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A
SURVEY JOURNEY IN SANTO DOMINGO,
WEST INDIES.

BY
JAMES W. WELLS, M. INST. C.F.

WITH MAP.



A SURVEY JOURNEY IN SANTO DOMINGO, WEST INDIES.

By JAMES W. WELLS, M. Inst. C.E.

Map, p. 604.

ON April 6th, 1892, I landed at the city of Santo Domingo, in the island of that name in the West Indies. As the object of this paper is purely geographical, I cannot venture to touch upon the great historical events which have occurred here, "the cradle of the New World." Here we find the old tree which, tradition says, is the same mentioned in Columbus's diary, to which he secured his caravel on his first landing; the fine old picturesque citadel hoary with age; the yet massive but crumbling walls and roofless palace of Diogo Columbus; the old convent of San Francisco; the city walls, and many other relics of the departed grandeur of the past of Santo Domingo. All these features and also the scenes of its modern life are well described in Hazard's 'Santo Domingo.' That work was written in 1873, since which date considerable progress must have been made. Hazard refers to "the quay, entirely deserted of shipping," and says, "The general business of the city appears very limited indeed, and there are only one or two really large and extensive stores with general assortments of goods." This description is no longer applicable, for now there are numerous stores and new buildings, busy streets with tramways and cabs, and long lines of wooden quays or stages newly-erected or being erected, which are anything but "deserted of shipping."

At midnight, April 9th, in company with two companions and some half dozen strangers I embarked on board the *Joséfitá*, a small coasting sloop bound for Barahona in the Bay of Neyba, a port about 100 miles to the west.

The hour of departure was late, it being necessary to await the coming of the land breeze which was, as usual, not very punctual in its arrival. The little sloop was crowded with cargo and passengers, and while we were seeking for some softer couch than the edge of a barrel, or the corner of a box on which to spread a rug for the night,



there occurred an incident which sufficiently indicated the state of tension in which the inhabitants live.

Late in the afternoon of the next day I landed on the shores of the Bay of Ocoa, and walked 3 miles inland to the ancient but small town of Azua. At least the site of the town is ancient, the first town having been built in 1504 by Diogo Columbus; but that and succeeding towns were destroyed by fire, battle, or earthquakes. Here is the entrance into the debatable land, extending to the frontiers of Haiti, once held by the unconquered Indian cacique Enriquillo, then raided by bands of French and Spanish maroon negroes, and finally by the armies of Haiti or by Santo Domingo revolutionists; this little-known region is what I was about to traverse.

The streets of Azua are wide and straight, but the majority of the houses are small frame houses covered with split palm staves, and thatched with palm leaves or roofed with sheets of zinc. Some few of the stores are large and well-provided with goods, and a considerable degree of quiet prosperity is distinctly perceptible. The surrounding country, at the time of my visit, was parched dry from the effects of an unusually long drought of fourteen months; not a blade of grass was visible, and barely a tree could show a leaf; strange indeed was the consequent wintry appearance of withered cacti, thorny mimosa, and bush in such a torrid heat as I experienced. But I found an exception to the prevailing scenes of desolation, for about two miles to the west is a region perpetually green with the most luxuriant vegetation—trees, grass, sugar-cane, and other agricultural produce growing in a most extraordinarily prolific manner. The soil, a white, marly loam, is identical with that about Azua, but no fertilising water is to be seen. The cause of this oasis is to be found in the fact that the land very gently rises in a steady slope to the hills and mountains beyond Azua, and further down the slope and near the River Houra there appear innumerable springs of water in the driest season; whenever a well is made in this favoured region the water rises to near the surface of the soil. These facts seem to indicate a water-carrying sub-soil formation, which probably exists at a greater depth and below the reach of the roots of vegetation the higher the land rises, but approaches nearer the surface on the lower levels. It probably originates in the hilly country miles away.

The sugar-cane is so rich and luxuriant, and in such quantities, that there are not mills sufficient to crush it or local capital to purchase machinery. There is actually enough cane planted to annually yield twenty thousand bags of sugar of 300 lbs. each. Cattle are fed on the surplus canes, which can be bought for 6s. per ton. I brought away some samples nearly 4 inches in diameter; but unfortunately the boatmen ate them, as they not unnaturally observed on the reprimand I gave them, "Who would imagine anyone valuing the food of cattle."



After waiting at Asua two days whilst our packet-boat was unloading, we arrived at Barahona on the 13th. The coast passed on the way is high and rugged, rising from lofty perpendicular bluffs to much higher ground inland, grassy and thinly sprinkled with bush, affording a noble coast scenery somewhat similar to that of the coast of Cornwall.

The approach to Barahona is very pleasing. Considerable lofty hills surround the Bay of Neyba right and left of the mouths of the Rio Yacki, from whence, almost due west to Port-au-Prince, in Haiti, stretches a low valley, bordered on the north and south by lofty mountain ranges. This hollow it is practically the main purpose of this paper to describe, for it is a portion of the island little known to those who have written on Santo Domingo.

Barahona possesses a wonderful little natural harbour. On an otherwise open coast a coral reef extends about 2 miles from, and parallel with, the shore, forming a natural breakwater to a considerable inclosure, 12 to 30 feet in depth. Many submerged rocks in this natural harbour are a danger to vessels entering or going out; but as the channels between are clear and distinct, the port pilots can easily conduct a ship in or out of port, but a steam-tug would greatly minimise possible existing dangers to sailing vessels. There has not been any Admiralty survey of the southern coast of Santo Domingo.

