

IV.—*Account of Scientific Explorations in the Isthmus of Darien in the years 1861 and 1865.* By M. LUCIEN DE PUYDT.

*Read, January 13, 1868.*

THERE is a portion of South America but little known even to the scientific world, yet admirably situated between the Equator and the Tropic of Cancer, bathed by two oceans, teeming in minerals and rich varieties of the animal and vegetable kingdoms, and endowed by nature with convenient ports and roadsteads, as well as with important rivers and spacious lakes. This portion is the American Isthmus—that immense neck of land which separates the two Americas, bordering Mexico on the north, and the United States of Colombia on the south, and comprising the five republics of Central America.

This paucity of knowledge, however, is not to be attributed to want of enterprise with reference to that comparatively vast territory; for ever since the commencement of the sixteenth century its soil has been trodden alternately by illustrious navigators, celebrated captains, bold and reckless adventurers, unassuming colonists, and ambitious conquerors, as well as by intrepid scientific explorers, more or less influenced by the desire of opening out fresh prospects for the progress of humanity; but, unfortunately, national rivalry, petty jealousies, and more especially the indifference or incredulity of the uneducated masses of society, have paralysed the efforts of the hardy pioneers of civilisation.

The history of the discoveries and explorations in that part, from 1501 to a more modern period, is too well known to the learned world to need any circumstantial account from me; but it may be merely observed that to the nineteenth century almost exclusively belongs the honour of sending forth expeditions thereto, with a view to general civilisation; whereas at anterior periods the chief incentives to those perilous undertakings were traceable to the love of conquest, the thirst of gold, and the hope of pillage. All honour, then, to the nations of our own times! All honour to France, England, the United States of North America, and Holland, not forgetting certain other countries; each having laboured to prepare the “highway” of future times, and with the aid of science to penetrate—what the first Spanish conquerors emphatically called—“the secret of the strait.”

At the southernmost portion of the American Isthmus stretches forth a narrow neck of land, generally known as the Isthmus of Panama, but more properly divisible into two distinct sections: one under the above name, and the other under that of Darien.



Line of the projected Canal of M. L. de Puydt.



The latter, to which I propose to devote more especial attention, is intersected by large rivers, the principal one being the Tuyra, which flows into the Gulf San Miguel (St. Michael) on the Pacific, and its more important tributaries the Congo, the Savannah, the Chucunaque, and others.\*

I traversed and explored the territory of Darien on two different occasions (in 1861 and 1865), with the view of determining the least elevated passage over the *Cordillera*, or mountain-chain, which borders it on the Atlantic side, as well as of tracing the most practical course for a large ship-canal, destined to unite the two oceans, either direct from sea to sea, or by turning to account the various water-ways of the two declivities.

I have now the honour of laying before the Royal Geographical Society, whilst soliciting the indulgence of its distinguished members, the scientific observations which, more especially in a geographical point of view, I had the opportunity of making in the above-named corner of the earth; one so little known even in our own day, and yet the one which William Paterson in a spirit of prophecy termed the "Key of the World."

Towards the commencement of the year 1861 I penetrated into the Isthmus of Darien, ascending the Tuyra, with the intention of examining the routes followed by Captain Prevost, of the British Navy, and Lieutenant Strain, of the United States, as well as the one mentioned by Dr. Cullen, and found practicable by Messrs. Gisborne and Forde. All these explorers were under the necessity of following, or crossing at times, the highway of communication which was opened in 1785 by Don Andres de Arisa, viz., from *Puerto Escoces* ("Scotch Port"), on the Atlantic, to *Puerto del Principe*, on the right bank of the *Savannah*. That route was completely finished when Don Manuel de Milla Santa Ella visited it in 1788.†

I had purchased at Panama a small schooner, called the *Mercedita*, in which, at the head of twenty-seven men, I ascended the Savannah as far as the mouth of the River Lara, where I pitched my first camp, that being the very spot where Captain Prevost's companions so miserably perished. By means of

\* As a geographical division, the Isthmus of Darien should be bounded on the south by  $7^{\circ} 56'$  N. lat., from the extremity of the Bay of Candelaria to Point Garatchine; but the orohydrographical division is better defined by the limit  $6^{\circ} 50'$ , as the Nique chain continues from the Gulf of Uraba to the Bay of *Aguacate*, thereby forming the grand division between the two important basins of the *Atrato* and the *Tuyra*.

† In 1865 I found and copied at the Bogota Library, the MS. of Don Andres de Arisa, to which there was a map of Darien attached, and which bore the title of 'Comentarios sobre la rica y ferulissima Provincia del Darien—Santa Maria la Antigua del Darien,' April 5, 1774. The information acquired by this writer gave rise to the road in question.

canoes I easily reached a point in the Rio Lara, where the strong tide of the Pacific is still perceptible, and, after a long passage through virgin forests, I arrived somewhat higher up than the confluence of the *Rio de la Paz* and the *Chucunaque*. It was there I became thoroughly impressed with the conviction of the impossibility of laying down a canal between the Bay of Caledonia and the River Savannah, unless by means of numerous sluices, which, however, could only be fed by the upper waters during the rainy season. The mountain, named "Loma de-seada," once passed, the country became gradually more elevated towards the Atlantic, as far as the lofty chain of the Cordilleras of San Blas, which borders the above-named bay.

It was evident that the information given by Dr. Cullen was completely incorrect, and that he had not traversed the interior of the country. In fact, I fully ascertained that such was the case when I reached the hospitable dwelling of Messrs. Nelson and Ossack in the village of Chepigana, on the left bank of the Tuyra, that being the house in which Dr. Cullen states he lived, and from which, as he alleges, he set out on that hunting expedition which conducted him, through level savannahs, to the shores of the Atlantic. I was assured by Messrs. Nelson and Ossack that they had never seen nor heard of Dr. Cullen except at Panama.

One point remained to be determined, viz., how far we should admit of the alleged height of 152 mètres, which served as the basis of a number of plans for constructing a canal, and which it was stated was the height of a gorge at the sources of the Rio *Sasardi*, near the Bay of Caledonia. That height, it was affirmed, had been carefully measured by Colonel Augustin Codazzi, of the New Grenada Engineers; but all my inquiries on the subject when I returned to Europe proved of no avail, and it was only on my second visit to Bogota in 1866, that I discovered, amongst the numerous maps and documents of the Observatory, a large MS. map of the Isthmus of Panama, drawn up by the above-named Colonel. The following is an extract:—

	Mètres.
Sources of the Aglasinique (Atlantic) .. .. .	591
Road do. do. .. .. .	274
Small chain of the Rio Sasardi .. .. .	300
Road of Sasardi (village) .. .. .	152
Road of Sucubti (village) .. .. .	274

It is clear, therefore, that there has been a regrettable confusion with reference to the 152 mètres in question, which were given as the height of the least elevated pass in this mountain-chain, whereas by the word "road" ("*camino*" in Spanish), Codazzi only intended to indicate the height (above the level

of the sea) of the routes *half-way or so up the hills, and following the windings of the declivities leading from one village to another.*

All this was fully confirmed by fresh proofs; for one of my countrymen, who is settled in Colombia, made me a present of a map entirely in the handwriting of Colonel Codazzi, and signed by him, under date March 31, 1854; and in that map, which has special reference to the explorations of Captain Prevost and Messrs. Strain, Gisborne, and St. John, the heights are thus given in *English feet*:—

	Feet.
Between the sources of the Asnati (a minor tributary of the Chucunaque, Pacific) and those of the Aglasinique .. ..	1340
Small chain of Sasardi .. ..	1010
Between the sources of the Aglatomate (Atlantic) and those of the Sucubti (a tributary of the Chucunaque, Pacific) ..	1275
Road of Sasardi (village) .. ..	500

The observations I had made with reference to that proposed line of canalisation—which up to that time was regarded with so much favour—were consequently confirmed; and thenceforth, ceasing my investigations in that direction, I considered that the vast valley, traversed by the immense River Tuyra, which is so far up a tidal one, might afford in its eastern portion the means of easy communication with the small valleys which are bathed by the rivers that flow into the Atlantic, on the western side of the Gulf of Uraba. Thereupon I ascended that river, penetrating into the streams which feed it in its upper course; such as the Capeti, the Pucro, and the Paya; and after numerous difficulties and trials—which, however, were happily vanquished—I came to the conclusion that, *on that side alone*, the elevation of the Cordillera was sufficiently low, or else the rents in the mountain-chain sufficiently deep, for the construction of a navigable water-way suitable for all kinds of vessels of whatever tonnage.

I was sufficiently familiar with the orography of the Isthmus of Darien to remark not only the diminished elevation of the mountain chains, in proportion as they approached the Choco or the mouths of the Atrato, but also their frequent divisions into nearly isolated peaks or mamelons. Moreover, the double and broad cordillera in the Isthmus of Panama, parallel to the coast of San Blas, became a simple one, forming only one continuous but still thick line, after leaving the sources of the Chucunaque. Then descending towards the south-west on leaving Cape *Tiburón*, that chain narrows and falls, forming the *Sierra or ridge of Nique*, subdivided on the north, under the name of *Sierra de Estola*, and on the south, under that of *Sierra de Mali*. Subsequently one meets still with some isolated peaks,

but the previously mentioned continuous chain is replaced by mound-like formations, in the midst of which flow the waters of the Atrato and of other less important rivers.

I shall return hereafter to the topography proper of the extremity of the Gulf of Uraba.

In this quarter I continued until the month of June, 1861, zealously persevering in my researches and investigations, meeting with an hospitable reception in all the villages, contiguous to the Tuyra—such as Las Palmas, Chepigana, Santa Maria la Reale, Molineca, and Pinogana—and living on a friendly footing with the Paya Indians, one of whom, who spoke Spanish, acted as my interpreter during the greater portion of my wanderings. So far, then, I was in a favourable position for prosecuting my design, but the majority of the men in my service were sorely fatigued with the rough life of the woods, to which may be added the discomfort of the heavy rains which prevail in this latitude, when the sun enters the Tropic of Cancer.

I was then obliged to terminate the expedition for the time being, and to return to Europe, in order to submit to scientific men the results of my first researches, as well as the deductions I felt justified in making, with reference to the junction of the two oceans, by a maritime canal.

Four years were in that way devoted to various kinds of labour. I consulted all the authors who had written on the subject, analysed the works of eminent engineers of various nations, and closely examined every production bearing on the American Isthmus, from the plan of canalisation by the *Coatzacoalcos* in the Tehuantepec, up to the one carried into execution, at the *Raspadura*, by the parish priest of *Novita* (Choco). Thus assisted by the scientific attainments of my courageous predecessors, I resolved to explore the Darien anew—but this time on the Atlantic side, and in that way to penetrate to the boundary of my former travels in 1861.

Meanwhile “The Colombian Canal International Company” had been formed in Paris, under the auspices, and with the co-operation of a number of eminent, learned, and honourable gentlemen. It will be sufficient to make mention here of the two engineers who, so soon as a definitive plan shall have been determined on, will give their valuable aid to the work, viz., Mougel Bey, who drew up the Suez Canal plan, and Mr. Maclean, President of the Society of Civil Engineers, London.

I set off again in December, 1864, and organised my expedition at Carthagena, procuring the assistance of fourteen choice men. And here I may be allowed, were it only in grateful recognition of services rendered, to make mention of three of

the number, countrymen of my own, who afforded me many proofs of devoted zeal, gallantly braved fatigue and fever and encountered all the risks of the expedition, which was solely based on my own researches and statements, and one in which my only guides, in a country unknown even to its nearest neighbours, were my maps and my compass: the three companions in question were Mougel Bey, junior, engineer, and Messrs. Truchon and Decurey, inhabitants of Carthagena, who were induced by the grandeur of the undertaking to share my hazards and perils.

Having made a journey to Bogota, I was not able to commence my new explorations before the 28th of June, 1865; on which day I set sail from Carthagena in an old *balandra*, called the *Esperanza*, a sort of one-masted decked barge of 30 tons, without any keel—the only craft I could procure in that port. Coasting along by Morosquillo and the Sinù, but only in the day-time, on account of the defective condition of my vessel,—to say nothing of the dry or moist whirlwinds which blew almost every night from the south—I doubled Point Caribana (where I was nearly wrecked on the Lavadera Rock) as well as Point Aguila, and entered the Gulf of Uraba.

