetata,.....Santa María.
Amyris caraña,.....Caraña.
Amyris altissima,.....White cedar.
Anacardium caracoli,.....Caracoli.
„ morus tinctoria,..Palo de mora.
„ occidentale,.....Paujil.
Anchusa leucantha.
Andromeda reticulata.
Angelonia salicariæfolia.
Annona squamosa,.....Anon.
Aptus precatorius,.....Brujitos.
Aralia capitata,.....Candelero.
Aralia palmata.
Arcliria coriacea.
Areca oleracea,.....Oil palm.
Arenaria nemorosa.
Argyrocheta bipinnatifida,.....Bitter broom.
Artocarpus incissa,.....Chestnut.
Arundo nitida,.....Puchicango.
Aspidium rostratum,.....Polipod.
Aster mutisii.
Astragalus geminiflorus.
Avena,.....Avena de grama.
Avicennia nitida,.....White mangrove.
Avicennia tormentosa,.....Black mangrove.
Azorella aretioides.
Bactris gachipaes,.....Corozo, Mararai.
Badleje polycephali.
„ rugosa.
Bactris mayor.
„ minor.
Bahuinia multinervis.
Bambusa arundinata...Cane.
„ latifolia,.... „ thorny.
„ trigynia, ... „
„ aculea,..... „ pointed.
„ ferrea,..... „ chontoza.
Barnadesia.
Basella marginata,
Befaria coarctata, ...,...Anguchas.
„ grandiflora,
„ Æstuans.
„ resinosa,....Angucho of the páramo.
Bertholletia excelsa,.....Yubia.
Besleria quinduensium.
Bignonia,.....Apamate.
„ chica.
„ pentaphyla,.....Yellow araguaney.
Birsonima chrysophylla.....Chaparro butter.
Bixa orellana,.....Achote, Bija Bijua.
Bombax ceiba, B. pedantrum,.....Ceiba.
„ gossipium,..... Carnestolendas, Ceiba for canoes.
Bocconia fructescens.
Bomplandia trifoliata,.....Angostura bark.
Borassus flabelliformis,..... Fan palm.
Borrago officinalis, ... Borage.
Bauhinia cumanensis.
Buguinvillæ pernviana.
Bowdicha virgilioides,.....Alcornoque.
Breca crinata.
Brownæa grandiceps,.....Cross-wood.
Brunellia ovalifolia.
„ acutangula.
Bryana coccinea,..... Guachamacá— poison tree.
Bucida capitata,.....Granadillo.
Bucida chocoensis,..... Marequende, Fox-tail.
„ elegans,.....Quende, Lion's heart.