Hills of considerable elevation, covered with woods, rise up to the rear of the little town, and form a very pleasing aspect from the sea. These elevations run almost due west to the opposite extremity of the island, in the Republic of Haiti, and in places rise to 5000 to 6000 feet above the level of the sea. From base to summit they are covered with forest, rich in mahogany, lignum-vitæ, fustic, lance-wood, satin-wood, and other valuable timber, the greater part of which cannot at present be felled and transported for want of roads; to devise a means of overcoming this difficulty was one of the objects of my mission. The exports of Barahona are almost exclusively timber, chiefly lignum-vitæ; but the trade has fallen off very much of late years, owing to all the near and easily accessible regions having been denuded.

Unfortunately, I landed at Barahona in Holy Week, when work of every kind is prohibited; and my requirements for a troop of horses were met, at first, with a steady refusal by any of the inhabitants to endanger their souls in supplying me with animals for a journey at such a time. With some difficulty I eventually surmounted their objections by writing an undertaking to be responsible for their sins in furnishing me with horses for the occasion, and I was thus enabled to get away the next day. The necessity was urgent, for in about three weeks the rains would be due, and, in the rainy season of the tropics, little outdoor work could be done of the character I had before me.

Finally, on April 14th, I left Barahona, accompanied by my two companions, Señors Caminero and Cambiaso, Señor Mota—a timber



outter and trader—and a peon as guide and baggage master, and escorted by the commander himself of the military forces of this region, General José Alta Gracia Coello. The General carried a Remington rifle and a revolver, and his crimson military saddle-cloth and purple holsters, all gold-braided and decorated with the arms of the Republic, and some brass buttons on his cotton tunic, served to indicate the rank and constitute the undress uniform of a general in the Dominican Army. The General was a pure dark descendant of the African race—it is not good form to say Negro—and proved himself to be a really good fellow throughout all the journeys, active, ever willing and obliging, considerate of others, good-tempered and patient under trials. We were all mounted on very fair pacing mustangs, and saddles and harness were equally fair; the hire of each horse was one peso per day (about three shillings), a very moderate charge.

Leaving Barahona, the road, after passing over a low shoulder of the hills, through thin woods, emerges on to a small, grass-covered savannah, flooded in the rains, then on through more thin woods and bush, and over gently rising and falling ground (the bases of the foothills of the dark, forested Sierras on our left), finally reaching Rincon. Nearly all the way the soil showed a white, marly loam, freely covered with rounded boulders, large and small, of a white, soft, close-grained stone. Excepting in the Rio Yacki, whose course we followed, and also in a small, stately, palm-bordered lagoon passed on our way, no stream of running water was seen until near Rincon, where there are several clear, quickly-flowing streams. Therefrom irrigation canals have been conducted, and thus the neighbourhood, which abounds in noble trees, is rich in brilliant verdure and soft shade, with plots of cultivated land, where plantains, maize, sugar-cane, cassava, tobacco, etc., grow in the most desirable luxuriance.

Rincon is a somewhat large but scattered accumulation of isolated, and more or less dilapidated, frame, palm-thatched houses, and a very plain wooden church, erected on the summit of a low hill overlooking a fine sheet of fresh water, the Laguna Rincon, 3 miles wide, 5 miles long. This lagoon, at certain seasons of the year, abounds with fish to an enormous extent; numerous fish-currals jut out from the shores, into which the fish are driven, then caught, killed, salted, and exported to all parts of the island. The lagoon has an outlet to the River Yaoki, which river washes the base of the hill on which Rincon is situated. The river is quite navigable for barges down to its mouth, and for 15 miles up-stream. At the mouth, however, a bar prevents exit of the craft to the bay, only shallow canoes being able to cross it.

Rincon and its immediate neighbourhood are said to contain about four thousand inhabitants, engaged in agriculture, timber-cutting, stock-raising, and fishing. There is also a garrison of four hundred soldiers. To the south of the town, about 6 miles away, rises the very imposing



pine-tree and "cloud capped" summit of Monte Laho, or Le Haut (5000 feet high); from its base to its summit, and extending all over the range of which it forms a part, the surface is covered with woods and forest, green in the valleys, but less so on the ridges of the spurs.