On the 7th of July I arrived at *Pisipi*—a small village situate at the mouth and on the left bank of the river Turbo. As the part of the country I proposed reaching was comparatively so near, I had indulged in the hope of being able to procure some intelligence respecting it, from the inhabitants of the place just named, particularly from Mr. Charles Dean, a British subject, who kindly received me; but, although the point at which I wished to touch was only some 19 or 20 miles distant by water, I could not, unfortunately, obtain the desired information. On the contrary, every one vied in dissuading me from the attempt to penetrate into a district inhabited by “Indios bravos,” under the leadership of a treacherous cacique, well known for his enmity to all foreigners. I was told that none but Indians of the same race could ascend their rivers, much less enter their villages, without running the risk of being put to death. Moreover—and this was of importance—every one affirmed that the river I was in quest of, in that direction, viz., the Tanela, did not even exist, and that the only “river” known under that name was one of the thirteen mouths of the Atrato—the Boca de Tarena. Nevertheless, I relied so much on my former researches respecting the Isthmus of Darien, that I persisted in my project, and ordered the owner of the craft to obey my instructions and proceed on the appointed course, without any further observations.

I left Pisipi on the 10th of July, at 7 A.M., under a stiff breeze



doubled Point Revesa, passed at some distance the Atrato, crossing two of its mouths (the Boca Grande and the Boca Tarena)—which were so much blocked up by the alluvia of the rivers that there was not sufficient water for the Indian canoes; and at 1 P.M., cast anchor in the western extremity of the Gulf of Uraba, some 2 miles from the coast, and in 6-fathom water.

At that short distance, and in a s.s.w. direction—the one in which I expected to discover the mouth of the Tanela—the coast, viewed through a spy-glass, presented but one continuous net-work of mangroves, sheltered behind a bar which was exposed to all the fury of the waves. To the west arose a chain of small mountains, sloping down to the sea and terminating, to the south, in the Peak of Tarena, and, to the north, in the Peak of Gandi. To the north, the islands of Tarena, Tutumate, and Tambor, were embosomed on the sea—the last-named one being lost in the horizon, above Puerto Escondido. Opposite the Tutumate Isles, and on the brink of the shore, are four fishermen's huts, which form the so-called village of Tutumate. I ordered the largest of my three canoes to be launched, and, accompanied by M. Mougel, junior, M. Truchon, and four rowers, all well armed, made right ahead for the bar, which we succeeded in passing over in safety, and found ourselves, all at once, in a small tranquil creek, at the extremity of which we perceived the mouth of the Tanela, some 20 mètres wide, and so well-concealed as to be completely invisible from outside the bar; continuing my reconnoitring, I entered the river to the extent of 5 or 6 miles, in order to note its various aspects.

The Tanela is 3 fathoms deep at its outlet, and  $1\frac{1}{2}$  some 6 miles up—that distance being the furthest extent of the exploration on the 10th of July; at which time, however, the river was not supplied with its average volume of water. For the space of about 3 miles, it takes a s.s.e. inland course, exhibiting in its axis the Peak of Tarena; it then inclines more and more towards the south, the s.s.w. and the south-west until it resumes its general direction, viz., w.s.w., which—with the exception of numerous bends—it maintains up to the point of junction of two branches, one of which descends from the Sierra de Estola in a more northerly course, whilst the other rises between the counter-forts of the Sierra de Mali, in a more southern one.

Contrary to the delineation on the maps, the Tanela has but one outlet into the sea; but it is evident, from the appearance of the spot, that there were formerly two, if not more. At some remote period it must have debouched direct into the gulf, whilst following its general direction from w.s.w. to e.n.e.; and at that epoch the River Atrato had only one vast estuary, situate

at the extremity of the Bay of Candelaria, at the base of the counter-forts of the Choco Mountains, and at the rear of the present mouth of the Suriquilla. The immense alluvial deposits of the Atrato have, by degrees, filled up the entire extremity of the gulf, covering it with flat shores, which produce only mangroves, and which, as now seen, are intersected by numerous canals, more or less navigable.

The Suriquilla, Tigre, Arquia, and other lagoons or marshes have likewise sprung up from those alluvial formations. To the like cause must be attributed the impediments to the direct course of the Tanela—obstacles which compelled it to deflect more and more towards the north, and to assume its present direction, whilst forming two or more mouths. The extension of the sandbanks has, however, effaced all traces of the more eastern mouth, so that only one now remains. That theory is confirmed by ocular inspection. In effect, on ascending the Tanela some 3 miles, one finds it flowing through an entirely flat, muddy, and slimy country (covered with mangroves), and maintaining an uninterrupted connection with the banks of the Atrato. It is only after the Tanela takes a westerly course that its bed becomes sandy, pebbly, and stony: the river is then in its ancient bed.

Before penetrating further into the country and advancing towards the Cordillera, I was desirous of reconnoitring the river as high up as possible, and, above all, of sounding the disposition of the Indians of Tanela, who had been described as so hostile. I wished also to determine the exact site of that village. Accordingly, on the 11th of July, accompanied by Messrs. Mougel and Truchon, as well as by a young native of Pisisi, whom Mr. Charles Dean had given me as an interpreter, I reascended the Tanela, and found that, higher up than the point I had attained the preceding day, the river still maintained an average breadth of 20 mètres, covered with water; but not unfrequently its bed was 100 mètres or more across, and was formed of rocks and fragments of trachytes, dolomites, gneiss, and porphyry, dry to view.

I drew near a *ranchito*; but although it was uninhabited, I found under it two slightly-made boats, called *cayucos*, and perceived also another untenanted *ranchito*, surrounded with banana-trees.

On the 12th inst., after having come in sight of other *ranchos* and plantations of bananas, cocoas, and the *Dioscorea radia*, I arrived, about half-past 4 P.M., at the confluence of the two branches already mentioned. From the sea up to this spot, I counted 17 rapids or "leaps," but of little incline or height. These were easily passed over, with the aid of cordage or a pole,

although I must not forget to mention that my canoe was heavily laden—containing not only nine men, but provisions, ammunition, bedding, and other articles. At the junction in question is a rapid with an incline of about 1·50 mètre, and somewhat more difficult to cross. It may be observed that the number of rapids here set down is not given as the absolute one; for a few inches more or less of water cause them to disappear and re-appear, particularly up the windings of the river—the pebbles being washed down by the currents and storm-floods.

I left the smaller and far less important branch on the left and entered the northern one, whereon I considered it more probable the village of Tanela would be found. Its Indian inhabitants, I felt assured, were skilful navigators, as the construction of their cayucos was perfect in their way. At the mouth of the river I saw five or six of these admirably-shaped canoes, cut out of single trunks of trees, the natives making use of them even for turtle-fishing out at sea.

A little above the junction of the two streams I came on a magnificent and spacious *rancho*, entirely of bamboo (*Bambusa arundinacea*), and of excellent construction. The roof was formed of palm-leaves, artistically juxtaposed and interwoven, and the dwelling itself was surrounded by plantations of banana and coco-nut trees, as well as by flowers of various kinds. Up to that time I had not encountered a single human being; but, on the other hand, I had at various times discovered unmistakable traces of the presence of man, near the abandoned *ranchos*—for example, ashes still warm, fruit recently cut, footsteps, &c. I may here add that I had given the strictest orders to respect property and not to take anything whatever belonging to the Indians.

After resting and sleeping tranquilly in the *rancho*, we continued on our way. Our measures of precaution were found unnecessary, and that night also was passed in complete security.

On the 13th it was impossible to leave at an early hour, for the northern branch of the river had become so swollen during the storm, which broke out in the course of the night, that the navigation was impeded. It may be stated here that, up to the village of Tanela, I counted eight rapids, all of greater extent than those previously met with, on the lower course. It was evident that this northern branch took its source in a much more mountainous district, one, moreover, with a vaster plateau. As for the southern branch, it was not affected by the storm, but remained unchanged in appearance.

It was not before a quarter past 5 P.M. that we perceived the village of Tanela to our left, on the right bank of the river, the inhabitants being assembled on the margin. Soon afterwards

a light mahogany canoe, with three men, pushed off towards us. One of them was Nusalileli, the cacique of Tanela, who gave us a very kind reception, and insisted upon our sleeping in the village. Accordingly we proceeded there, and were most hospitably entertained; but I was unable to obtain any information respecting the interior of the country, the frequented roads, or the position of certain points. The fact was that, despite the perfectly good understanding between us, the Indian was of too distrustful a character to furnish me with the details I so much desired to procure.

The 14th, at half-past 6, I took my leave of the Indians of Tanela, who treated us with every mark of friendship, refusing our offer of remuneration for their hospitality. It is true that, with reference to my proposed exploration, I was not any better informed than previously to this visit; but of one thing I became certain, that, by acting with great prudence, I should have nothing to fear from these natives, whilst fully conscious that I could expect no assistance on their part.

At a quarter past 3, the same day, I again reached the sea, after an easy descent of eight hours and a half, exclusive of some short stoppages for meals.

My plan was now fully determined on, viz., to land the provisions and all the *matériel*; to reascend the Tanela, as far as the confluence of the two branches; to erect a *rancho* near that spot, as a basis of operations, and thence open a route through the virgin forest, compass in hand, and following the direction of the southern branch, which I considered would lead me to the slopes on the Pacific side by one of the transversal gorges or valleys of the Cordillera.

The execution of this plan was at once commenced; but unfortunately the large canoe, with M. Truchon and six men, was upset whilst crossing the bar, and a whirlwind which rose at the same time compelled me to weigh anchor and take moorings on the opposite coast of Caiman. This untoward event, which, however, did not involve any loss of life, necessitated the division of the expeditionary party into three companies. I landed Messrs. Mougél and Decurey, with four men, and then sailed for Pisisi, where I found M. Truchon and his crew all safe, but wholly destitute, as everything on board of the canoe had been lost. Finally, after many fatigues and contrarieties, I anchored on the 23rd at the same spot, opposite the Tanela, and on the next day we all landed, with our stores.

Being under the apprehension that the ten men in my service, eight of whom were negroes or mulattos, would make an attempt to return so soon as they came in view of the Indians, of whom they stand in dread, I took every precaution against their escape;

and accordingly, immediately on our landing, I signalled the owner of our craft to hoist sail, move off to a distance from shore, and proceed towards Pisisi, it being understood between him and me that he was not to return before September. My men were in consternation at his departure; but nought remained for them but to march forward and do their duty.

Whilst I was making all necessary scientific observations, during my upward course on the Tanela, M. Truchon preceded me on the voyage and had a *ranch*o constructed on the right bank, about 150 mètres lower down than the confluence of the two branches of the river, below the Grand Rapid. The Tanela Indians kindly assisted him in the construction. We were on an excellent footing with them; and here I may state, once for all, that we continued so during the entire exploration.

On the 3rd of August all our preparations for a settlement were terminated, and we were enabled to commence our labours for opening the line. The same day nineteen tattooed and armed Indians, of the villages of Cuti and Arquia, paid us a visit, and endeavoured by all kinds of mendacious statements, as well as by a description of the various perils that awaited us, to dissuade us from proceeding any further up the country. I told them, however, in a conciliatory but firm manner, that I had fully made up my mind on the subject, so that all their efforts proved unavailing, and thereupon they withdrew.

The next day I had a road cleared in a westerly direction, making allowance for the magnetic deviation of the spot (8° E.). On the 5th I traced the site of a new *ranch*o, which was not definitively occupied before the 17th, as the branch of the Tanela, which we followed up, had not sufficient depth of water to float the canoes when laden, so that all the materials had to be carried on men's backs.

On the 10th I received a visit from Pascual, the chief cacique of the Indian confederation of the *Caribbees-Cunas*, and whose residence is at Arquia. He was accompanied by thirty-three men, armed as for war, and tattooed with the reddish-yellow juice of the arnotto plant. He also advised me not to push my researches further; in fact, every word of his partook of falsehood and duplicity, and it was only after an interview of three hours that he became convinced I would only yield to force, and accepted the hospitality of my *ranch*o in Indian fashion, that is to say, by drinking with me the *chicha*, a beverage made from Indian corn. He then left, but returned to take his leave of me before proceeding on his way back to Arquia. This second time he was accompanied by forty men, but in more pacific guise. Although still as distrustful as before, and still as much disposed to mislead

me with respect to any information regarding the country, he made some protestations of friendship before his departure.

During all this time the labours of exploration continued unabated, but some of my workmen had an attack of fever, produced by over-fatigue. M. Mougel, junior, having imprudently exposed himself, fell seriously ill, and became so weak that he was unable to render me those professional services on which I had relied for establishing, by positive data, the result of my exploration. M. Truchon himself, despite all the energy of his character, was compelled to seek repose for a time in order to recruit his strength, exhausted as it was by his too great ardour in the cause.