Buchnera virgata.
Cactus cereus.
Caladium arboreum.
Calceolaria perfoliata.
„ carpiniflora.
„ chimboracensis.
„ candicans.
„ ericoides.
„ fasciculata.
Calcitrum lidifolium.
„ reflexum.
Calcitrum nivale.

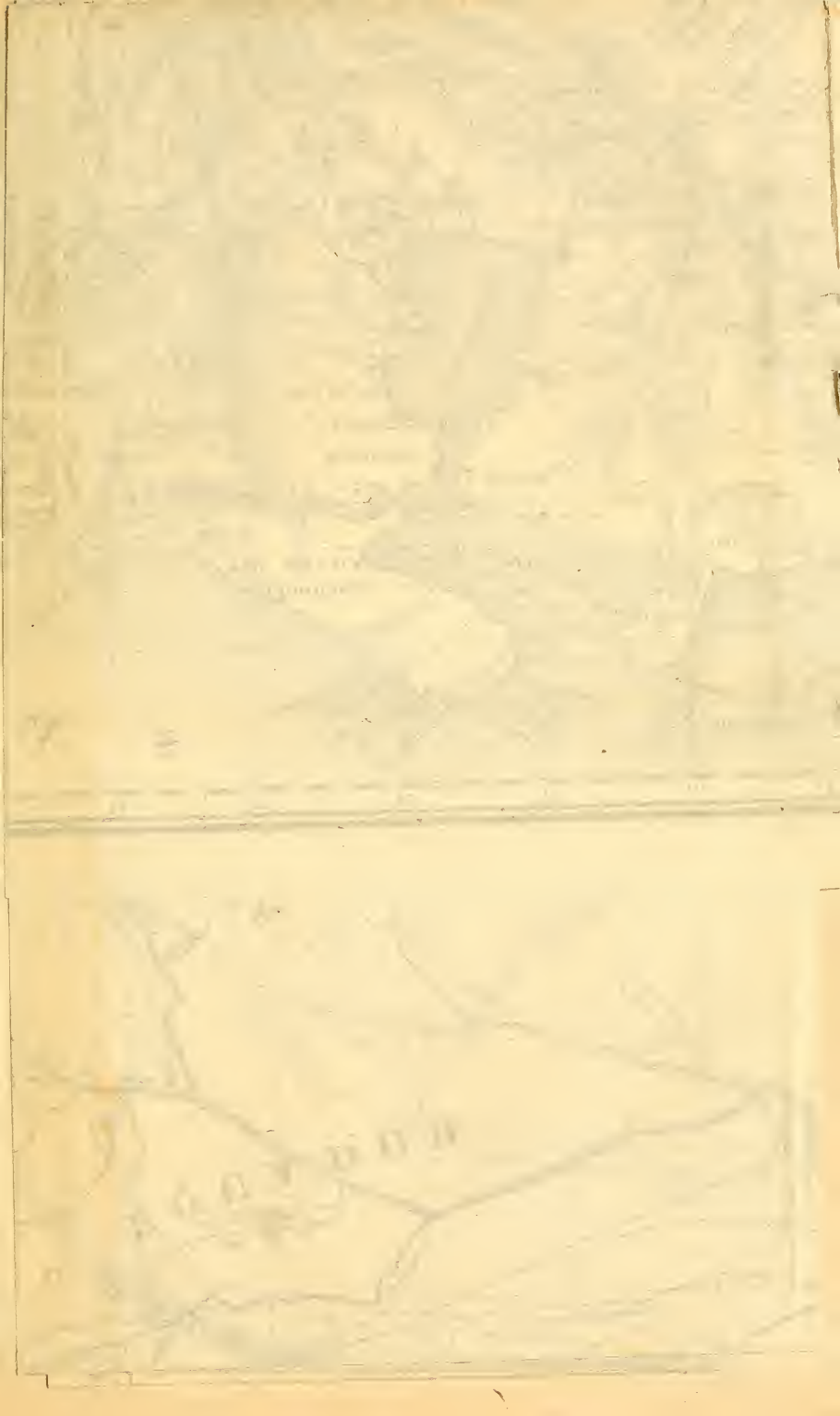
Caliphrantus paniculata,.....Little lemon.
Calophyllum Cupi,.....Cupi.
Canella alba,.....Curbana.
Caparis,.....Cañafistolo—of various species.
Carex pichinchensis.
„ stehelina.
Caricie integrifolia,.....Wild pear.
„ polymnia.
Carthamus tinctoria,.....Saffron.
Castillea elastica,.....Elastic-gum seringa.
Cæsalpina.
Ceratonia siliqua,.....Smooth tare.
Cerastium densum.
Cecropia peltata,.....Guarumo.
Cedrela odorata,.....Cedar.
Cerbera thevetia,.....Wild rice.
Ceroxylon andicola,.....Wax-palm.
Cinchona lancifolia,.....Quina orange.
„ ovalifolia,..... „
„ cordifolia,..... „ yellow.
„ oblonguifolia,..... „ red.
„ grandiflora,..... „ white.
„ condaminea,..... „
„ caduciflora,..... „
Cissampelos scandens.....Pareira brava.
„ caapeba,..... „ false.
Citharexylum cinereum,..... ...Pendare.
Citrus,.....Lemon.
Citrus vulgaris,.....Orange.
Citrus aurantium,..... „ sweet.
Coffea arabica,.....Coffee.
Chamærops humilis.....Common palm.
Chamoedonea gracilis.
Chuquiraga insignis.
„ microphylla.
„ lancifolia.
Chelone,.....Scented oak.
Chionantes compacta,.....Guava Myrtle.
„ tetranda,.....Snow tree.
Chionanthus pubescens,.....Arupo.
Chrysophyllum,.....Caimito.
Clitora ternata, ...Bejuco de conchita.
Clusia alba, ...Copey.
Cocco-cypselum repens.
Commelina comunis,.....Canutillo.
Convolvulus bogotensis.
Copaifera officinalis,.....Canime.
Cordia dentata, ...Caujaro.
„ lanata.
Cortex winteranus,.....Cinnamon.
Coulteria tinctorea,.....Guarango Dividivi.
Craniolaria annua,.....Escorzonera.
Crescentia cugete,.....Totumo.
Croton lucidum,.....Canoe-cedar.
Cryptocarya canelilia,.....Little cinnamon.
Curatella americana,.....Evergreen oak.