Leaving Rincon we proceeded in this direction. The road, after descending from Rincon, passes for about 2 miles through level, well watered and rich land abounding in woods and scattered homesteads and plots of cultivation. Beyond, the road or trail rapidly begins to ascend, and is extremely dry, stony and scoured with deep gullies. A thin vegetation of bush and small timber covers the hollows and hill-sides, where some indifferent *lignum-vitæ* were observed. Further on, as the track becomes steeper, more stony and winding, the vegetation is still poor, but *lignum-vitæ* is more abundant. In one and a half hours' ride is reached the deep gorge of Cañada Fonda, whose lofty perpendicular sandstone walls and deeply scoured dry channel indicate what a mighty rush of waters there must be here in the rains. The height is 1850 feet; mahogany now occurs, the vegetation is more dense and trees are more lofty. Onwards, the ascent becomes more and more steep, the path often being only the boulder-strewn beds of dry watercourses shut in by steep hill-sides densely clothed with forest. Orchids are most abundant, mahogany and lance-wood are constantly in view, and on the higher levels very fine cedars are met with. Finally, after a severe climb of four hours, the summit of the pass is reached, 3590 feet high. The situation is picturesque and delightful, the air is cool and fresh, being 65° at 5.30 P.M. Rich forest of fine timber is seen in all directions, and although mahogany has not been seen after 2900 feet of elevation, here are great quantities of cedar 4 to 6 feet diameter. The soil is rich and most fertile, and although too high for coffee or cocoa, there is an abundance of localities lower down each side of the ridge admirably adapted for the purpose. High above the pass rises the lofty summit of Laho, its dark mass wreathed in white drifting clouds of mountain mist, in the intervals of which are seen masses of tall pine trees rising high above their surrounding vegetation. Laho is about 5000 feet high.

Descending the southern slope, the track winds in and out of deep gorges, or climbs over sharp spurs of the steep hill-side through dense forest for 800 feet. Here at nightfall we found a small farm known as Pueblo, and to our chagrin, deserted. This had been our destination for the night, consequently, foodless and shivering in our thin garments in the fresh mountain air we passed the night. At 5 A.M. the thermometer registered 59° and at 7 A.M. 64°. Pueblo is situated by the side of a long valley extending to the sea. On its opposite side is a long spur of hills reaching from the main range to the coast and known as Las Lomas Ruperto.

Returning to Rincon we proceeded westwardly the road traversing



the fertile regions of its near neighbourhood watered by the Rios Savello and Bartollo. There are here many plots of cultivation and homesteads, and also many others nestling amidst the palms bordering the southern shores of Laguna Rincon; but at half an hour's ride from Rincon, the road passes through very thin leafless woods of small timber parched dry with drought; the watercourses were all dry, and the soil, naturally rich in the elements of fertility, was baked hard, cracked and dusty.

Near the south-west extremity of the lagoon a track leaves the main trail for Pueblo de la Puente de Loma, a small hamlet of thirty to forty houses about 2 miles away. On leaving the lagoon the road pursues a north-west direction towards the low hills of Salinas, crossing first the flat grassy Savannah de Buena Vista, and then proceeds over gently rising ground, a buff-coloured sandy marl, firm to the tread in wet or dry weather, and thickly covered with many varieties of cacti, aloe and thorny mimosa.

Meandering amongst the low hills of the settlement known as Salinas, the sweet-water river of that name serves to irrigate the little valleys of the place, and as the road follows up the course of the stream, it proceeds through densely shaded avenues of very fine trees, or skirts numerous "canuocs" or cultivated plots, each one with its isolated homestead. The settlement is only eighty years old and contains about one thousand five hundred inhabitants, whose houses are much scattered.

Cattle-raising on the plains of Neyba is the main industry. The temperature is here very high, the thermometer registering 96° under the breezy shelter of the thick grass roof of a house.

A short distance beyond Salinas is a low range of bare brown hills extending west for about 4 miles, from 200 to 300 feet in height. These have long been celebrated as the Salt Hills. Exaggerated accounts had been given to me of their "springs of salt brine" and "glistening palisades of salt," which I failed to perceive. Undoubtedly there are in these hills, and extending throughout their length, several great veins of very fine white crystal rock salt 10 to 15 feet thick, but as the surrounding material is soft and much resembles in appearance dry London clay, timbered galleries and shafts would be necessary to get out the salt, and the value would not repay the expense except for local requirements, for which it is much used. There is also white marble in these hills.

From these hill-tops a very extensive view is obtained over the level Savannah de Neyba, covered with the sad grey of thorns and cacti which, stretching far away north to the Rio Yacki, forms a great plain without a *break* in its level surface or monotonous colour, without a blade of grass or living thing; a veritable desert. In the rainy season, however, it is covered with rich grass, and forms a huge grazing ground for cattle.



From Salinas to the Rio de las Marias the road crosses this Savannah. It is not quite so flat as it appears, as it very gently slopes east and west, to the Lagoons Rincon and Enriquillo, and north-east to the Rio Yaoki. The height of the divide is, however, only about 155 feet above the sea. It is a dry, arid, wind-swept region in this season of the year, and contains about 170 square miles. On this exposed plain, with its heat-radiating surface, the warmth of the rays of the sun from a cloudless sky resembles that of the front of a furnace, but it is rendered endurable by the fresh sea breeze which constantly sweeps over the Savannah, driving the fine particles of the dry soil into long drifts to the leeward of the clumps of parched and drooping thorns and cacti. Notwithstanding the desolate aspect of the weird-looking vegetation, such as cacti of every imaginable form, size, and variety, mingled with thorny mimosa sadly draped with the grey filmy masses of Spanish moss streaming to the breeze, still, the fresh breeze, the bright light and the rapid pace we travelled over the firm smooth soil, rather tended to a feeling of exhilaration than of exhaustion or ennui. Although the thermometer registered 134° in the sun, the air was so dry and the breeze so strong, that the perspiration evaporated as soon as it occurred.