On the 21st of August I quitted the line which had been opened out in the westerly direction, but which, however, was actively prosecuted in my absence, and proceeded towards the N.N.W., in order to ascertain the exact nature of the upper course of the northern branch, which flows, as already stated, in front of Tanela. After crossing several small mountain chains, separated by valleys radiating around a central summit, I reached the bank of the river and found that my conjectures were correct.

Of a far larger volume of water than the southern branch, the northern one was rapid in its course, confined by steep banks, obstructed by large blocks of rock, which were at times dislodged by the force of the current, and characterised here and there by falls or leaps of 2, 3, or 4 mètres. As the waters were so much swollen by a storm that I was compelled, with the two men who accompanied me, to pass the night on the bank, I concluded that the river received the torrents of rain-water which descended from the broad and elevated table-lands of the Sierra de Estola, where it takes its rise. Very different, as already observed, was the case with regard to the southern branch, for on one occasion there was scarcely a rise of a few centimètres, after the rain had fallen in torrents during fourteen consecutive hours.

On the 23rd and 24th of August I reconnoitred the course of the southern branch as far as the slopes of the Mali, and through some open vistas along the course of the river. I was enabled, by climbing up trees or neighbouring hills, to see with my own eyes that the two summits of the Mali and the Estola sank down, as it were, to an abrupt and rapid declivity, leaving a breach between them in the shape of a V, beyond which nothing further was discernible on the horizon. Nearly or quite up to my knees in water during several days—sometimes, however, hardly up to the ankle—I examined all the approaches and all the sinuosities of the ground, and felt sure that I was on the right way—the great desideratum.

I rectified the curves of the road which had been opened, and on the 25th of August M. Decurey and myself took an affectionate leave of our friends, appointing the end of the month for our return, and arranging that, in case of any untoward event, M. Truchon should take the command of the expedition and endeavour to bring back the remainder in safety. We two then proceeded on our explorations, accompanied by five devoted men, who carried our hammocks as well as provisions for five days.

Thus we set off into the unknown wilds, certain to meet with fresh difficulties, perhaps to perish. At best, we might be compelled to return by the Pacific slope, either by Paya, if we descended the river of that name, or by Tapalisa, if we followed the Pucro, or else by the Capeti and the Tuyra, for all three rivers have their sources in the same neighbourhood and in proximity to the Mali and Estola sierras. Nothing, however, of all this happened, and, as will be seen, it pleased Providence to restore us safely to the friends we had left behind.

I caused a small *rancho* to be erected at the foot of the Mali, and on the morning of the 27th doubled a buttress of the latter, whilst following a s.s.w. direction; then turning w. by  $\frac{1}{4}$  n. I reached its summit, some 400 mètres above the level of the plain. On the Pacific side the descent is almost perpendicular, and consequently dangerous, the sierra forming, as it were, a wall, from the top of which one perceives immense wooded savannahs, watered by the Tuyra and its tributaries. From out that ocean of verdure emerge the peaks and summits of the hilly chain which follows the course of the Chucunaque, and which, in undulating forms, die away in the distance, enveloped in a blueish tint, and taking a direction from north to south and from n.n.w. to s.s.e.

It was clear, therefore, that we had reached the last limit of the chain which separates the two slopes on that point; but the question still remained whether, at the base of this same peak of the Mali, we should find the Tanela unchanged in respect of its incline and current. A branch of that chain advanced towards the west and plunged almost perpendicularly in the direction of the gorge; but the eye was limited in its range by a luxuriant and gigantic vegetation, nor—for the same reason—could the ear catch the least sound announcing a water-course, even if there were any falls.

Creeping on all fours, sometimes sliding on our backs, at others with our faces to the earth, and here and there lost for a while amidst the ferns and tufted plants, we happily accomplished our perilous descent, with a grateful sense of Providential preservation.

At one end of a little savannah I came again on the Tanela,

but found its volume of water considerably diminished. It was taking a zigzag course between the slopes of the two sierras in alternately a west and south direction, so that the direction given to the passage in the Cordillera was south-west. In this latter direction I continued, accompanied by M. Decurey, sometimes in the water, at others half-way up the declivities; the result being that, in a short time, we were again presented with the same spectacle we had witnessed from the summit of the Mali. The view was an unbounded one, the already-mentioned plains of the Darien stretching out to a remote distance, without any impediment. The Tanela itself had dwindled down to a small stream, fed here and there, on the right and left, by some descending brooks, furtively making their way under the grasses, the mosses, and the stones.

It was evident that we had attained the culminating point—the very threshold of the division of the two slopes, and, at the same time, the spot where the Nique chain was at its lowest point of depression. I thereupon drew up a circumstantial account of this latter exploration, as was the case with regard to the other operations, and we returned to our *rancho*. I considered it, however, advisable to make our way back along the course of the Tanela, so that I might be certain, once for all, that the deviations we had made, in order to ascend the Mali, had not removed us from the route I was in quest of.

On the evening of the 28th we had the pleasure of rejoining our friends; and we all indulged in a holiday in commemoration of this felicitous termination of a difficult enterprise, which so many persons, including not a few who were competent to form an opinion, had deemed impracticable. From that date up to the 3rd of September, when we left for Carthagena, nothing worthy of note occurred.

It may, however, be stated here that, on descending the Tanela, I made a series of observations on the speed of its current at all points of its course. I am aware that those observations cannot possibly lead to any positive deductions with regard to the facility of constructing a maritime canal through the Isthmus, or dispense with the necessity of a survey; but such as they are they were submitted to an engineer, who based his calculations thereon, as follows:—The height of the “threshold of division,” or level summit resulting from the incline of the Tanela, as calculated by the speed of its waters, is found to be 30 mètres, 79 centimètres—this same threshold not being more than five miles in length.

From the insufficiency, however, of the details furnished, I have grounds not only for thinking that the above figures are below the standard, but for expressing the opinion that the



height above the level of the sea is from 40 to 45 mètres. This, then, would be the most depressed point of the Cordillera, *at the practicable site for opening a canal, with easy issues into the two oceans.*

With regard to the employment of a barometer as a substitute for levelling, I am convinced, by my own experience, that it would only lead one into a labyrinth of errors. The heights to be measured are, comparatively, so low, the climate so moist, the electric tension so strong, and the variations of atmospheric pressure so abrupt, that, independently of the absence of special experimental tables of correction for those regions, as well as through some other causes, the use of the barometer would be a matter of very great difficulty, without any but exceedingly doubtful results. In fact Mr. Guyot, Professor of Physical Geography at New Jersey (United States), was obliged, as he himself told me, to dispense with that mode of measuring heights, whilst making observations in intertropical climates, more particularly with respect to the lesser altitudes.

I have now to state that, as I was charged with a scientific mission by the Minister of Public Instruction, I collected, during my journey, as many facts as possible, likely to bear on the subject of such a mission. I may add also that, during my exploration of the eastern coast of Darien, I sent one of the companions of my journey of 1861 to complete the observations previously made, in order that it might be seen whether the results were in accordance with those already obtained.

I shall now treat of the Isthmus of Darien in a point of view which may, possibly, be deemed the most interesting for the Royal Geographical Society, and shall group together the facts arrived at during my two explorations.

I have already pointed out the limits of Darien, and described the large river which crosses it nearly from east to west, after a lengthy course from south-west to north-east. The tide of the Pacific finds its way very high up the Tuyra and its tributary streams, and is perceptible three miles above Pinogana, fifteen above Yavisa on the Chucunaque, and six above the mouth of the Rio Lara which falls into the Savannah. The Tuyra is of considerable depth, particularly as far up as Santa Maria La Reale, and its feeders are both numerous and important on both banks; but as existing maps are very incomplete as to those points, more especially beyond Pinogana, I shall endeavour to supplement them by means of the notes taken during my journeys. From Pinogana to Paya, its tributaries are:—

1st. The Arusa or Aruja, on the left bank.

2nd. The Yape, on the right bank. Above the latter river, the Tuyra is still from 90 to 100 mètres broad, and from 3 to 3·50 in depth, in an average volume of water.

3rd. The Capeti, on the right bank, 20 to 25 mètres at the mouth: this is the route followed by the Spaniards in their contests with the Darien Indians. It flows between the Yape and the Pucro, parallel to those two rivers and its sources, like the Pucro and the Paya are in the open gorge between the Sierras of Estola and Mali.

4th. The Cupe, on the left bank. Beyond this river the Tuyra is only 30 mètres broad.

5th. The Margarita, on the left bank, a small rivulet.

6th. The Soto Caballo, on the right bank, small.

7th. The Tuluagua, on the right bank.

8th. A nameless stream, on the left bank.

9th. The Piedro or Rio de Piedras, on the left bank.

10th. The Pucro, on the right bank, 30 to 35 mètres at its mouth. The village of the like name no longer exists. This river formerly afforded the means of communication—as is the case now with regard to the Capeti and Paya respectively—between the two slopes of the great mountain chain.

11th. The Mallakanti, on the left bank.

12th. The Paka, on the left bank.

13th. The Kuriako, on the right bank.

14th. The Inaganayua, on the left bank.

15th. The Piriako, on the left bank.

16th. The Pita, on the right bank.

17th. The Tikurtikinti, on the right bank.

18th. The Paya, on the right bank.

Up to the village of Paya, which is on its right bank, this last-named river receives not less than twenty-two tributaries, all the names of which I have obtained—the principal, however, being the Abchueldotogo, the Muyaco, the Abchueltumati, the Espinoso, the Paluti, the Biagual, the Palludi, and the Muchagambi. Opposite the village the Paya is still 30 mètres broad.

I have already spoken of the chain of the Cordilleras bordering on the Atlantic. This chain, after leaving Cape Tiburon, diminishes both in breadth and height, and becomes broken up into various masses of greater or less importance. It is in that respect that the maps are completely in error, local observation having set aside the assertion—based on an existing fact, but not sufficiently explained—that *three small consecutive chains and parallel mountains separate the Western Savannahs from the eastern shore of the Isthmus, and are connected by lateral valleys.*

This is true—but what is the relative situation of those minor chains? Do they present, as asserted, that insurmountable obstacle which has been made the basis of so much opposition to the proposed canalization by the lower Darien?

To those questions I offer the following replies:—

Taking Cape Tiburon as its starting-point, the Cordillera is divided into three chains, the highest of which is the Sierra de Estola, that is to say, the most westerly one. This chain continues in an uninterrupted line, gives rise to some streamlets, slopes down abruptly and profoundly in the vicinity of the sources of the Tanela (Atlantic) and of the Capeti, Pucro, Paya, and Masagui (Pacific), and then rises again under the name of Sierra de Mali, thus extending the grand Nique chain as far as the Bay of Aguacate, on the Pacific.

The second chain diverges from Point Miel (Cape Tiburon), follows the coast, which it often borders perpendicularly, opens out and divides into mamelons, so as to afford passages for some insignificant brooks, slopes down to a considerable depth, thereby forming the fine port known as Puerto Escondido,\* and then abruptly terminates in the Peak of Tarena, which is partly surrounded by the Tanela.

The third of the above-mentioned chains leaves Cape Tiburon Point, plunges into the sea, which it coasts, and only emerges from the waves to exhibit the summits called, respectively, the Tonel, Piton, Bolanderos, Tambor, Tutumate, and Tarena isles; three of which (the Bolanderos and the last-named two) are composed of petty groups of conic islets, of small extent, with perpendicular partitions or side-walls, around which are safe anchorages, from 20 to 40 fathoms in depth. I have anchored in, respectively, 9 and 13 fathoms water, *within a stone's throw* of one of the Tumate, and also one of the Tarena islets.

Of these three minor chains, the Estola is the highest, one of its summits (Peak Gandi) being 700 mètres, and another (Peak Estola) 500, above the level of the sea; next comes the second small chain which borders the coast, and is only of the average height of 120 mètres; and last of all, the *sub-marine* one, rising out of the waters some 30, 40, or 50 mètres.

These chains are intersected by parallel valleys. The first one, between the Sierra de Estola and the coast chain, is but of inconsiderable altitude above the level of the sea, and is bathed by a small river which rises on the declivity of the Peak of Tarena, and flows into the Puerto Escondido; and the second

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\* This port must not be confounded with a similarly named one, to the south of Point Careto, towards 8° 45' N. latitude.

one, between the coast and the isles, is easily discoverable in depths of 10, 20, and even 30 fathoms of water. The Puerto Escondido is, throughout its extent, from 15 to 44 fathoms in depth, with a slimy and pebbly bottom.