Cyathea speciosa.
„ villosa.
Cypura graminea.
„ martinicensis.
Cyperus prolixuus.
Dalea astragalina,.....Pispura.
„ Mutisii.
Dædalea lævis.
Dalechampia canescens.
Daphne cestrifolia,.....Anomala.
Datura arborea, ...Borrachero, Floripondio.
„ sanguinea,.....Tonga.
„ bicolor,.....Yellow borrachero.
„ fastuosa, ...Niungue.
„ tatula.
Dendrobium elegans.
„ grandiflorum.
Dendrobium longifolium.
„ latifolium.
Desfontainea splendens,.....Almaguereña.
Desmanthus lacustris,...Mimosa of Mompox.
Deyeuxia coarctata.
„ stricta.
Dialesta discolor.
Dichondra sericea.
Dicliptera pilosa.
Dicrauum concolor.
„ longisetum
„ densum.
„ vaginatum.
Dioclea sericea,.....Dioclea of Honda.
Dipteris odorata, ...Sarapia or Tape.
Dodonæa viscosa.
Dorstenia contrayerva, ...Cooling-rice.
Draba alyssoides,...Whitlow of Guachucal.
Drymis granatensis.
Dulongia acuminata,.. Dulongia of Popayan.
Ecastophyllum Brownei,.....Maray Maray.
Echites hirtella.
„ montana.
„ congesta.
„ bogotensis.
„ bracteata.
„ mollissima.
„ riparia.
„ paludosa.
„ citrifolia.
Ehretia,.....Yellow oak, Guatacan.
„ citharexylum tomentosum,.White pole.
Elaphrium graveolens,.... { Crispin, Magdalena gum.
Elephantusia macrocarpa, { Tagua, Negrohead, Vegetable ivory.
Elodea granatensis.
Elytraria frondosa.
Epidendrum fimbriatum, ... { Vainilla of the páramo.
„ ibaguense,.....Vainilla of Tolima.
„ polystachyum, . „ of Guáitara.
„ cernuum,..... „ of Janacata.
„ geminiflorum,.. „ of Mayo.
„ longiflorum,.... „ of Popayan.
„ vanilla aromatica, „ scented.
Epsthephium elactum.
Epilobium bonplandium,.....Shagreen.
Eriodendrum anfractuosum,.....Ceiba.
Erythrina rubrinerva, ...Chocho.
Erythræa quitensis, ...Canchalagua.
Erythryna umbrosa, ...Cachirulo.
„ velutina,..Cachimbo macho, Bucare.
„ dubia,..... „ fever.
Escallonia floribunda.
„ myrtilloides.
„ pendula.
„ tubar.
Escobedia scabrifolia,.....Saffron.
Espeletia argentea,.....Frailejon plateado.
„ corymbosa..... „ of Almaguer.
„ grandiflora.....Frailejon.
Eupatorium iresinoides,.....Eupatorium.
„ acuminatum..... „
„ pellucidum, ... „
„ suaveolens,..... „
„ sericeum,..... „
„ loniccroides, ... „
Euphorbia orbiculata, ...Milky.
„ latazi,.....Lechero
„ cyathophora,... „ of Ibagué.
Euphrasia santolinæfolia,.....Eufrasia.

Evolvulus debilis,.....Savannah grass.
„ holocericeus,.....Oretama.
„ veronicæfolius.
Exacum spicatum,.....Cutubea.
Festuca andicola,.. ..Grama of the páramo.
Fevillia tamnifolia tavilla.
Ficus deudrocida,.....Fig.
Ficus velutina,.....Velvet fig.
„ elliptica,.....Gum elastic.
„ arboricida,.....Large fig.
„ glabrata,..... Do.
„ prinoides,...Gum elastic of Guaduas.
Flacourtia glauca,.....Candelillo de Esmito.
Flacourtia ulmifolia,.....Candelillo.
Fragosa crenata.
Freziera chrysophylla reticulata,.. Mandur.
Fuchsia petiolaris, quinduensis, } Bell fuschia.
„ triphylla, hirtella.
Galactodendrum utile,.....Milk-wood.
Genipa americana.
Geoffræa spinosa,.....Gigua.
Geoffræa superba, ...Gigua almond.
„ bredemeyeri.
Gentiana, cerastioides, corymbosa, sedifolia, } ....Gentian.
Geranium cuculatum.
Girocarpus americanus,.....Flyer.
„ cordifolia.
Gonolobus riparius.
Gossipium uniglandulosum,....Cotton, long.
„ arborescens,..... „ tree.