The route is often intersected by extremely tortuous and deeply scoured dry watercourses, indicating a heavy rush of waters in the rains. Not a stone is to be seen, and in the watercourses the marly soil is deposited in horizontal strata. I am led to the belief that this valley of Neyba has gradually been raised by deposited denudation from the adjoining mountains, which has eventually separated the salt water of Laguna Enriquillo from what once formed part of the sea. I further believe it to be not too extravagant to consider that the whole of the mountain ranges on the south side of the valley formed a separate island divided by a strait of the sea from the main or northern island. Throughout the valley all stones and rocks, large and small, whether on the surface or exposed in washouts, are rounded as the pebbles of a sea-shore. Extensive and solid beds of coral are often exposed along the shores of Laguna Enriquillo, which has retained its salt water, because, unlike the other lakes, it has no outlet or overflow; Laguna Rincon is 18 feet, Marias 160 feet, Fonda 190 feet, Limon 155 feet above sea-level, whereas Enriquillo is practically level with the sea. The aqueous evaporation in the dry season over the considerable surface of Enriquillo is probably more or less in volume equal to the amount of water from the few small streams which enter it.

The Savannah terminates at the Rio de las Marias, from the other side of which river, and extending to Neyba, and from Barbacca in the west to Cambronal in the east, is a well-wooded, fertile tract of about 12,000 acres where lignum-vitæ and fustic are most abundant.

The town of Neyba is a well-laid-out town of broad straight streets at right angles to each other. A very plain and simple wooden



structure is the church in the northern and highest part of the town. It is a prominent object from many distant points of view, and formed one of the main points of triangulation * for the construction of the map herewith submitted, the details of which were sketched in whilst passing through the country seated on the back of an ambling horse, whose even movements allow of taking notes. A small pocket-compass (not too lively), a pencil, book, aneroid, and a watch for distances, show by this sketch map what can be done by simply riding through a country.

Good Friday was the day of my arrival, and it was truly remarkable to observe the throngs of orderly and gaily-dressed people which filled the streets and surrounded the church densely packed with devotees. As in most Roman Catholic countries the church bells are silent on this day; but some men energetically paraded the streets and made day and night hideous with the sounds of lusty wooden clappers. Most of the men carried fighting cocks, and the next day cook-fighting was the universal amusement, accompanied by betting, excitement, and shouts of glee.

There are supposed to be about five thousand inhabitants in the town and its neighbourhood; but it is only a rough estimate, as no census has been taken. There are a few stores, if one may so designate the mean little stocks of dry and wet goods observable. The fact is, the major part of the goods of the outside world required by the people of this region are mainly obtained at Port-au-Prince in Haiti, and smuggled over the frontier by Laguna Fonda.

Inquiries made at Neyba failed to elicit any information whatever as to any reported minerals in the surrounding region.

From Neyba to Esterro is about 2 miles, and all the way lignum-vitæ and fustic are sighted, the former is rather second-rate, but the fustic is very fine. There are also many caya amarilla (*Zanthoxylum coriaceum*), a tree much resembling satin wood, but without the odour.

Esterro is a small collection of about one hundred inhabitants, and a little further on is Barbacoa, a large scattered settlement. The people appear quite numerous, and all, without exception, are well-clad and perfectly independent, for a very small amount of labour supplies their simple requirements. This neighbourhood is dotted with homesteads and plots of flourishing cultivation, and upon examining into the cause of such productiveness in such a dry season and generally dry soil, it was found that near the lagoon are many springs of delightfully cool, fresh water, flowing over rocks. The inference is that these springs come from the highlands at the north of Neyba, and the water filtering through the deposited humus or disintegrated material of the hill-sides, passes below the soil over impervious strata and finally emerges at a low level near the lagoon; if that be so the existence of

* By prismatic compass.



this subsoil flow of water is quite sufficient to account for the fertility of an otherwise waterless region after a long drought. It is similar to the fertile oasis near Azua both in cause and effect.

At Barbacoa, hearing of a reported existence of salt some way up the mountains, I made an examination. The distance is about 3 miles, and mainly up the white boulder-strewn beds of hill-side gullies. The soil of the land traversed is a light yellow marl, and, where exposed, shows dense underlying beds of soft rounded white stones. The vegetation is thorn and cactus, a region now valueless; but it might be made productive by making dams in the numerous dry watercourses to catch the water of the rainy season. In times gone by some good timber grew here, if one can judge by the stumps of big trees in a locality whence forest has now quite disappeared. After a tough climb up 500 to 600 feet, the alleged salt deposit proved to be merely the surface of a limestone rock, between some small interstices of which a little moisture was oozing, and, as it was probably charged with some acid, it deposited, in the shape of foam, a very small quantity of saline matter on the rocks. To see this, a dollar had been paid the guide, and a severe climb on foot on a sultry tropical morning had been undertaken before breakfast. But the ascent served to show that the whole of the region, between Neyba and the hills at the rear, was covered with only thorns and caeti.

At Barbacoa, and up to about 60 feet above the level of the lagoon, are vast beds of coral and coral rock in every shape and form, interspersed with numerous marine shells. There is no doubt that the coral is solid rock and not a superficial deposit.

From Barbacoa to Postreerrios the road passes through a dry and uninteresting region. Two streams only of running water intersect the route in a distance of 12 miles; many coral reefs were met with on the way, and also many dry but deeply channelled watercourses. The ground is undulating, dry, and parched, and the vegetation is thorn and cactus, the latter occasionally occurring in dense masses. Even to 2 or 3 miles inland the same dry, arid appearance prevailed. On the more distant mountain slopes the vegetation is greener, but not of any degree of richness.