It is unnecessary to point out to those whom I have now the honour of addressing the deductions to be drawn from this orographic and hydrographical nature of things, with reference to the facility of laying down a canal in this direction. I may be allowed merely to add here—in order to avoid the necessity of reverting to the Gulf of Uraba—that, in consequence of several accidental occurrences during my explorations, I felt bound to traverse it several times, in various directions, more particularly on the following lines:—From Pisisi to the Tarena Isles; from the Tarena Isles to Point Caiman; from Point Caiman to the Tutumates; from Puerto Escondido to the anchorage opposite the Tanela; and from Point Aguila to Pisisi; and I invariably found a minimum depth of 10 fathoms up to within two miles of the eastern coast of the Gulf and of the line of the northern mouths of the Atrato, and of more than 20 to 45 on all the other points.

I had no means at hand for taking deeper soundings.

The climate of the Isthmus is, in general, healthy. As the country, which is but of limited breadth, is situate between two oceans and furrowed by numerous broad water-courses, with mountains either of no great altitude or else isolated, the breezes from the opposite shores have sufficient scope for dispersing any miasma that might arise from that decay and fermentation of vegetable matter, which are chiefly observable after the rainy season.

On the western course, in the plains on the Darien side, the rainy season, properly so called, commences towards the 1st of June and terminates about the middle of September; the dry season lasts from the 15th of November to the 1st of April—the intermediate periods constituting two mixed, variable seasons, alternating between fine weather and intermittent rains.

On the Uraba Gulf side, that is to say, on the Atlantic slope, the rainy season is of later arrival and shorter duration—the variable seasons, as well as the dry one, extending over a longer period.

Storms are of frequent occurrence throughout the Isthmus, particularly in the rainy season, and they rage with a fury unknown to our latitudes, bursting forth with scarcely any warning, and abating with the like rapidity.

The lowlands contiguous to the coasts, and more particularly such as are of slimy alluvium formation, are unhealthy and

uninhabitable, both on account of their humidity and the presence of myriads of mosquitos and sand-flies, which would render a residence insupportable. Very different, however, is the case some little distance inland—the nature of the soil and the excellence of the water rendering the interior of the country very salubrious.

During my two explorations I always found that the cases of fever—intermittent, but never miasmatic or marsh fever—which broke out amongst the men who accompanied me, were traceable to imprudences of one kind or the other, such as overbathing, too prolonged exposure to the sun, the absence of woollen clothes on the upper parts of the body, or some excess in fatigue or drink.

The soil of the Isthmus is distinguished by those peculiarities which belong to lands of upheaval, and which appertain almost exclusively to that period of transition which originated—what were formerly called—the primitive formations; as for secondary strata, very few are discernible. Generally covered with a layer of *humus*, not unfrequently of considerable thickness, the sub-soil is composed of granitic, porphyritic and trachytic rocks; of dolerites, quartz-like gneiss, pegmatites and siliceo-aluminous earths. The most prevalent rock on the Pacific side is argillaceous schist, which is always more or less decomposed, and often found in a state of transition to pure clay. Something similar may be said with regard to the pegmatites, which are so far altered as to pass into Kaolin or porcelain clay.

I consider that the Isthmus of Darien was the point whereon the nucleus of vibration of that vast upheaval was established, which elevated from the depths of the earth the immense chains of the Cordilleras to the north, and of the Andes to the south; and if that hypothesis be correct, the inconsiderable altitude of the mountains on that point would be attributable to the quasi-immobility of the nucleus itself.

At some subsequent period must have occurred another local phenomenon, caused, no doubt, by the shock of a violent current extending from the west to the east, breaking and dissevering the already formed Cordillera, and scattering some of its remnants into the depths of the Gulf of Uraba, or massing them on its shores.

Evidence of all this may be easily deduced from the present appearance of the district between the Cordillera and the Gulf, no true regular rocky foundation or *couche*, nor any rocks superposed in straight or inclined layers being discoverable in any part. Nought, in fact, is to be seen but a *conglomeration*

of blocks of all kinds of shapes worn away by attrition, rounded off here and there, and scattered pell-mell either on the surface of the soil or in the soil itself. These enormous blocks, which are principally met with near the sierras, were formerly embedded in the earth; but at present they are held captive, as it were, between the roots of some patriarchal trees, and kept fixed in the soil by the vigour of such vegetation. The water-courses, rains, and storms have laid bare those blocks, by carrying off the lighter remains which surrounded them, so that they are now visible on the spots where they were formerly hurled by one of those convulsions of our globe. It will be seen, therefore, that those blocks are, so to say, erratic—rolled-down fragments, belonging to ancient alluvia, and not to be confounded with similar specimens of more modern formations. These special characteristics were discovered by exploring the bed of the Tanela, particularly in its upper course.

I may here refer to my mineralogical collection, in order to show how rich, in that respect, is the subsoil of the Isthmus. I shall, in the first place, make mention of coal (which to my own knowledge exists on two points), and of cinnabar and quicksilver in the Estola Sierra, as well as of silver, oxydised tin, &c.; and express the belief that, judging by the similarity of the soil in some places to that of the famous mines of Muzo (Colombia), which I have visited, emeralds are very likely to be found in the Isthmus. As for gold, it is on record that the Spaniards greatly enriched themselves by working mines of that precious metal in the Darien, and I am enabled to state positively that almost all the rivers—particularly on the Pacific slope—waft down either gold-sands or gold agglomerations of larger or smaller size.

It would be impossible to avoid repetition in treating of the hitherto unknown natural vegetable wealth of the Darien soil, all that is wanting being labour and means of transport.

Certain trees, such as the Mora, the Mahogany, the Ceiba, &c., attain to gigantic proportions, both as to length and diameter. I have seen a canoe, of 25 tons, which was entirely scooped out of the trunk of one tree. Amongst the trees serviceable for building purposes may be also mentioned the Gayac, the Ironwood, the Cabbage, the Ebony, the Red Mangrove (*Rhizophora Mangle*), the Nispero (*Mespilus vulgaris*), the Espave, the Bongo, the Corotu, the Red and White Cedars, &c., for the most part incorruptible in water, and impervious to insects. The two slopes produce also immense quantities of the Hevea, which yields caoutchouc, the Tagua or Vegetable-ivory tree, the Corozo Palm, which furnishes an excellent oil for commercial purposes.

the *Copaifera officinalis*, from which the Balsam of Copaiba flows, the Myroxylon, whence the Balm of Tolu is derived, and other valuable trees.

Amongst the productions used for tinctures, I may cite the Pernambuco, the Logwood-tree (*Hæmatoxylon campechianum*), the Arnotto, the Sumach, the Phytolacca, &c.; and, amongst those employed by cabinet makers, the Mahogany, the *Bois de Perdrix* (Partridge wood), and various others.

Were the Isthmus more populous, or inhabited by a less sluggish race, the naturally fertile land along its shores and rivers would be rendered highly productive. In fact, the soil is fecund in the extreme, and the few plants which are known to commerce, and which I found growing wild, or in some widely apart plantations, were wonderfully developed. The soil is peculiarly suitable for the cotton-tree, more especially the variety known as Long-silk Georgian, as well as for cacao and coffee trees, sugar-canes, ricinus, tobacco, indigo, vanilla, sarsaparilla, rice, potatoes, maize, &c.

I shall pass over the medicinal productions, as well as those innumerable flowers which charm as much by the magnificence of their forms and the brilliancy of their colours, as by their delicious perfumes. Amongst the former, however, may be just mentioned—1st. the Cedron, the fruit of which contains a kernal of unequal bitterness, which proves to be a sovereign remedy in fevers that have resisted quinine and anti-toxica; it is also of great efficiency in cases of bites by venomous serpents; and, 2nd, the Guaco or Huaco, which, together with the plants called “Yerbas de ligatura,” is also successfully employed in similar cases, whether arising from poisonous reptiles or insects.

Throughout the entire Isthmus, no horse, ox, cow, or goat is to be met with,—the only domestic animals possessed by the inhabitants of the two slopes being dogs, pigs, cocks, and hens.

Amongst the wild animals affording food for man, may be enumerated the tapir, the wild-boar, the wild pig, two kinds of peccaries, the roebuck, the agouti, the paca, and the black howling-ape, the latter being considered a delicacy by the inhabitants; amongst the birds, the hocco, the penelope, the pheasant, the partridge, the pigeon, various kinds of ducks, the wood-hen, snipe, &c.; amongst reptiles, the sea and land tortoise, and the iguane, the flesh of the latter being delicate and succulent; and, finally, amongst the fish and mollusca, the bagre, the sabalo, the corvina, the dab or flounder, the dorado, sea and mangrove oysters, Venus shell-fish, tellinea, donacea, and other shell-fish.

The forests are the resorts of numerous carnivorous animals, such as the jaguar, the puma, tiger-cat (with another species called the *Ocelot*), and other quadrupeds of the mammalia class; the racoon, the large and small ant-eater, the armadillo, the sloth, and a host of monkeys of the Sapajou tribe, inhabiting the interior of the woods, and filling them, night and day, with their cries and yells. The carnivorous species find abundant and easy prey amongst the peccaries and wild pigs which swarm on the Isthmus, but which, so far from being dangerous to man, rapidly flee at his approach. The same may be said of the numerous species of serpents with fangs, which at sunrise betake themselves to humid thickets, where they remain all day, only quitting their retreats during the night. The most common are the rattle-snake, the bejuco, the bejuquillo, the mapana, the trigonocephalus, "Lance-iron," and the long adder; and amongst the non-poisonous kinds, the *boa-constrictor* and the *boa canina* (Gallicè: "*boa chasseur*").

The *alligator sclerops* abounds in the slimy water-ways, particularly on the Pacific slope, as well as in the River Tuyra, and iguanas, lizards, "dragons," basilisks, and chameleons are found perching on the trees. The existence in America of the last-named little animal was long denied; but I once held a female chameleon in my hand, and for some time observed her whilst bearing her young one on her back, keeping it up by intertwining their two tails. Unfortunately being suddenly overtaken by the waters, after a violent storm, I was obliged to abandon this curious specimen of natural history, in order to save my life.

The forests and the savannahs teem with myriads of birds and butterflies, of brilliant and variegated colours. Every moment bands of aras, guacamayas, and other parrots, are seen on the wing, toucans, blue and white herons, tabirs—the deadly foes of reptiles—agaimes (the guardians of the poultry-yard), colibris, bird-flies, tangaras, and kingfishers, spring emulously from tree to tree or from flower to flower, whilst the white or black pelicans are seen catching fish in the slime of the lagoons.

A curious fish is found in the River Tuyra, viz., the "runcador," first mentioned by Herrera, in his 'History of the West Indies.' It is endowed with voice, which resembles the roaring of a young bull, and which causes a vibration of the waters. I was greatly surprised on hearing it, for the first time, whilst descending the river.

It now only remains to cast a rapid glance at the present inhabitants of the Darien, who are but little known, and respecting whom so much incorrect information has been given



in various small publications. I shall premise by a brief retrospect at the former state of that fine country, to which, on account of its great natural wealth, the Spaniards gave, at the commencement of the sixteenth century, under the governorship of Diego de Nicuesa, the title of "Golden Castille."

It was in 1501 that Rodrigo Bastidas, of Seville, whilst following up the discoveries made on the Colombian continent by Olonzo de Ojeda, proceeded along the coasts of Gaira, Magdalena, and Carthagena, penetrated into the gulfs of Sinu and Uraba, and doubled Cape Tiburon as far as Port del Retrete—the furthest point reached by the army that followed Christopher Columbus, who himself descended from Cape Gracias á Dios in a westerly direction. Bastidas was accompanied by Juan de la Cosa,—a celebrated and skilful mariner, who acted as pilot.

Notwithstanding the resistance of the Cacique Cemaco, the towns of San Sebastian and Santa Maria el Antigua were founded by Enciso, and that of Agla by Vasco Nuñez de Balboa, who had to carry on a contest with the Cacique Tumaco.\* It was during the expedition which this great captain (who perished so deplorably) made in the direction of the Atrato, that he discovered the vast ocean to which, in 1516, after having crossed the Isthmus, he gave the name of "Pacific."

The chief object of his first expedition was to seize on the immense treasures in the Temple of Dobaiba, and on the temple itself, which, it was said, was covered with gold and incrustated with pearls and precious stones. Even to this day there exists a tradition respecting Dobaiba, but as yet there has been no possibility of obtaining any positive information regarding that wondrous edifice.

At the time of the conquest of Darien, the country was covered with numerous and well-peopled villages. The inhabitants belonged to the Carribbee race, divided into tribes, the principal being the Mandinghese, Chucunaquese, Dariens, Cunas, Anachacunas, &c. On the eastern shore of the Gulf of Uraba dwelt the immense but now nearly exterminated tribe of the Caimans,—only a few remnants of the persecutions of the Spaniards having taken refuge in the Choco Mountains, where they are still found.