„ herbaceum,..... „ annual.
„ hirsutum, ... „ biennial.
„ peruvianum, ... } „ of Cartagena.
„ acuminatum,..... „ of Cauca.
Graminea,.Carrizo, carrizillo, diffr'nt classes.
Graminea,..... } Different classes of grains for soups.
Gaultheria odorata,.....Pesgua.
„ coccinea, ...Pesgua macho.
Guayacum niger,.....Guayacan black.
„ officinalis, ... „ yellow.
Habenaria trifida, latifolia.
Havetia laurifolia.
Hasseltia floribunda.
Hecastophyllum dubium, Brownei, } Brasilwood, Maray.
Hedyosmum, Hirsutum, Glabratum Bonplandium. }
Hedysarum reptans, tortuosum.
Helianthus aureus,.....Turnsol.
Heliconia bihai,.....Vijao, Vihao.
Heliconia hirsuta, psitacorum,.Little plantain
Heliocarpus popayanensis,.....Eliocarpo.
Heliotropium grandiflora,.....Turnsol.
Hemimeris Mutisii.
Hermesia castenaifolia,.....Willows.
Herpestes caprarioides.
Heteropteris argentea, cornifolia,...Malpigia.
Hevea guayanensis..,....Elastic gum, Gebe.
Hibiscus tiliaceus.....Majagua.
Hirtella mollicoma.
Hippocratea verrucosa,..... .....Warty.
Hippomane mancinella,.....Manzanillo.
Homalium racemosum,.. } Angelino laurel, A. oak.
Hura crepitans.
Hydrocotyle Bonplandi.
Hydrolea spinosa.
Hymenæa courbaril.....Carrot tree.
Hymenæa floribunda,.....Nazareno.
Hypoxis pusilla, elongata.
Hyptis melissoides, spicata.
Janipha Manihot,.....Sweet yuca.
„ Læflingii,.....Bitter yuca.
Jasminum Arabica,.....Arabia pine.
Jasminum Sambac,.....Diamela.
Jatropha curcas, ...Pine.
Jatropha gossypifolia,...Tautua, Frailecilla.
Jatropha Hevea,..Elastic gum, var. of Gebe.
Icica cuspidata,.....Tacipate pegapega.
„ macrophylla, ...Guacharaco.
¿ Icica caraña ?.....Caraña.
„ tacamahaca,.....Tacamaco canime.
„ altissima,..... ...Sweet cedar.
Iecebrum lanatum,.....Knot-grass.
Ilex paltoria.
„ miricoides.
Indigofera tinctoria,.....Indigo.
„ humilis, citisoides, tephrosioides, } .Wild indigo.
„ disperma,.....Fine indigo.
Inga lucida.....Guama machete.
„ ligustina,.....Orore.
„ pungens,.....Guamacho.
„ coruscans,.....Inga mimesa.
„ Humboldtiana, ...Guabo.
„ sapida,.....Guama chico.
„ fulgens,.....Copal Mimosa.
„ ornata,.....Guama cane.
„ forfex,.....Guama inerme.
„ salutaris,.....Dropsy-bark
Jonidium parviflorum,.....Cui-chunchullo
„ riparium,.....Carare Violet
„ anomalum.
Jonopsis pulchella.
Ipomœa dichotoma, coccinea.
Iresine mutisii, elatior, elongata, flavescens.
Isochilus graminifolius.
Juncus bogotensis, platycaulos, prolifer microcephalus, } Reed, Little reed.
Jussiœa peploides, polygnoides, natans, sedoides, salicifolia, macroparpa, } Clavelito, Clavecito.
Justicia, interrupta, pectoralis polygnoides, } ..Acanthus.
Klaprothia mentzelioides.
Klenia porophyllum, ...Cacalia.
Kuhlia glauca.
„ ulmifolia,.....Candelillo.
Kuhnia arguta.
Lantana floribunda,.....Verbena.
Lamourouxia serratifolia.
Lasiostoma curare,..... } Mavacure cane, Curare.
Lacistema myricoides.
Laurus cinnamomoides,..Andaqui cinnamon
Laurus,.....Mulatto laurel
Laurus,.....Sasafras „
Laurus persea,..... } Vegetable marrow, various kinds.
Lætia hirtella.,.....Trompillo.
Lecythis elliptica, dubia,.....False myrtle.
Lilæa subulata.
Lippia hirsuta.
Liquindambar styraciflua,.....Jalapa amber.