At the house of a Señor Gregorio Sierra, a little west of the Rio de los Rios, is a very curious relic of the past in the form of an ancient six-pronged anchor. This relic, in conjunction with the existence of such extensive beds of coral around the lagoon, and its salt water and low level, seems to indicate that Laguna Enriquillo was once an arm of the sea. The anchor was found embedded in the shore of the lagoon, near Bebedeiro, 50 feet above present water-level, by General Soza, when he was living here as a workman, in 1844, and employed by him on a boat which he then used on the lagoon.

The valleys drained by the Rio de los Rios and its feeders are an



exception to the poverty of the vegetation of this region, for there the presence of water, as elsewhere, causes the curiously, apparently dry and arid, but really fertile soil of this valley to blossom with vegetation, and much valuable timber is there to be found.

After passing the Rio Postrerrios, one again enters an extraordinarily fertile oasis. Irrigation channels intersect the road, and in all directions are plantations of the greatest luxuriance, mainly consisting of cane, plantains, maize, a little tobacco, and cassava. The people of Postrerrios seemed to be most industrious and energetic; our host especially, a young man, was so vivacious, and withal so hard-working, that it was quite refreshing to meet and know him in this land of "dolce far niente." "Still," as he said, with a shrug of his shoulders, "here one can grow anything, but we can only give it to our cattle."

From Postrerrios I proceeded north-east with the view of examining the reported rich lands in that direction. Beyond Postrerrios there is a short stretch of thorns and caoti until the narrow valley of Postrerrios is reached, where fine lignums are sighted about 40 yards apart, fustic much closer, a little small size mahogany and great quantities of candelon (*Colubrina ferruginosa*). There are clumps of lance from 10 to 20 yards apart; some of this is very fine, tall, straight and 10 inches thick; it is mostly, however, under 6 inches at the base, being little more than good-sized saplings. There is no satin wood or cocos wood.

A little before reaching the small homestead of Guayabal the Rio Postrerrios is found emerging from under the rocks of the base of a hill in a quickly flowing stream 12 feet wide and 12 feet deep. Guayabal is but a hut or two owned by a Haitian negro and his family. Their surroundings were squalid in the extreme, but here we passed a night. The place is situated 900 feet above sea level, at the end of a lovely valley surrounded by mountains covered with woods, and despite the fact that the head of the family was practically lord of all the land within sight, with a rich soil capable of producing any tropical products, as could be seen by the negro's adjoining plots of cane, tobacco, cassava, bananas, yams, beans, coffee, etc., yet nowhere could be witnessed more squalor, filth and savagery.

From this point all signs of the drought disappeared, the vegetation was fresh and luxuriant, the soil being kept moist by mountain dew. On the hill-sides surrounding the valley of Guayabal are mahogany and fustic, and an abundance of fine lance wood.

Leaving Guayabal, crossing the dry gorge of the Cachoncito and proceeding in an easterly direction up a wide valley drained by La Estrella, following the tracks made in 1844 by General Soza for the purpose of removing mahogany, one sees in the valley an abundance of fine lignum-vitæ (rough bark variety) tall, round and straight, and up to 24 inches diameter, mingled with fustic and lance-wood, and on the surrounding hill-sides there is very fair mahogany and abundance



of fine lance-wood. The road continues to ascend the hills by very steep ascents, with deep gorges in the hollows; hill-top and valley are all alike covered with thick woods abounding in membrillo (*Cerasus occidentalis*), the wood of which has a scent like that of aniseed, and from which a perfume is manufactured in St. Domingo city. Lance-wood is seen in all directions, and by the side of the track are many old rotten logs of mahogany. Mahogany is small and not very abundant, but away from the track the slopes of more distant hills show masses of the light green small foliage of what must be numerous and fine mahogany trees 20 to 100 feet apart. Lance-wood is abundant, but only about 20 per cent. is good for felling. Fustic is good, and one sees in various places in the woods from five to nine within sight in a radius of about 80 feet. Many old coffee and orange trees exist in the woods, the tombstones of a departed era of prosperity and activity in what is now a wilderness. Higher up the hills cedar appears, some trees 3 to 4 feet diameter. Finally at 11 A.M. an elevation of 2180 feet above sea-level was reached; the temperature was delightful, 76° Fahr., the air of the finest and the soil very rich. Here the trail ended, but beyond and around are higher elevations all covered with rich but yet second-growth forest.

Some years ago a trail existed leading on to the table-lands distant about three hours' journey, but it is now overgrown, and would require ten men working five days to clear it. This table-land is reported to be covered with dense virgin forest and to be most abundant in mahogany, fustic, lance-wood and cedar. This statement is probably true, because the same conditions were eventually found on the adjoining table-land of Los Piños. The table-lands are generally known as Los Manieles, and the regions of the ascent to them as Los Tibisiales.

Due south of Postrerrios is the Island of Cabritos, appearing as a low-lying sand-covered land dotted with bush. Many curious Indian relics have been found there, and many are believed to still exist, as well as numerous goats; but, most unfortunately, neither at Postrerrios nor at any other place on the shores of the lake, could be obtained a raft, canoe, boat, or any means of getting to the island. This island is especially interesting, as it was the headquarters of the unconquered last cacique of the Indians. Of the millions whom the Spaniards found in the island not one individual is left.