The conquerors had but one object in view, and but one incentive, viz., by all possible means to get hold of the entire wealth of the country. Everything disappeared beneath the footsteps of the invaders, and in a short time Spain was under

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\* Some authors attribute to Gabriel de Rojas the foundation of Agla, the ruins of which are still visible at the extremity of the Bay of Caledonia.

the necessity of having recourse to colonisation and the infamous system of slavery, in order to repeople a territory where she had left nought but ruins.

Matters, in a certain sense, progressed very rapidly. The search after gold was ardently resumed, particularly at Cana, and on the rivers Merea and Cuque. In fact, Don Juan de Ulloa states that, in 1716, there were not less than thirty or forty flourishing cities, towns, and villages on the soil of that fine colony.

By the year 1790 all that prosperity had ceased. Thirty shafts that had been sunk for working the gold-mines were closed up; the surviving Indians, in alliance with adventurers of all nations, had forced the Spaniards to sign the treaty of peace of Ascension Isle (June 9, 1787), and to demolish the forts they had erected, as well as to withdraw their military posts. Even the route opened by Don Andres de Arisa very soon disappeared amidst the luxuriant vegetation of the Inter-tropics. In fine, the only vestiges at present of Spanish domination are the ruins of a few forts; for example, at Escuchadero, on the left bank of the Tuyra, opposite the mouth of the Chucunaque, and at Santa Maria la Reale and Agla.

The Dariens, as well as the Anachacunas, have either totally disappeared or been absorbed in other tribes; the remnants of the Chucunaquese who in 1861 dwelt on the banks of the river which bears their name, and who hovered about my *rancho*, have gone up towards the north; the Mandinghese occupy the coast as far as the Bay of Caledonia, and the Cunas have established themselves on the shores of the Gulf of Uraba, near the outlets of the Atrato. It must be, however, stated that, in the interior of the country, more particularly to the south of the River Tuyra, there are still some small Indian villages belonging, I think, to the tribe of the Dariens, such as Sambu, Tucuti, &c.

I set down the entire population of the Isthmus of Darien at 5000 souls, at least, inclusive of the Indians of whom I have just spoken, as well as of the negroes and mulattos who inhabit the villages of Yaviza, Las Palmas, Chepigana, Santa Maria, Molineca, Pinogana, and some isolated huts on the banks or in the vicinity of the Tuyra—in all which places there is not a *single Indian*. In fact, all their inhabitants are either pure or mixed blacks, scarcely two or three *Mestizos* (issue of whites and Indians), or *Zambos* (issue of Indians and negroes) being met with.

I lay some stress on this point, because every traveller is heard speaking of the "Indians" of the Tuyra villages, whereas only Spanish is spoken therein, the Cuna and Darien dialects being totally unknown.

A small trade is carried on by all those villages with Panama,

by means of some Europeans, or of a few natives, owners of large canoes which, although without keels, traverse the Gulf of San Miguel and that of Panama, creeping along the coast, and only navigating by day. The principal articles of commerce are: caoutchouc (which the inhabitants commenced exporting some four years ago), tagua or vegetable ivory, bananas, pine-apples, timber, either square or sawn into planks, dried meat called *tasajo*, and small quantities of some other objects, such as vanilla, balsam of Tolu, and sarsaparilla. These articles they exchange with middle-men, who not unfrequently have beforehand, and, at enormous prices, sold to the producers such goods as cottons, handkerchiefs, jewellery, firearms, powder, household utensils, *aguardiente* or brandy, and *anisado*—produced by distilling the juice of the sugar-canes with various plants.

In consequence of these advances in kind and sometimes in money, on the part of the middle-men, nearly all the inhabitants of these parts incur considerable debts, in payment of which they have to collect the goods required from them, under penalty of imprisonment and the *cepo* (or stocks)—that is to say, a very heavy piece of wood enclosing the foot of the defaulter, just above the ankle. The inconceivable idleness of these people prevents them from emancipating themselves from these pecuniary burdens, by transacting their own business without agents; and their tendency to drunkenness and debauchery causes them to submit, without a murmur, to their fate, for the sake of momentary gratifications.

Their dwellings are, in general, uncleanly and void of the most necessary domestic objects. They are constructed with trunks of trees, connected by bamboos, which are planted in the earth or placed cross-wise, and the roof is covered with leaves of the macaw-tree. Amidst these villages, and on the humid ground, are seen, pell-mell, pigs, dogs, poultry, and naked children. As for the men and women, they exhibit a certain degree of luxury and are often somewhat coquettish in dress, particularly on holidays and at evening dances, as I was enabled to observe on the occasion of two *balls* given to me at Santa Maria, in the house of an inhabitant named Candelario.

Hunting and fishing afford abundance of food, and in addition the inhabitants have rice (which constitutes their principal nourishment), potatoes, ignames, and fruit of various kinds. Their arms are the gun and the machete (a sort of sabre), but they are wholly unacquainted with the use of the bow and arrow. Their boats, which are wholly made out of the trunks of trees, are not so elegant in form or so neatly finished off as those of the Indians on the Atlantic slope, but they are paddled with sufficient skill.

Their language is *exclusively* Spanish. So far, however, as

the inhabitants of the village of Pinogana are concerned, the foregoing observations with reference to the part of the Isthmus in question are susceptible of some modifications, for their manners and habits are somewhat influenced by the proximity of the Indian villages of Paya and Tapalisa, situate on the same slope, and by their frequent intercourse with the Cunas. In fact, the houses are better constructed and cleaner, some having even a rather elegant appearance. The men display a little more activity, and the visitor perceives, to some slight extent, that he is on the verge of another state of society.

To conclude the remarks regarding the Pacific slope, I may state that Catholicism is the religion of the country, but only nominally. There is—or, at least, there ought to be—a parish priest at Yavisa, the chief place of the province of Darien; there is one at Chepigana or at Santa Maria, in the bishopric of Panama; but unfortunately these clergymen show the worst of examples to their flock, as I found to be the case in 1861, and thus contribute not a little to the general immorality. In fact, there are still entire families who know nothing of the religious ceremony of marriage or of baptism.

Let us now pass beyond the Cordillera, and enter into the territory of the Carribbees-Cunas. The political organisation of the Indians is recognised by the Republic of the United States of Colombia, and the Governor of Quibdo, province of Choco, has authorised, under the name of “Confederation of the Indians of the San Blas Coast,” the union, under a Cacique or Great Captain, of the various tribes and villages which are scattered along the coast, from San Blas Point to the extremity of the Gulf of Uraba and as far as the mouths of the Atrato.

The Indians are completely ignorant of the form of government of the territory on which they are living, and “Bolivar” is the only name that has remained in the memory of their elders, whilst the sole reminiscence of their subjection of old is their traditional hatred of the Spaniards.

The Colombian Government declares and states in writing that it tolerates the Indians, whilst the latter call themselves the *masters of the soil*. The authority of the Cacique is absolute, and neither he nor his people are subject to any tax, impost, or military service. When affairs of general importance are to be discussed, he convenes a council of village caciques, each of whom presides over a local council, convoked for local matters.

The Indians in general of the coast of San Blas, and as far as Cape Tiburon, refused to submit to any yoke; and Sasardi, Morti, and some other localities remained independent. Only six villages, inhabited solely by Dariens and Cunas, have united under the authority of the Cacique Pascual, now in his 90th

year, but who is still in the vigour of health. He is a cunning and courageous man, who formerly served under Bolivar, in the War of Independence. The following are the names of those six villages:—Arquia, the chief place of the Indian Confederation, and the residence of the Great Cacique; Cuti and Cuque,—all three being situate on the rivers of the same names, and which are tributaries or sub-tributaries of the Atrato; Tanela, Paya, and Tapalisa, also constructed on the banks of similarly named streams—the Tapalisa being a feeder to the Pucro, which forms a junction with the Tuyra. The four villages first named are on the eastern, and the two others on the western slope of the Cordillera; all six being connected by easy and direct roads, which I have very frequently traversed during my explorations. I am not exactly acquainted with the number of their inhabitants; but I know that Pascual is at the head of some 400 or 500 warriors. I can only speak positively of Paya and Tanela; but, from the exact nature of the details furnished me, I believe that the following particulars will, with some slight variations, apply also to the other villages, and it will be remembered that, in my two interviews with the above-named cacique, he was accompanied by men from the six localities.

The villages of the Cunas are well situate, being built on the banks of rivers; and the houses are spacious, elegant, and constructed with admirable skill and attention to details. Many of them have an open bamboo flooring, 2 mètres from the ground, and are thus preserved from the humidity of the soil and the effects of the rain; the pillars, supporting the entire construction, are made of bamboos of 25 to 30 centimètres diameter, or of hard and carefully prepared timber. Covered with palm or macaw leaves, they thoroughly withstand the inclemencies of the weather, and are sometimes built on so extensive a scale, that they contain not less than fifty, sixty, or even eighty hammocks. The firearms, and fishing and hunting implements, which are placed in recesses in the shape of lofts, are very carefully made and always kept ready for use.

The Cunas are of middling but robust stature, with large shoulders, narrow waists, well-turned arms and ankles, and small feet. Their skin borders on a clear brownish red—the young women and children being of a somewhat more subdued hue. Their hair—which is black, smooth, and very abundant—is worn long, except at Tanela, where the married women cut it short; thus presenting a striking contrast with the long hair of the men, which is sometimes left floating about their shoulders, and at other times twisted round the head, and raised over one ear, in a species of top-knot, fastened by a long triangular comb, made of the core of the palm-tree, and ornamented with original

designs, executed with bark and vegetable fibres. The men have no beards.

Contrary to the disposition of the inhabitants of the banks of the Tuyra, of whom I have already spoken, the Indians here referred to are sober, patient, industrious, faithful, courageous, and very gentle towards any one who has gained their confidence. Strange to say, they refrain from brandy, rum, *anisado*, wine, and, in fact, every fermented liquor, except *chicha*, which they themselves make from maize-seed and the juice of the sugar-cane. And here I may state, but with no slight repugnance, that this *chicha* is made in the following manner:—Some old women, squatting around an empty gourd, munch and chew the maize-seed, and then expectorate it into that receptacle until the latter is filled; the product is then left to ferment, and it serves as the chief ingredient of the *chicha*. This I saw done, and I was obliged to partake of the beverage!

Theft is altogether unknown amongst the Cunas. Their curiosity, which often partakes of the infantine, leads them to examine very minutely any object they may see for the first time; they will cautiously touch it, inquire for what purpose it is employed, and then put it back in its place; but all this without any excitement or indiscretion. The *ranchos* I had constructed were often left untended, and completely abandoned to the good faith of the Indians, and we never missed the slightest article either of provisions or ammunition.

It must not be thought, however, that it is unnecessary to act with great prudence in their regard, for the Cunas are exceedingly distrustful, and the surest way of gaining no information from them is to ask for it, particularly with any air of eagerness. Although I was on very intimate terms with Nusalileli, the Cacique of Tanela, and acquainted with certain Indian rallying or "association" signs, which enabled me to place myself more promptly on a good footing with them, he never fully opened his mind to me on certain points, or with reference to certain questions.

They are, however, a hospitable race; and although idolaters, believing in the supernatural potency of the grotesque fetishes suspended in their houses, bowing reverentially to grossly formed figures, and holding certain trees as sacred, they, nevertheless, acknowledge a Supreme Celestial Power, whence the Good and the Beautiful emanate. It was with an air of profound reverence that Nusalileli raised his eyes towards heaven, on refusing the presents I offered in return for his hospitality, and exclaiming, "The great God on high commands his children to receive kindly the guests he sends to them."

Despite these good traits in their character, they are terrible

enemies; when summoned to arms, shrinking from no danger, and, from their agility, skill in handling weapons, and thorough knowledge of the thousand artifices of forest warfare, capable of resolutely opposing any attempt on their independence, or any violation of their customs and manners.

Certain crimes—or offences deemed such by their laws—are punishable with death; for example, that penalty was inflicted on a man who had aided in the accouchement of a woman, whose life was in imminent danger; on another occasion, a female, who had become insane, was hung from a tree and burned; and the Indian who acted as my interpreter in 1861 would have been put to death for having wished to serve me in the like capacity in 1865 without the authorisation of the Cacique, had not my ulterior relations with Pascual procured his pardon.