Lobelia columneæ, ferruginea caoutchouc, gigantea fætida Mutisiana, rupestris, fastigiata, grandis, glabrata, } Lobelia, campanillas.
Lupinus Smithianus,.... } Taure del páramo, Chocho.
Lonchocarpus macrophyllus,..Fruta de lama.
Lupinus paniculatus,..... .....Bogotá lupin.
„ alepecuroides,.....Purple taure.
Luzula gigantea.

Lycopodium microphyllum,.....Licopodio.
Marcgraviacia godoya,..... { Cow's tongue.
Macrocnemun tinctorium, ...Puraguatan.
Malpighia obovata,.....Malpigia of Nare.
„ ternifolia,..... „ of Pandi.
Malva urticæfolia,..... { Common mallow with purple flower.
Malvaviscus arboreus,.....Malvavisco.
Mammea americana,.....Mamey.
Marantha,.....Solu silvestre.
Maranta lutea, cachibu,.....Hoja de rancho.
Margyrocarpus setosus.
Mussænda nitida,.....Gardenia.
Melampodium paludosum,. { Melampodio of Darien.
Melananthera linnæi,.....Cariaquito white.
Melastoma Mutisii, ...Siete cuero white.
„ octunum,..... „ variety.
„ diversifolium,....Melastomo de
„ ibaguense.....Mayo de Ybagué.
„ rubiginosum,.....Pega pega.
„ granulosum,...Siete cuero chico.
„ theæzans, ... May flower.
„ setinode,..... May rose
„ caudatum,.....Mayo rosado.
„ coronatum,.....Siete cuero.
„ extinctorium,.... { Melastomo of Mariquita.
„ laçerum,..Melastomo of Quiudio.
M. Capitellatum.
Melastomo xanthostuchis,....Evergreen oak.
Melicoca olivæformis,..... { Cotopris, little monkey.
Melochia piramidata .....Common mallows.
Microtea debilis,.....Magdalena herb.
Mikania suaveolens, ...Guaco of Guarumo.
„ Guaco,.....Guaco.
„ laurifolia,..Guaco cacalia of Mutis.
„ angustifolia. .....Guaco of Ibagué.
Mimosa humilis, dormiens somnians, pellita, pudica, { Sensitive plants.
Mimosa cinerea,.....Cuji.
„ odorata,.....Aromito.
Mirabilis hybrida,....Buenas tardes, Jalapa.
Moñina obtusifolia, revoluta cestrifolia, phytolaccæfolia, parviflora. { Hebeandra.
Morinda Turbacensis,..Morinda of Turbaco.
Morus alba.....White mulberry.
Morus celtidifolia, ...Mulberry.
„ corylifolia,.....Colored mulberry.
„ tinctorea,.....Mulberry wood.
Mougeotia polystachya, ...Meloquia.
„ mollis,.....Malva mole.
„ inflata,.....White meloquia.
„ hirsuta,.....Santa Ana mulberry.
Muntingia calabura,.....Cedrillo majagua.
Mutisia grandiflora,.....Mountain bells.
Myrica arguta, cerifera, Polycarpa, Pubescens, { Wax laurel.
Myristica otoba,.....Otoba.
Myroxylum peruiferum,...Peruvian Balsam.
„ pubescens,.....Tache.
„ toluifera,.....Balsam of Tolu.
„ popayanensis,.....Balsam,
Myrsine popayanensis.
Myrtus Xylopioides, mollis acuminata, microfilla, salicifolia, clusiaefolia, Marantha, { Myrtle.
Myrtus albida, crypthocarpa,.....Myrtle.
Myrtus coccolobaefolia,.....Sour guava.
Najas arguta.
Nauclea aculeata.
„ tomentosa,.....Uruparia.
Negretia mutisiana.
„ mollis.
Neottia squamulosa.
Nephrodium exaltatum,.....Polipod
Neurocarpum macrophyllum, ...Savenata
Nicotiana tabacum,.....Tobacco
„ andicola,.....Wild tobacco
„ pulmonarioides,.....Sayre
Nierembergia spathulata.
Noisettia frangulefolia,.....Tall violet
Norantea anomala.
Nycterisition argenteum.
Ocotea javisensius,.....Sasafras
„ sericea.
„ turbacencis.
„ discolor.
„ rigida.
„ mollis.
„ longifolia.
„ latifolia.
„ macrophylla.
Odontandra acuminata,.....White mangle
Œnothora epilobiifolia.
Olyra aruudinacea.
„ cordifolia.
Oncidium iridifolium.
„ pictum.
„ panduriferum.
„ globuliferum.