Leaving Postrerrios the road quickly quits the pleasant cultivated land, and, skirting some low hills, passing over dry and stony lands of bush and scrub, it eventually reaches the shores of the lagoon, where the wavelets curl and break like those of the sea. For nearly 2 miles the road is hemmed in between the lagoon and bare, brown, steep hill-sides; then the hills retire somewhat from the shore, where a stream enters, moistening the soil and fostering the growth of a narrow belt of forest. Here, at the foot of the hills, by the side of the stream and road, is a



spring of mineral water, called by the people "the sulphur waters." The water is clear and tasteless, but the odour is quite offensive, like that of sulphuretted hydrogen. An emerald-green slime is deposited on the rocks covered by the waters, and every kind of vegetation is killed by contact with the water.

The road continues for about $1\frac{1}{2}$ miles to more or less skirt the shore, passing through woods containing some lance-wood, then enters on slightly-rising ground abounding with the rich cultivations of La Discubierta. Irrigation channels are again met with, and again they are the sole cause of fertility; but here they are not conducted from a stream of running water, but from natural springs, bubbling from the earth as at Esterro and at Azua. The scattered plots of cane, plantains, etc., extend about three quarters of a mile in length, and yet between the plantations one sees the dry and apparently arid soil, bearing only the thorns and cacti, which is so characteristic of this region. It is evident proof that the soil is eminently fertile when supplied with water.

La Discubierta is a collection of separate farm homesteads, and its population attend to their home agriculture, and raise stock and cattle in the valley to the rear of the settlement. Amongst their other occupations is that of bee-keeping, an industry which, in fact, is very general throughout all the settlements of the region from Barahona to Laguna Fonda, and the wax and honey form no inconsiderable portion of the exports at Barahona. The process adopted is a very simple one. The stem of a soft wood palm is cut into lengths of 3 feet; the interior of each piece is cleared out, leaving a hollow cylinder of 12 to 18 inches diameter. These cylinders are then laid horizontally on the ground near the house. The bees speedily adapt them as hives, and fill them from end to end with combs.

From La Discubierta an exploration was made of the highlands to the north-west. A few minutes' ride over the stony land and bush brought us to the foot of the hills, where a steep climb led us up the gorge of a dry watercourse, filled with huge rounded boulders. On the hill-sides, about half-way up, is a fair supply of *lignum-vitæ*, and in the gorge are clumps of lance-wood, but small and distorted. On reaching the summit fairly thick forest appeared, covering an undulating table-land. Quite a number of clearings had been made for plantations. Mahogany is repeatedly seen.

There is no *lignum*, fustic, satin-wood, or cocus-wood, but some fine cedars are occasionally seen. The elevation of the plateau is 1680 feet above sea-level. The climate is warm and humid. The soil, a rich, dark, vegetable mould, is most admirably adapted for coffee and cocoa.

Leaving Discubierta the road passes round the gently-rising ground of Savannah-en-Media, which forms a cape in the lagoon. Here the country is again dry, and thinly-covered with scrub, thorns and cacti;



dry, brown, bare, and uninteresting, are alike level ground and hill-side all the way to Bebedeiro, where plots of cultivation and woods again appear, and in which fustic abounds; again, in the bush around Boca de Cochon and Tierra Nueva it is even more abundant. On the hill-sides, to the north of this place, the light green foliage of *lignum-vitæ*, and of *almacigo*, furnish nearly the only green seen on the otherwise brown surface of those hills; but the loftier and more distant hills are abundantly covered with green verdure. The resin of the *almacigo* furnishes the incense of the churches.

From Boca de Cochon the ground rises by imperceptible gradients. The soil is good, but dry and parched. The vegetation resembles somewhat that of a fruit orchard, amongst which are numerous *lignum-vitæ*, some as much as 3 feet diameter, and of most desirable quality and conditions.

The shores of Laguna del Fonda, half of which lake is in Haitian territory, consist of sand and mud; the water is brackish, but quite drinkable. North and south the hill-sides slope to the water's edge. On the shores were seen lying many old mahogany curls,* and their appearance of age indicated how neglected has been this industry of late years. The land between Lagunas Enriquillo and Fonda is gently undulating and covered with bush and scattered trees of small growth. The soil is eminently fertile when supplied with water. The settlements of Boca de Cochon, Tierra Nueva, and Bebedeiro, consist of a number of scattered homesteads, where the people seem to be very poor, and the homes are little more than a shady place in which to sling a hammock to sleep in or to avoid the rain.

Returning to Boca de Cochon, we proceeded to explore the south side of Laguna Enriquillo. From Boca de Cochon the road soon strikes the low sandy-mud shores of the salt-water lagoon, and continues to skirt it until near the Arroyo Blanco stream. Up to this point the ground traversed is tame and uninteresting, low-lying land thinly covered with scrub and thorns. At Arroyo Blanco another plot of cultivated land occurs, watered by irrigation channels, and blooming with the rich verdure of woodland. Many houses are scattered about here, and the fields of cane, etc., are filled with rich and succulent products.