The Cunas wear drawers extending to the knee, and leaving the upper part of the body uncovered; but some have a species of short, loose smock-frock, or else a shirt of European shape. The head is generally bare, but at times enveloped in a narrow girth called in their language a “counter-poison,” about two centimètres in width and two or three mètres in length. It is made of the fibres or barks of certain plants, with which they alone are acquainted. When bitten in the forests by a serpent or a scorpion, or any other venomous animal—for example, a mygale—the Indian fastens a ligature around the wound, with the band or fillet in question, and pursues his journey without losing his strength or feeling the effects of the poison, though he may have to walk some three or four hours before reaching his village. On arriving there, he receives the necessary attendance, and, generally speaking, the wound is promptly and radically cured. It is, however, quite certain that the poison of the Bejuquillo and the Coral serpent is so active that the ordinary ligature is often found ineffective, when no other succour is at hand; and the patient dies in less than a couple of hours, amidst frightful sufferings, swollen, tumefied, and covered with sanguineous spots. On the other hand, whilst I was at the emerald mines of Muzo, I witnessed some extraordinary and almost incredible cures, effected by the use of those herbal ligatures—*Yerbas de ligatura*.

The women wear short-sleeved chemises, descending to the knees, and such ornaments as necklaces composed of the teeth of animals (tigers or caimans), or of coloured seeds. At Tanela I saw many with broad gold or silver rings through the nasal partition, and hanging down as far as the chin. Some of the Indian women are pretty, and all admirably well formed. Both male and female always go bare-footed. It may be stated here that on high holidays the Cunas wear drawers or large girdles

made of the plumage of birds, as well as a sort of cap covered with plumage and surmounted by long red, blue, green or yellow feathers, plucked from the tails of the aras. I have in my possession one of these head-dresses, which came from Paya, and which is about 62 centimètres in height.

The weapons most in use are bows and arrows of various kinds, suitable for hunting or fishing, and adapted to each species of prey. They also employ the lance, and all carry a heavy *machete*, a species of carefully-polished sword-knife, having a short, obtuse and broad blade, with a strong haft. This weapon serves for a hatchet, a tomahawk, and a sabre. The arrows are formed of thin and light, but solid reeds, hardened at the fire and bearded, and with palm-wood points. The lances are either of cut flint or of iron. Moreover, almost every Indian possesses a gun, and displays remarkable dexterity in its use as well as in that of his bow and arrows, but they are all very saving of their powder and ammunition, reserving their fire-arms for grand occasions. When the Cacique Pascual came to my *ranchito*, on the 10th of August, 1865, *with his sons*—for such the term he bestows on those subject to his authority—they were all armed with the *machete*, which they call the *pulla*, and some of them had guns, whilst the others carried bows and arrows and lances.

I have never remarked that their arrows were poisoned, nor did those they gave me bear any marks of ever having been tampered with in that way. This forbearance on their part is certainly not attributable to any ignorance of the vegetable poisons and antidotes of their country.

On grand occasions they tattoo their faces and busts with rocon. The tattooing of the Confederation of the Cunas consists of a transversal streak from one cheek-bone to the other, and across the nose, and of other lines descending perpendicularly on the cheeks as far as the corners of the mouth, and intersected by small horizontal streaks. The number and position of the lines serve to distinguish the inhabitants of the respective villages.

Polygamy is allowed amongst the Cunas, and they may have as many wives as they have respectively plantations to superintend. One of the wives devotes special attention to household affairs, cooking and attendance to the children; another to the bananas and maize; a third to the cultivation of the cocoa-tree, &c., &c. Pascual himself has four wives, but I believe he is the only one with so many.

The sole occupations of the men are hunting, fishing, making arms, and constructing *cayucos* (canoes) and houses. The other labours are performed by the women with patience and resig-



nation, but not to the exclusion of pleasure or gaiety, as may be seen in the nightly dances.

I have already stated that the Cunas, like all the Caribbean race, are skilful navigators. In fact, they venture in their light canoes, under a heavy sail, into the Gulf of Uraba, for tortoise-fishing, and with the view of exchanging their products either with the Indians of San Blas or with the canoe-men who ascend the Atrato. The Cunas traffic in cacao, tapir-flesh, venison, dried pork (*tasajo*), and lard, contained in pig-guts, receiving in exchange fire-arms, powder, shot, and various domestic utensils—nearly all these objects being of English manufacture when they arrive by the Atrato, and American when sent from San Blas or the neighbouring coasts.

It has been already stated that there is not a single Indian in the villages on the Tuyra, and it may be added here that the six villages of the Cunas do not contain a single inhabitant of white, black, or mulatto breed.

Pascual, who was formerly a slave amongst the Spaniards, is the only one who speaks fluently and understands well the Spanish language. A few others are acquainted with several words, but I only met with one individual who could utter a little English, and his pronunciation was horribly bad.

The language of the Cunas is soft and sonorous. The syllables are composed of one or two vowels, or of one or two consonants, as in *ulu* (canoe), *tumati* (great), *ambé* (ten), *chipugua* (white), *chule* (not, nothing), and *huishi* (thou knowest, dost thou know?) The accentuation of certain words is marked by a guttural articulation. Their power of computation does not exceed number 20.

I trust the day is not far distant when this rich and interesting country will be better known, and when the investigations of science will elicit new facts and lead to fresh discoveries. Once the Isthmus is opened, by means of a maritime canal, to the navigation of the world, with the flags of every commercial nation floating in unison, and with swift steamers cleaving the waters of the Tuyra, the Darien—that “key of the world,” as Paterson calls it, that “threshold of the gate of communication between the two oceans,” as the illustrious Humboldt describes it—will become the converging point for the commercial and industrial enterprise of the various peoples of the earth.

## APPENDIX I.

## VOCABULARY AND PHRASES OF THE CUNA LANGUAGE (ISTHMUS OF DARIEN).

ENGLISH.	CUNA (pronounced as in Spanish).
Monkey (generic term) .. .. .	Chúlo.
Stag .. .. .	Cogüe.
Cat (generic term of different sorts of <i>Cats</i> ).	Miu.
Dog .. .. .	Acho.
Curassow Birds ( <i>Crax alector</i> ; <i>Ouarax pauxi</i> ).	Shigli.
Peccari ( <i>Dicotyles</i> ) .. .. .	Yánu.
To go hunting for Peccari .. .. .	Yánu máque nae.
Paca .. .. .	Chúla.
Agouti .. .. .	Ucho.
Penelope, Meleagris (Birds, gallinaceous)	Guama.
Poultry, Fowl, Hen .. .. .	Cálin.
Turtle (of Sea), Tortoise-shell .. .. .	Yauca.
Sabalo (Fish) .. .. .	Mila.
To go fishing Sabalo .. .. .	Mila máque nae.
There was no fish on the coast .. .. .	Tel (?) mala mila nica.
To catch (in the meaning of hunting or fishing).	Máque.
Cow; Heifer .. .. .	Moli; Moli totogua.
Goad or whip the ox with the workmen (Imperative).	Moli totogua eti machigua pe taque nae or Shé taque.
Father .. .. .	Tata.
Mother .. .. .	Nana.
Nusalileli's Mother .. .. .	Nusalileli nana.
Brother .. .. .	Urpa.
Sister .. .. .	Orne.
Son .. .. .	Hilú.
Daughter; young girl .. .. .	Púnagua.
A young boy, a youth .. .. .	Machigua.
A little boy or girl, a child .. .. .	Nuchuguagua.
A Man .. .. .	Tule.
Men, individuals .. .. .	Tule.
How many men or inhabitants are there in Turbo?	Picua tule Turbo pe taquesa?
A Negress; a black man .. .. .	Tule rati.
Workmen .. .. .	Machigua.
A good, or clever seaman .. .. .	Mía Cántiqui.
The head .. .. .	Ságala.
The belly .. .. .	Sábala.
To work .. .. .	Sátu.
To make water .. .. .	Guinae.
Fathom .. .. .	Táli.
Vara (Spanish measure; 80 centimètres)	Barra.
Water, river, rivulet .. .. .	Ti.
Cayuco, canoe, small boat, pirogue .. .. .	U'lu.
Can you sew a sail? .. .. .	Ulmola maqueti pe huishi?

VOCABULARY, ETC., OF THE CUNA LANGUAGE—*continued.*

ENGLISH.	CUNA (pronounced as in Spanish).
Have you seen a canoe on the coast? ..	Opo úlu pe taquesa?
Is there water in the river? .. ..	Turbi (?) ti nuali?
Look to the canoes! .. .. .	U'lu taque!
How many are they? (the canoes) ..	U'lu picua mai?
Are they all lashed? .. .. .	Pela etine?
They are all lashed; <i>or</i> yes .. .. .	Etine pela <i>or</i> ée.
Are they leaky? .. .. .	Ti nica?
Do you know how to build a canoe or boat?	U'lu shapeti shique pe huishi?
A paddle, an oar .. .. .	Camé.
Take care of the paddles .. .. .	Camé pe hue taque.
Embark! .. .. .	Opo úlu pe nae!
Champan (great canoe covered with a tent of leaves and branches).	U'lu chuigua.
Broken, parted .. .. .	Piscali.
White .. .. .	Chipugua.
Blue (dark) .. .. .	Rati pi.
Blue (clear) .. .. .	Mola rati.
Yellow .. .. .	Cortiqui.
Black .. .. .	Rati.
Red .. .. .	Quíniti.
Fat, big, voluminous .. .. .	Shomété.
Thin, lean .. .. .	Tátragua.
Tall, high .. .. .	Tumati.
Little, short .. .. .	Totagua.
New, fresh .. .. .	Pini.
Old, worn out .. .. .	Chérete.
Neat, pretty .. .. .	Naper tag legue.
Savoury, pleasing to the taste .. ..	Nugue tag legue.
A bad, a wicked man .. .. .	U'rue tule.
Very bad, very wicked .. .. .	Urrué toga.
Idle, coward, weak .. .. .	Húie.
José is very idle, cowardly, or weak ..	Jose húie toga.
Do not send Lazaro, because he is too idle.	Lazaro nate húie toga nonigui chule.
Ill, evil .. .. .	Chuli.
My, mine .. .. .	Ann cati.
Your, yours .. .. .	Pe cati.
I, me .. .. .	Ann.
You, thou, thee .. .. .	Pe.
Day .. .. .	Yppa.
Night .. .. .	Negchichi.
Morning .. .. .	Huacuterga.
Noon, the middle of the day .. ..	Tata yorcua.
Evening .. .. .	Sheto.
To-day .. .. .	Emis.
To-morrow .. .. .	Pana.
Banana .. .. .	Machi.
Banana (ripe fruit) .. .. .	Mátun.
Banana tree .. .. .	Machi cana.
Are the banana trees good? .. .. .	Machi cana no eti?

VOCABULARY, ETC., OF THE CUNA LANGUAGE—*continued.*

ENGLISH.	CUNA (pronounced as in Spanish).
Give bananas to the cow .. .. .	Moli machi cune pe shunate.
Carry this ripe banana to our friend Icuacunapaleli (name of an Indian of Tanela).	Ai Icuacunapaleli má tun shunate.
Go with the workmen (the boys) to clean, to weed banana trees.	Machigua túle pe nate machi emie.
Cacao .. .. .	Chiagua.
Cacao tree .. .. .	Chiagua cana.
Have the cacao trees fruit? are they bearing cacao?	Chiagua cana chiagua nica? <i>or</i> chiagua cana chiagua taquesa?
Calebash (fruit of the <i>Crescentia Cujete</i> )	Púgulo.
Coco nut; coco tree .. .. .	Ocobo; ocobo cana.
Indian corn, maize .. .. .	O'pa.
Give maize to the poultry .. .. .	Pe cálin ópa cune.
Will you have some bread? .. .. .	Matu pe tegui?
Rice .. .. .	Aro (from the Spanish <i>arroz</i> ).
Sarsaparilla (plant) ( <i>Smilax sarsaparilla</i> )	Súguia.
Water .. .. .	Tí.
To drink .. .. .	Cope.
Can you drink milk? .. .. .	Moli núu pe cope huishi?
Milk .. .. .	Moli núu.
Flesh .. .. .	Sána.
Do you eat meat? .. .. .	Sána cune pe huishi?
Catch a hen .. .. .	Cálin pe maque, <i>or</i> cálin pe cae.
Broth .. .. .	Lisa.
Meat, food .. .. .	Náala.
To eat (verb) .. .. .	Cune.
What have they given you to eat? ..	Tule pe mas cuna?
What have you eaten? .. .. .	Ypi pe cune?
India-rubber .. .. .	Cúnu.
Tobacco, cigar .. .. .	Huála.
Bring tobacco .. .. .	Huála pe she.
Go to the house of X . . . to buy tobacco	X . . . neca huála pe nae puque.
Forest or wood .. .. .	Chápul.
Are you going to the forest? .. .. .	Chápul pe nae?
House, habitation (rancho, Spanish) ..	Neca.
Go to Olocunalileli's house (name of an Indian of Arquia).	Olocunalileli neca pe nae.
To-day you depart from my house, you bad, wicked boy.	Penate emis, neca angate ani urruetoga.
Room (interior division of a house) ..	Cape neca.
Door .. .. .	Guanabcaca.
Assist John in cleaning the patio (interior yard of a house). .. .. .	John purgana emie.
Assist Pedro in enclosing the poultry-yard.	Pedro chuara etine.
Clothes, vestment, linen .. .. .	Mola.
Put on your new clothes .. .. .	Mola pini cae.
Pull off your old vestment .. .. .	Mola cheretete chica.
Give your dirty linen to be washed ..	Pe mola she puna mola emique.
Breeches, pantaloons .. .. .	Carson (perversion of the Spanish word <i>Calzon</i> ).