„ olivaceum.
Onoseris mexicana.
„ purpurea.
„ hieracioides.
Oreodoxa regia,.....Royal palm.
„ sancona,.....Sancona palm.
„ frigida,.....Small palm
Orthotrichum longirostrum.
Oryza latifolia,.....Little rice
Osteomeles glabrata.
Oxalis lotoides.
„ mollis.
„ scandens.
„ medicaginea.
„ lupulina.
„ psoralioides.
„ hedysaroides.
„ schraderiana.
Orypetalum riparium.
Palicourea speciosa,..... { Emetic herb.
„ longifolia,..... { herb.
Palmas—Cocos nucifera,.....Cocoanut.
„ „ butyracea, { Royal palm, Pindova, Tall palm, Cuesco, Winepalm.
„ oreodoxa regia, ...Royal palm.
„ martinezia caryotæfolia,....Tall palm.
„ ceroxylon andicola,.....Wax palm.
„ mauritia flexuosa,.....Moriche.
Panax longipetalum,.....Yagrumo.
„ splendens,.....Aralia of Popayan.
Pancratium litorale,..... { Beautiful flax of the coast.
Panicum altissimum,.....Guinea plant.
„ leucophæum, myurus,... } Panic grass,
„ zizanioides, jumentorum, } Camelote,
„ glaucescens, ... } Gramalote.
Paspalum carinatum, stellatum, distichophylum ciliatum, hirtum, conjugatum, macrophyllum, virgatum, undulatum, aureum, ... { Grasses, Millet.

Passiflora glauca, emarginata, quadrangularis, ligularis, ornata, guazumœfolia, longipes, glabrata, coriacea, difformis, misera, alnifolia, vitifolia, manicata. } Passion-flower and Granadillas. There are some other varieties; and those bearing the most exquisite fruit we have placed in Table G.
Pauletia picta.
Paullinia cupana,.....Cupana.
„ turbacencis, riparia, mollis. } Cururu, Azucarito.
Pavonia typhalœoides, sessiliflora, mollis, mutisii..... } Mallows. Hibiscus,
Pictis pygmœa, elongata,....Anisillo linear.
Pelicourea rigida,.....Chaparrillo.
Peperomia tristachya, talinifolia, saligna, laxiflora, foliosa, colorata, mollis, diversifolia, biuncialis, mummularifolia, rotundata, dissimilis, pallens, microphylla, protulaceæfolia, glalioides, stoloniferа, pruinosa,..... } Peperonias, Uma-puma, and other local names.
Perrottetia quinduensis.
Petitia quinduensis,.....Verbena of Quindío.
Petræa arborea,.....Maria.
Phalangium latifolium,.....Cross-flowers.
Pharus scaber,.....Faro of Tequenthama.
Phaseolus linearis, peduncularis.
„ pilosus.
Phyllantus lycioides,.....Barbascajo.
Phylantus salviæfolius,..... Yuca tree.
Phytelephas macrocarpa,.. { Tagua, Negro-head.
Phytolacca bogotensis.
Piper grandifolium, variegatum, crassinervium, riparium, rude, hispidum, psilostachyum, tenue, umbrosum, cornifolium, latum, coruscans, macrurum, albidum, lævigatum, } Varieties called native pepper.
Piscidia erithryna,.....Barbasco.
Pistia stratiotes, ...Swimming grass.
Pitcairnia pungens,..... Thorny cypress.
Pleurothallis laurifolia,..... Small onion.
„ macrophylla,...Damitas (Parasites.)
Plumbago scandens, ... Tri-colored grass.
Plumeria alba, rubra,.....Lechoso.
Poa reptans, infirma, pastoensis,..... } Dog-tooth, Migastaquia.
Podocarpus taxifolia,.....Yew tree.
Poligonum segetum, hispidum, Weak tobacco.
„ tamnifolium,..Hæmorrhage plant
Polipodium crassifolium,..... Red root.
Pontederia azurca,.....Pontederia de Buga.
Portulaca oleracea,.....Berdolaga.
Pothos myosuroides, microstachyus, } Parasitic and odoriferous plants.
„ violaceus, quinquenervius, pedatus, } Murapa, Falsa vainilla.
Pourretia pyramidata,.....Achupalla.
Polylepis incana, ...Quinuar.
Polymnia riparia.
Prosopis dubia,.....Carita, Turbaco.
Psoralea mutisii,..... Bogotá indigo.
Psychotria emetica,.....Ipecacuanha.
„ ardisiæfolia, anceps, } Varieties of Ipecacuanha.