At Gemani, a little further on, is another small group of homesteads. Here the expedition was joined by the Commander of the Forces of this region, a practised woodcutter, who accompanied the exploration as a guide to timber lands. At this place are also mineral springs, similar to those on the other side of the lagoon, and also some very good

* A mahogany curl is 4 to 6 feet in length, and is cut from the trunk from just above the junction of a branch. It is very valuable when the two hearts of the trunk and the branch are separate and distinct at the end of the curl, for then the intervening wood offers the finest grain for veneering purposes, and, owing to its size, it is portable on horseback, whereas the logs are not, owing to their weight.



lignum-vitæ trees, but they are confined to a very limited area, not perhaps more than 100 acres.

Leaving Gemani the road takes a southernly course, winding in and out of valleys, and over ridges 400 to 500 feet high, all alike brown and parched, and practically devoid of vegetation of any value. But further to the south on a range of hills (Las Lomas de Cavan) the guide stated that mahogany and cedar are abundant, but have never been worked; the soil is good for coffee and cocoa, and a distant view showed the hills to be well covered with forest. This region has long been famous as the haunts of Maroon or runaway negroes, so long, in fact, that men and women have been captured there in a state of absolute savagery—"wild men of the woods."

All the hills and land between Lagunas Limon and Enriquillo are only thinly covered with scrub, thorns, and cacti, but the hills on the south side of Laguna Limon are densely covered from base to summit with very fine timber. An ascent was made to the height of 950 feet above the sea with very satisfactory results. In the plain at the west end of Laguna Limon is an abundance of excellent lignum-vitæ of both smooth and rough bark, and all the way up the hill-side, either in the gorges or ridges of spurs, is encountered in great abundance lignum, fustic, lance-wood, and some satin-wood, 15 inches in diameter. In the upper region mahogany is also abundant; there are numerous trees 4 feet in diameter, tall, straight and round, and 25 feet to lowest boughs. This is certainly the finest timber region yet seen, and the hills continue to rise to quite 2000 feet, everywhere covered with fine timber; mahogany and cedar being especially abundant in the upper regions.

The water of Laguna Limon is fresh and abounds with caymans. The settlement of Limon is a small group of homesteads of stock and cattle raisers, as is also Florida at the east end of the lake; with these exceptions, there is nothing to note, either as to habitations, or timber, until the road skirts the little cove on the shores of Laguna Enriquillo, near La Furnia, where there is some lignum-vitæ, and a few houses; and also at Abaitoa. The road now skirts the shores of the lagoon, having steep hill-sides on the right. No timber of any consequence is noticeable, but another mineral spring is here met with, producing precisely the same unpleasant odour as the two already mentioned. It gushes out from the hill-side and meanders through a beautiful grove of palms, forming certainly the prettiest scene on the generally uninteresting shores of Enriquillo; but here the road is quite impossible for any wheeled vehicle, for huge boulders cover the steep side-long ground and render locomotion even on horseback a difficult matter. As the hills recede from the lagoon the land again becomes flat, somewhat wooded and cultivated, and houses are often met with. San José is quite a little village, and from here onwards to Las Damas



the vegetation improves, and plots of cultivation are more frequent. The Rio de las Damas is a good stream of rushing water, providing excellent water-power for any purpose.

The town of Las Damas is a great hollow square of houses, with a few parallel streets at the rear, built on a flat. The houses are neat, plain, and as comfortable as one may expect to find in a country town in this land. There are more white inhabitants than one usually sees, and some of the women are handsome, in fact, Las Damas has long been noted for the charms of its female inhabitants, some of whom are quite types of Spanish beauty.

An excursion was made to the summit of hills south-west of Las Damas. The Rio de las Damas flows from the west through a savannah of bush and grass, a great place for cattle. The main range of mountains to the south is well wooded and lofty, the summits showing pine-trees. This range of mountains is known as the Sierra Borohuca, and up to quite recent times was occupied by Maroon or refugee negroes. There is no track now existing in that direction. Some thirty years ago some mahogany curls were exported from these hills, and mahogany is reported to be fairly abundant. Undoubtedly they are well wooded, and there is no reason why they should not produce all the timbers found in similar localities and conditions.

From Las Damas to Neyba the road passes over a flat all the way; it is quite devoid of interest in the way of vegetation. There are long, bleak stretches absolutely devoid of anything green, and a few thorns and cacti comprise the rest. Many deeply-scoured dry channels of surface drainage are passed on the way, and between Cachon de la Gruasumilla and Rio de las Marias the soil is wet and very slippery, but firm. Here, in the rains, the waters of the lake rise and extend thus far, so flat is the land here.

From Neyba to Cambronal the road passes through open woodlands, which are the most prolific lignum-vitæ and fustic-producing districts of the whole of the region examined. Here are all sorts and conditions of both trees, good, bad, and indifferent. Some of the lignums are perfect, 30 feet of straight trunk, round, free from knots, and 28 inches thick. Others are most indifferent, and in places there is an average of thirty lignums and twenty-eight fustics to the acre; and near Cambronal that is a fair average. This lignum-vitæ and fustic-bearing region is estimated to contain 12,800 acres. Half-way to Cambronal the road passes between a short range of bare hills on the left—the Sierra de los Remedios—and a lagoon thickly studded with palm-groves on the right, known as Laguna de las Marias. Just about here the lignums and fustics cease, but are again found in great abundance beyond the lagoon.