VOCABULARY, ETC., OF THE CUNA LANGUAGE—*continued.*

ENGLISH.	CUNA (pronounced as in Spanish).
Shirt .. .. .	Yuvaleti, yocala.
Bring the blanket .. .. .	Mol guaguachichiti pe she.
Neckcloth, cravat, a piece of cloth round the neck.	Mol tucalchichigua.
A piece of cloth round the head .. ..	Ságala mola.
Ribbon with stripes .. .. .	Mol ileleti.
Gun .. .. .	Quinqui shique.
Take away your gun .. .. .	Quinqui shique pe shunate.
Do you know how to shoot (with a gun)?	Quinqui ócole pe huishi?
To shoot (with a gun) .. .. .	O'cole.
Gunpowder .. .. .	Quincuve.
Ammunition .. .. .	Quincua.
Prime (of a gun) .. .. .	Quincurquina.
Axe .. .. .	Acán, acána.
Where is the axe? .. .. .	Acána pia mai?
To cut, to open, to break .. .. .	Shique.
Take the axe, and go with Juan to cut fire-wood.	Acán shique, Juan, pe nate sho shique.
Knife .. .. .	Estín.
Large knife, hanger (Spanish, Navaja)	Estín capegua.
Scissors .. .. .	Tisla.
Cauldron, large boiling-pot .. .. .	Esméte.
Needle .. .. .	Ico, ýco.
Thread .. .. .	Nérpa túpa.
Seat, chair, bench .. .. .	Cána.
To sit down, to sit .. .. .	Chicue.
Trunk, box .. .. .	Ulúgua.
Dish, plate .. .. .	Náala.
Porringer .. .. .	Múrrucua.
Calabash .. .. .	Nóga.
Keep, take care of the calabash in your room.	Cape néca nóga shunate.
Wash this porringer, this vessel .. ..	Múrrucua urtalegua cae emigue.
Wash this dish .. .. .	Náala urtalegua cae emigue.
Tube, pipe, a stalk of a pipe .. .. .	Pipa.
Bring a sack, a bag .. .. .	Saco (Spanish) cuena pe she.
Much, very much .. .. .	Toga.
Few, a few, very few .. .. .	Pipigua.
Enough .. .. .	Togue.
Soon, instantly .. .. .	Yóo.
Quickly, fast .. .. .	Ucurmate.
Yes .. .. .	Ée (nasal).
No, nothing, not .. .. .	Chúle.
Who? What? Whom? .. .. .	Ipi, ypi.
Have you banana? .. .. .	Machi nica?
Have you seen? .. .. .	Pe taquesa?
Where is he? Where is it? .. .. .	Pia mai?
To shut .. .. .	Yaetique.
Shut the door .. .. .	Guanabcaca yaetique.
What is it? What is there? .. .. .	Ipi gua?
To put out, to pull off .. .. .	Chica.

VOCABULARY, ETC., OF THE CUNA LANGUAGE—*continued.*

ENGLISH.	CUNA (pronounced as in Spanish).
To take .. .. .	Cae.
To see, to perceive .. .. .	Taque.
Or, either .. .. .	E'.
Are you well? How do you do? ..	Nuhueti?
I am well .. .. .	Nuhueti (understood, A'nn).
And you too, are you well? How are you?	Pe nuhue moga?
I am well too .. .. .	Ann nuhue moga.
To have, to possess .. .. .	Nica.
What have you? What do you possess?	Ypi pe nica?
Have you seen Pascual? (Name of the Grand Cacique of the Confederation of the six villages of Indians—Cunas).	Pascual pe taquesa?
Have you seen him? <i>or</i> Have you seen them? You have seen him <i>or</i> them.	Pe taquesa.
I have seen him <i>or</i> them .. .. .	Ann taquesa.
To tell .. .. .	Shogue.
Tell, tell him, tell them .. .. .	Pe shogue.
Tell him to come .. .. .	Tanigui pe shogue, <i>or</i> nene pe shogue.
What does he say? What do you say?	Ygui shogue? Ypi shogue?
Say to Olanquileli. (Name of an Indian of Tanela.)	Olanquileli pe shogue.
To know .. .. .	Huishi.
Do you know it, <i>or</i> that? .. .. .	Yti pe huishi?
I know, I know it .. .. .	A'nn huishi.
I do not know .. .. .	Ann huish chúle (ellision in the verb).
I know no more, <i>or</i> nothing more ..	Yguesa.
To will; I will .. .. .	Tegui; Ann tegui.
I order you, I enjoin you to tell the Capitan Pascual, &c.	Capitan Pascual ani carta shogue pe ishe ga, &c.
I will not? (It does not please me.) ..	Ann tegui chule.
Will you? Does it please you? .. ..	Pe tegui?
To go, to set out .. .. .	Nae.
Go (imperative) .. .. .	Pe nae.
When do you depart? .. .. .	Yucu, <i>or</i> Sann pe nae?
When shall you return? .. .. .	Yucu, <i>or</i> Sann pe ninigui?
To return .. .. .	Ninigui.
To take, to take away, to carry away ..	Shúna.
Take that away .. .. .	Pe shúna.
Bring what they have given to you ..	Túle tegui pe she.
Do not sit down here .. .. .	Yti bali chicúe chúle.
It is ended; there is none, there is no more.	Perquisa.
Silver (the <i>metal</i> , not <i>money</i> ) .. ..	Mánia.
Who has given you the silver? .. ..	Penki mánia toga ipi noga?
Whence have you obtained that silver?	Mánia toga pe ulugua togua cate?
To whom have you given the silver? ..	Ique noga chichigua penqui mánia?
Give me the silver immediately! ..	Emiscua mánia angati pea sobando teque!

VOCABULARY, ETC., OF THE CUNA LANGUAGE—*continued.*

ENGLISH.	CUNA (pronounced as in Spanish).
Gold .. .. .	O'lo.
Pain, sorrow .. .. .	Nún maque.
What ails you? .. .. .	Ipi pe nun maque?
Are you sick? .. .. .	U'a cai pe nica?
Medicine, remedy .. .. .	Yua sae.
Fire .. .. .	Sho.
Bring me some fire, <i>or</i> a light .. .. .	Sho she taque, <i>or</i> Sho taque pe she.
Bring nearer the fire-brands .. .. .	Sho pe taque nae, <i>or</i> Sho pe maqueti.
A lie .. .. .	Cacanchi.
The truth .. .. .	Napriagua.

NUMERALS.

1. Kuasak.	8. Pavaga.	15. Kakatal.
2. Pagua.	9. Pakevake.	16. Kakanerkua.
3. Pa.	10. Ambé.	17. Kakakúgulé.
4. Pake.	11. Kuisak.	18. Kakapava.
5. Atal.	12. Kakapagua.	19. Kakapakeva.
6. Nerkua.	13. Kakapa.	20. Ambetulevua, <i>or</i>
7. Kúgule.	14. Kakapake.	Ambetuleúa.

APPENDIX II.

SUPPLEMENTARY NOTE RELATING TO THE FIRST EXPLORATION OF THE ISTHMUS OF DARIEN, IN 1861. BY M. LUCIEN DE PUYDT.

A FEW further details regarding my expedition of 1861 are necessary, especially as erroneous statements have been published, without my consent, regarding it.

I was commissioned in 1861 to undertake a scientific exploration to Darien, by a French company, founded by M. Paul Roger. This society collapsed in 1862, and M. Roger died in June, 1867.

Messrs. Mellet (Engineer of Ponts et Chaussées) and Gustave de Champeville (Civil Engineer) were to accompany me. These, with five other persons (who, I may say in passing, were utterly useless), composed my staff. At the last moment M. Mellet broke his engagement, and I left on the 17th February, 1861, with my six other companions.

Whilst making arrangements for the expedition at Panamá, M. Roger forwarded to me, by the packet of the 2nd March, M. Hilarion Bourdiol, formerly student at one of the schools of Arts et Métiers. This gentleman had, according to instructions received from M. Roger, assumed the title of engineer in chief, and was to have under him M. de Champeville, but still subject to my immediate control. Although fitted by his youth, health, and courage, for the undertaking, he had not the special education fitting him for an engineer, nor had he other scientific acquirements.

On the 21st of April, 1861, the expedition, composed of 27 persons, em-

barked on board a vessel of 30 tons, which I had purchased, and, piloted by Captain Negro, we visited many villages on the borders of the river Tuyra, and disembarked on the left bank of the Savana, immediately below the junction of the Rio Lara.

On the 22nd, I fixed with Messrs. Bourdiol and de Champeville the direction they should follow to reach the right bank of the Chucunaque, *below* the River Paz, which is one of its affluents on the right. The angle determined on was  $57^{\circ}$  E.; but in taking into account the magnetic variation of the place ( $8^{\circ}$ ), the route to cross the forest would become altered to an angle of  $49^{\circ}$  E.

Obliged to attend single-handed to the multitudinous details of the expedition, and being myself occupied in scientific studies, it was impossible for me to see to every detail, and numerous mistakes were committed, either in the determination of the various angles of the line or in the heights, during a route of 18,550 mètres (20,288 yards, or  $11\frac{1}{2}$  miles). It followed that the note-book of M. Bourdiol gave for result an angle of  $51^{\circ}$  instead of  $49^{\circ}$ , and nevertheless the route followed made an angle of  $46^{\circ}$ . It happened, in consequence of this error, that he arrived on the banks of the Rio de la Paz, *above* its confluence with the Chucunaque, and not on the right bank of the Chucunaque, below the point where it receives the Rio de la Paz, which should have been the case had the angle of  $49^{\circ}$  been kept to.

I again turned to the River Tuyra, the object which I had chiefly in view. The direction of this vast stream running from east to west, the elbow which it forms at a little distance from the Gulf of Uraba, on the Atlantic side, and the direction of three of its affluents, the Capeti, the Pucro, and the Paya, whose sources, near to each other, lie in the lowest part of the Cordillera of Nique (Sierra de Mali and de Estola), the accounts of the inhabitants of the isthmus, the writings of Paterson and other explorers, led me to believe that the only passage for an oceanic canal, without locks or with few only, ought to be found in this direction.

The northern line to Caledonian Bay, by the Savannah River, was found to be quite impracticable by our expedition, and the want of success of my predecessors was made intelligible.

I re-ascended the Tuyra, visited its upper affluents of the right bank, and, after finding my favourable opinion justified by the aspect of the localities, and gathering valuable information, I left to rejoin the expedition up the Lara. On approaching the place, one of my people met me with the following letter from M. Bourdiol:—

“*Rancho No. 6, May 31st, 1861.*”

“We arrived here yesterday evening, in spite of the bad weather, and with the water up to our breasts, at the junction of the Rio de la Paz and of the Chucunaque. As it is now necessary to agree on what remains to be done, I beg you to rejoin us at this rancho, that we may consider the matter.

“**BOURDIOL.**”

“**M. DE PUYDT,**

“*Chef de l'Expédition du Darien.*”

I was very doubtful on the subject of this letter, this being the third time that M. Bourdiol had announced to me the discovery of the Chucunaque, and it might not be the last; for the expedition had never attained the banks of the Chucunaque, being still on the left bank of the La Paz, and yet M. Bourdiol persevered in the mistake. Thus, on the 30th of May, M. Bourdiol was doubly and completely misled. He had lost himself in the midst of inundated grounds and narrow valleys, and did not know how to extricate himself.

I resumed the command of the labourers, turned to the right, and continued opening the road. It was not until June the 2nd, at 3 in the afternoon, after



two days of toilsome forced marches, that I arrived on the right bank of the Rio de la Paz.