„ lucida, divaricata, hirta,..Raicillas.
Quercus Humboldti, Almaguerencis, Tolimencis, ... } Oak, Common oak of Almaguer, de Tolima or Quindío.
Quercus caris,.....Pardillo.
Ranunculus bonariensis, geranioides, pilosus, Bomplandianus, aquaticum,..... } Ranunculus.
Rauwolfia ternifolia.
Restrepia antennifera,.....Uniflor.
Rhamnus senticosa,.....Molono.
Rhaptostylum acuminatum, { White oak of Popayan.
Rhus juglandifolia,.....Caspi.
Rhinocarpus excelsa,.....Caracoli.
Rhizophora mangle, ...Mangrove.
Ricinus comunis,..... Palmacristi.
Robinia maculata,.....Ratsbane.
Rodriguezia,.....Mata-totumo (Parasite.)
Rubia incana, scabra,..... Madder.
„ tinctorium,.....Dye-madder.
Rubus bogotensis, glabratus,....Blackberry.
Rudolphia dubia.
Ruellia paniculata, inundata, geminiflora, tubiflora, gigantea, macrophylla,..... } Turnsol.
Rumex longifolius, ...Dock.
Saccharum contractum,.....Suaye cañita.
„ ravenæ,.....Fox-Tail.
Sagina quitensis.
Salvia rufula, tolimensis,.....Sage.
Salvia tortuosa, moschata, carnea, venusta palæfolia, petiolaris, sagitata, ... } ...Sage.
Salvinia lægivata,.....? Water-grass.
Saman acacia,.....Saman.
Sambucus nigra,.....White alder.
Sapindus saponaria,.. .....Parapara.
Sapium salicifolium,.....Azucenillo.
Sauvagezia erecta.
Schœnus globosus, ...Dieromena.
Schmidelia occidentalis, mollis.
„ glabrata.
Schrankia hamata,..Tuberose sensitive plant.
Schwenkia glabrata.
Scirpus oxiguus, trichoides.
„ montanus.
Scleria floribunda,.....Curíbano.
Scutellaria malvæfolia.
Securidaca volubilis.
Securidosa pubescens,.....Cascaron majomo.
Sedum bicolor,
Senecio macrophyllus, fuliginosus.
Sesbania dubia.
Setaria gracilis, composita,..Peacock's meat.
Sida hermannioides, floribunda, atrosanguinea, linifolia, hondensis, althæifolia.
Sideritis bullata,.....False sage.
Siegesbeckia cordifolia.
Sisyrinchium bogotense.
Smilax officinalis, tomentosa,..Zarzaparrilla.
Solanum,..... False tomato.
„ oblongifolium.
„ anonæfolium.
„ rudula.
„ lepidotum.
„ narense.
„ trachyphillum.
„ venosum.
„ lævigatum.
„ fœtidum,.Yerba ïrundia, Fœtid plant.
„ cornifolium.
„ psychotrioides
„ phyllyreoides.
„ sacrophyllum.
„ ovalifolium.
Soliva mutisii, pigmæa
Spananthe paniculata.

Spathodea obovata,...Espatodea de Turbaco.
Spermacoce bogotensis, humifusa, capitellata.
Spigelia hamelliioides, pedunculatis, ... } Vermifuge.
Spilanthes ciliata, fimbriata, mutisii,... } Guaco of the cordillera of Bogotá.
Spiracantha cornifolia.
Spiræa argentea.
Spondia lutea,.....Jobo.
Stachys bogotensis,.....Espinosa.
Stachytarpheta orubica,.....Verbena.
Stellaria recurvata.
Stelis floribunda, angustifolia, elongata, alba, macrocarpa.
Stemodia arenaria.
Stenoglossum coryophorum.
Stevia ivæfolia, elongata.
„ elatior, glutinosa.
Stylosanthes guyannensis,..... { Mariquita clover.
Styloceras laurifolium.
Svartia,...Beteado, Quiebra-hacha, Biomate.
Swertia asclepiadea, hypericoides, gracilis.
Swietania mahogani,.....Caoba.
Symplocos, alstonia, serrulata, rufescens, tomentosa, mucronata, ... } Little lemon tree.
Tacsonia lanata,.... { Curubita of Quindío or the South.
„ speciosa,.....Curuba of Bogotá.
„ mollissima,.....Tacso of Popayan.
„ viridis,..Sweet curubita of Antioquia.
Tagetes zipaquirensis,..... { Anicillo of Zipaquira.
Talinum patens,.....Portulaca, Vicho.
Tamarindus indica,.....Tamarind.
Tecoma pentaphila,.....White oak.
„ azaleæflora,.....Ash.
Telipogon angustifolius, ...Tradescantia.
Tephrosia senna,.....Buga senna.
„ emarginata, ...Barbasco.
Ternstræmia clusiæfolia, { Taonabo tree of Popayan.
„ meridionalis,..Taonabo of Bogotá.
Tetracera volubilis.....Tigaria.
Tetramerium jasminioides,..Coffee jessamin.
Teucrium palustre.
Thalictrum podocarpum.
Theobroma bicolor,.....Bacao of Chocó.
„ cacao, { White, yellow, purple, and green coffee.
„ guazuma,...Strawberry tree.
„ silvester,.....Monkey cacao.
Thibaudia floribunda, nitida...Chamorlanes.
„ longifolia, falcata, macrophylla, ... } Uva camarona.
„ cordifolia, melastomoides,... } Chamorlan de borrachera.
„ moides, scabriuscula, pubescens, ... } Urbalaes.
„ quereme,.....Scented quereme.
„ ardisæfolia,.Grape de Fusagazuga.
Thymus nubigenus,..... { Timo of Purace, odoriferous.
Tillandsia elongata, heliconioides, { Agave palo.
Tocoyena mutisii, longifolia.
„ macrophylla.
Tournefortia hispida, lævigata, nitida, leucophylla.
Tradescantia hirsuta,.....Comelina.
Tragia volubilis.
Tribulus cistoides,.....Abrojo.
Tribulus maximus.
Trichilla spondioides.
„ guadijuga, montana,.... { Forest cherry.
Trichoceros parviflorus,...Mosquito flower.
Trifolium,.....Meliloto
„ guyanensis...Mariquita clover.
„ .....White clover
„ .....Purple do.
„ .....Yellow do.
Trigonia sericea.
Triplaris americana.
Triumfetta pilosa, acuminata.
„ mollissima, ...Bartramia
Trixis nerifolia, ...Incense
Tropæolum pubescens, peregrinum,..... { Capuchina, Malla.
Turnera mollis, sericea.
Unona xylopioides,.....Fruta de burro.
Uceolaria cinereo cæsia,.....Liquen.
Urtica serpyllacea,..... { Round nettle of Almaguer.
„ thymifolia,.....Little nettle.
„ melastomoides,.....Suba nettle.
„ floribunda,.....Ortiga of Popayan.
„ lepthophyla, flabellata,... { Ortiga of the South.
„ horrida, baccifera, ulmifolia,..... { Pringamosa.
„ tiliæfolia nemorosa, { Pringamosa of the Magdalena.
Vaccinium acuminatum,.....Hyacinth.
Valeriana microphylla triphylla, crassifolia laurifolia, longifolia, urticæfolia,... } Various valerians.
Vanilla aromatica, ...Vainilla, Bejuquillo.
Verbena glabrata,.....Verbena pelada.
„ valerianoides,..Verbena de valeriana.
Verbesina turbacencis,.....Sarbatana
Vernonia rubricaulis,..... Spring.
„ gracilis.
„ frangulæfolia.
„ cordiæfolia.
„ odoratisima,.....Censer-plant.
„ eleagnoides.
Veronica serpyllifolia.
Viburnum glabratum.
Vicia cetifolia.
Villarcia Humboldtiana,.....Ciénaga grass.
Viola parviflora (Vide Jonidium,) ..... { Cuy-chuuchullo
„ pruncllæfolia, stipularis, ...Violet.
Vitis indica,.....Para water-cane
„ tiliæfolia,.....Cane grape
Waltheria indica,.....White mallows.
Wedelia pulchella,..... Little mirasol.
Weinmania ovata, heterophylla, hirtella sorbifolia.
Wiborgia parviflora,.....Galinsoga.
Wigandia urens,.....Sozo.
„ crispa,.....Tantan.
Witheringia macrophylla,..... Lake leaf.
„ rhomboidea, ciliata,.Tomato flower.
„ dumetorum, riparia.
„ angustifolia.
Xanthium catharticum,.....Caza-marucha.
Xuarezia biflora,.....Caprraria
Xylopia salicifolia, ligustrifolia.
Zingiber officinale,.....Ginger.
Zanthoxylum culantrilo,.....Culantrillo.
„ rigidum,.....Niaragato.
Zygophyllum arboreum,..... Holy rod
Zornia pubescens.



J. Mayer, Lith. 93 William St. N.Y.