My Indian interpreter, Pedro Juan, of the village of Paya, recognised the stream to be this affluent of the Chucunaque, and not the Chucunaque itself, which he had often ascended and descended.

Enquiries made above and below added nothing to our knowledge, of any use; and I caused the date and the names of myself and two engineers to be cut upon a large tree; and having drawn up a report, I gave orders to return to the Savannah, where our vessel (the *Mercedita*) was anchored.

On the 2nd June, one of the party, Thomas Fellow, an intelligent Englishman, climbed a lofty tree, and, guided by the compass, saw to the east the Loma Deseada Hill, situated in the delta formed by the meeting of the Sucubti and the Chucunaque, the course of this latter river being indicated by the tall trees which border its banks and the ground rising by degrees towards its boundary at about 18 miles' distance to the north-east, the chain of the Cordilleras of Caledonia Bay showing a bluish continuous line on the horizon.

I returned to France, where I devoted much time and attention to the preparation of another expedition for 1865, bringing to bear upon the study in hand the great experience acquired in 1861; my intention in this new undertaking being to discover some lower passage in the Cordillera between the source of the Tanela to the east and that of the Paya, of the Capeti, of the Pucro, and of the Tapaliza, to the west of the mountains.

Whatever may have been said, written, or published by M. Bourdiol, or by others, in France or abroad, respecting the expedition to Darien in 1861, I regard it as a strict duty to conceal nothing of the results, favourable or unfavourable. Science neither admits romance nor *equivoque*, still less untruth. I believe the results of my journey have been to expose the erroneous assertions of Messrs. Cullen, Gisborn, Airiau, Roger, Bourdiol, and others, on the supposed extraordinary facility of the passage from the one ocean to the other by the line of the Savannah and Caledonia Bay. This line of communication between the seas ought to be completely abandoned, as it offers no mode of establishing the only inter-oceanic canal that modern science would admit of, that is, suitable for navigation for large ships, and with two to four locks at most.

I have obtained fresh knowledge of the orography and hydrography of the eastern portion of the Lower Darien, in the neighbourhood of Choco, relating to the opening of such a canal to unite the Gulf of Uraba with the deep waters of the River Tuyra, where it bends into the Gulf of San Miguel.

Besides this, our expedition has made scientific observations of various kinds, in geography, natural history in its different branches, ethnology, geology, hydrography of the interior and of the coast, orography, and so forth, most of which have not yet been published, but having an important bearing on the future canal.

M. Bourdiol was never in command of a Darien expedition, and his published accounts are borrowed from the works of his predecessors and contemporaries, or are only the fruit of his own imagination. He was occupied only during 43 days in levelling and surveying, under my direction, from the Lara to the La Paz, a distance of  $11\frac{1}{2}$  miles. M. Felix Belly is therefore mistaken\* in saying that the exploration of M. Bourdiol lasted three years. Rear-Admiral Davis, of the United States Navy, has fallen into a similar error in his 'Report on Interoceanic Canals and Railways,' in speaking of M. Airiau and of M. A. Antoine de Gogorza, neither of whom ever set foot upon the land of Darien, and also in speaking of M. Bourdiol as the leader of an expedition. Admiral Davis makes a mistake also in dates. It was in 1861, and not in 1864, that

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\* In his work 'À travers l'Amérique Centrale, le Nicaragua, et le Canal Interocéanique, par Felix Belly.'

M. Bourdiol was attached to the expedition which I commanded. The expedition never had any fears of wild Indians, for the simple reason that no such Indians were found between the Gulf of San Miguel and the Chucunaque; the inhabitants of the villages are all, without exception, blacks, mulattoes, quadroons, or whites. Of these my crew was composed. The expedition of 1861 was daily supplied with provisions by the abundance of game, and the region affords an inexhaustible supply; so that, beyond the rains and the fatigue attending such journeys, there really was no cause for complaint on the score of want of food, as we even had a surplus. Intermittent fever alone was the cause of anxiety on the score of health; with this exception, the condition of the expedition was excellent.

I may add that I have now before me the note-books of M. Bourdiol, containing all the observations of heights by levelling; and the result does not give more than from 52 to 55 feet of elevation, where Moritz Wagner had found 138 feet in the same place. M. Bourdiol, in his chimerical project for a canal, conceived in Paris in 1862, had laid down 144 feet—a figure not resulting from his labours, but from the data of the eminent Bavarian geographer.

In concluding this statement, I may state that in 1861 I forwarded to M. Roger, on my return to Paris, a complete record of my observations on all the scientific points of the expedition which occupied me in Darien. This record has become, I cannot tell for what reason, the property of M. Bourdiol; and I was much surprised, during my absence from Europe in my second expedition of 1864-5, to find that M. Bourdiol had laid before the Geographical Society of Paris my lawful property, and secured for himself the credit of work to which I had the sole claim.

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### APPENDIX III.

#### NOTE ON DON ANDRES DE ARÍZA'S MAP OF SOUTH DARIEN (1774).

IN May, 1868, I discovered in the Public Library at Bogota (Columbia) a MS. with the following title:—

‘Comentos sobre la rica i fertilisima Provincia de el Darien, en fecha i dirijidos de Santa Maria la Antigua de el Darien, el 5 de Abril, 1774, por el Sör. Don Andrés de Aríza a el Exñio. Virrei.’\*

 †

“Capitulo: De Tall de la Provincia de Sa. Maria la Antigua de Darien, arreglado al Mapa que le dirigió al Exñio. Sör. Virrei en fecha del 5 de Abril, 1774.”

The map in question had been torn out of the MS., and, despite all my efforts, I could not at the time discover where it had been taken to.

During my second visit, however, to Bogota, in 1866, I saw it accidentally in the hands of a person who refused my offer of purchase, but allowed me to take a copy—the one which, in strict conformity with the original, I now present to the Royal Geographical Society of London.‡

Briefly, the more interesting and important portions of the contents are the following:—

*Villages.*—Santa Cruz de Cana, which, in the year 1712, was set fire to,

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\* Manuel de Guirrioz, Viceroy from 1772 to 1775.

† Monogram of Andres de Ariza.

‡ Now in the Map Collection of the Society.

amidst the slaughter of the inhabitants, by 80 Frenchmen and 300 of the Gulf Indians, under the command of Charles Tibou :—

Yavisa, a fortified village, on the Chucunaque; number of inhabitants ..	170
Santa Maria la Reale; fortified, and situate at the mouth of the Pirré ..	180
Caná, fortified; on the river of the like name .. .. .	26
Chepigana, fortified .. .. .	..
Tichiche .. .. .	117
Pinogana .. .. .	180
Molineca .. .. .	110
Tuenti .. .. .	168
La Marea, on the river Tayecua; much gold .. .. .	..

*Indian Villages.*—Congo, Balsas, Acauti, Paya, Yavisa, Sambú, Pirré, Matu-maganti, Tapunaca, and Tupisa.

*Gold Mines in the Province.*—Troncoso, Sábalos, Tayecua, Nusaganti, Arquiatí, Nususunaqui, Acuasiscuati, Bagre, Marea, Balsas, Cana or Espíritu Santo, Rio de Playon, Sucubti, Cuque (mouths of the Atrato), and Mali, situate on an arm of the Pucro.

*Rivers.*—The Chucunaque, which opens out a communication with the north, by means of the Rivers Tupisa and Gandi, as well as of the Turganti and the Chueti.

The Tuyra, a very considerable and broad river, easily navigable up to the mouth of the Pucro. It takes its rise from the Chocó, near the source of the Atrato; it is a tidal river up to a little distance above Pinogana.

Amongst its tributaries are two rivers affording easy access to the Northern Sea. One is the so-called Rio Pucro, the sources of which are near the Rio Tarena, not far from the marshes of Zaraqulla, Tíglas, &c. The passage is made in six days, in canoes. The other is the Paya, affording greater facilities for the journey, its volume of water being more considerable.

The Mali Sierra, which has to be passed on either of the two routes, is the only point by which the Gulf of Uraba, its environs, &c., can be reached.

As an addendum to this notice, I may remark that my two explorations of the Darien, respectively in 1861 and 1865, and more especially in the latter year, resulted in the discovery, on the 27th of August, 1865, of a very low or sunken passage in the Mali Cordillera, between the sources of the Tanela (Tarena) on the Atlantic slope, and those of the Pucro, of its tributary the Tapalisa, of the Paya and of the Capeti, on the Pacific side. This is the point of which such precise mention is made in Don Andres de Aríza's report.

#### APPENDIX IV.

NOTE ON THE MAP OF DARIEN, BY THE COLOMBIAN ENGINEER, M. AGUSTIN CODAZZI, dated the 31st March, 1854.

THIS map, which was drawn up expressly to illustrate the routes taken by Messrs. Prévost, Gisborne, and Strain, completely differs—singularly enough—from M. Codazzi's other maps of the Isthmuses of Panamá, Darien, and Choco, and also, amongst others, from the one published by Dr. Kiepert of Berlin.

All the points on this map \* are placed 30, 31, 32, and 33 minutes more to the south than their real situations, and—what is still more singular—the left part of the map, which is devoted to Mr. Gisborne's plan of canalization, presents the same differences in latitude with respect to the right side, of

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\* A copy of which, presented by M. de Puydt, is now in the Map Collection of the Society.

which it is merely a detail. It is the latter side which (in that respect only) is in accordance with the other maps of Codazzi.

In M. Moritz Wagner's excellent map of Darien, as well as in Dr. Kiepert's, the sources of the Chucunaque are placed—and correctly so—not far from those of the Bayano or Chepo, and on the slope of the Pico Pitgandi—which is at an elevation of 400 mètres, or about 1300 English feet. M. Codazzi, on the right side of his map, makes the Chucunaque extend its course far too much to the north-west; whilst, on the left side, he brings that course to an abrupt termination, and places the sources of the river under  $77^{\circ} 50'$  w. longitude (from Greenwich), instead of under  $78^{\circ} 12'$ , more or less. In like manner, the sources of the Bayano are represented by him to be so far east as  $78^{\circ}$ ; moreover he alters the course of the Aglasiniqué—describing it as traversing the Cordillera under the novel name of Rio Caledonia—and introduces certain changes into the entire mass of the Cordilleras, being thus in complete contradiction with himself, on one and the same sheet of paper.

The publication of this map would be merely a matter of curiosity, as but little credence is to be attached to such a production; at the same time, however, the publication would serve as a warning to avoid making use of it with regard to the history of Darien. This map may be taken as evident proof of a pre-conceived and pre-arranged plan, on the part of M. Codazzi, to uphold the statements of Mr. Gisborne, and—what is more to be regretted—to set forth the possibility of making a certain wonderful canal, without sluices, straight as an arrow, and passing through wholly flat savannas, from one ocean to the other. This is the canal of which bird's-eye views were published by Dr. Cullen, and, after him, by the pretentious Mr. Airiau.

All these localities were visited by me in 1861, during the expedition, of which a narrative has been presented to the Society. I had previously discovered that rising ground, 240 feet above the level of the sea, separated the valley of the Savannah from that of the Chucunaque. I also found an elevation of 144 feet above the level of the Rio de la Paz, some two miles from its mouth in the Chucunaque, and yet this is the elevation which, according to Mr. Airiau, was to be traversed by a canal without sluices, and on a level bed! Moreover, to the north-east and east arose before me the chain of the Cordilleras, which give rise to the Rivers Morti, Sucubti, Asnati, and Napsarti, tributaries and sub-tributaries of the Chucunaque, on its left bank.

This part of Darien inspired M. Bourdiol (the young surveyor who was under my orders in 1861) with another singular project, to which he gave publicity, viz., a canal with fourteen sluices, a tunnel through the Cordilleras, feeding-canals, &c. It is true he knew nothing more of the nature of the ground than was communicated to him by one of my labourers, who, perched upon a tree, caught sight of the locality in question, some 18 or 20 miles distant. We were at the time (June 2, 1861) on the right bank of the Rio de la Paz; yet M. Bourdiol did not hesitate to draw up a map of Darien, which differed *in toto* not only from those of Codazzi, Kiepert, and Wagner, but—what no one will be astonished to hear—from all other maps in existence.

The original of the present map is now in my possession. It was given to me, in Colombia, by a friend of the late Colonel Agustin Codazzi, of the Colombian Engineer Corps.

No other copy, I believe, exists; so that, even on that score alone, the map in question may be considered to be interesting in a geographical point of view; whilst it would be of service in any discussions relative to the construction of an inter-oceanic canal through the Isthmus of Darien.