Cambronal is a wooded region, threaded by canals and streams in all directions. The soil is fertile, and the locality possesses great potentialities for agriculture after the lignums have been cleared out. There



are a good many inhabitants scattered about, and many small plots of cultivation, but there is no energy whatever amongst the people.

From Cambronal to Salinas is a hot, dusty, uninteresting ride across the sun-blasted and wind-swept dry savannah, sometimes across stretches of land absolutely bare of any vegetation whatever; at others through lanes amidst dense masses of candelabra cacti and mimosas, draped with the weird, filmy, grey masses of Spanish moss.

From Salinas to Barahona I completed a journey through what had been a most certainly interesting and little-known region, yet full of historical memories and physico-geographical problems not lightly solved.

From Barahona to Santo Domingo, partly by land and partly by sea, my travels terminated, with the exception of a few days' exploration of the gold regions to the north-west of the capital, which, considerably to my astonishment, I found to possess much of the characteristics of the best-known gold regions of Brazil with which I am familiar.

Before concluding, I must mention that there is no detailed English chart of the interesting southern coast of Santo Domingo.

Besides Barahona there is another very fine harbour of refuge, the easily-accessible but land-locked Port of Salinas, where the vessels of Columbus sought refuge in a gale, and which to this day has not been surveyed. As a natural port and harbour it is perfect, with deep water alongside the shores.





Map

BETWEEN
& LAGUNA FONDA









THE
SANTO DOMINGO

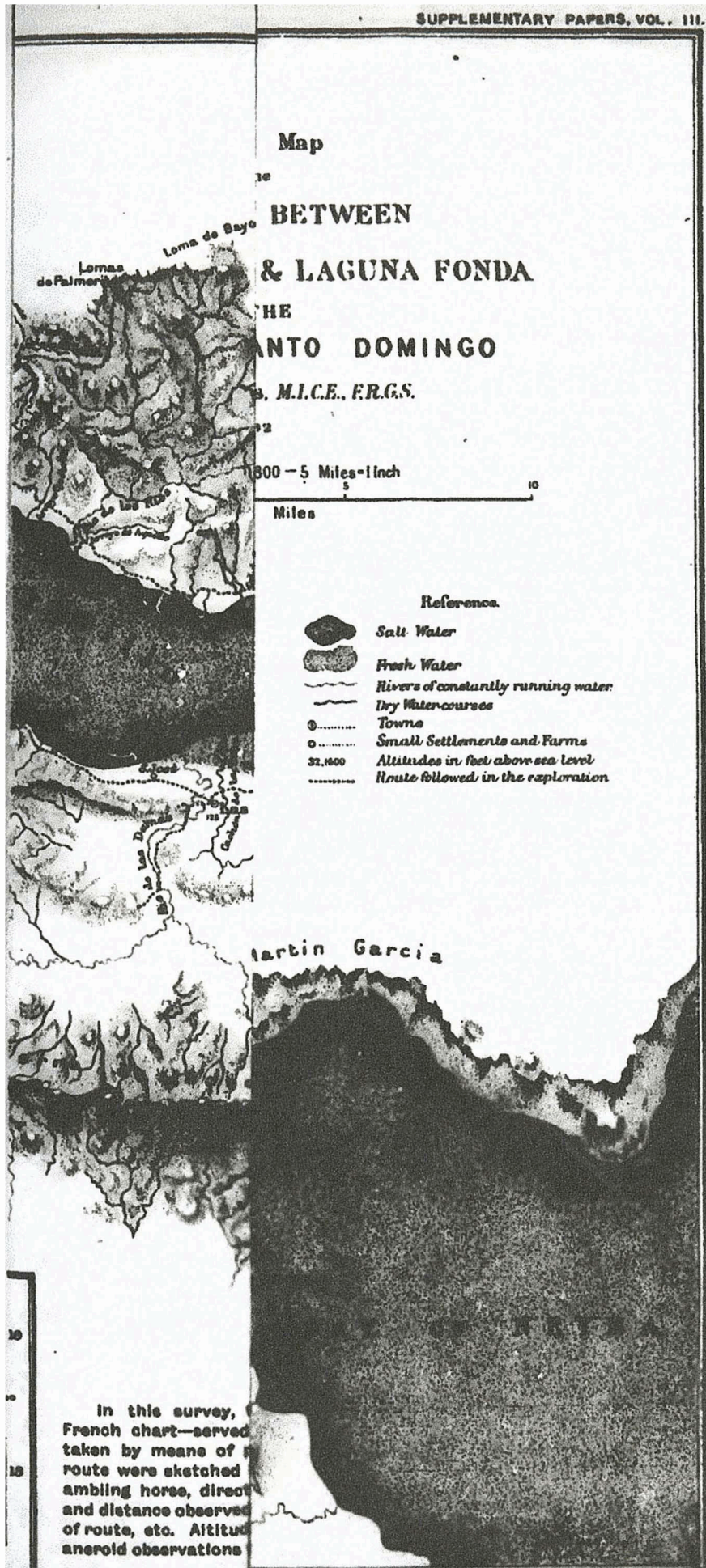
J. M.I.C.E., F.R.G.S.

1800 - 5 Miles = 1 Inch

Miles

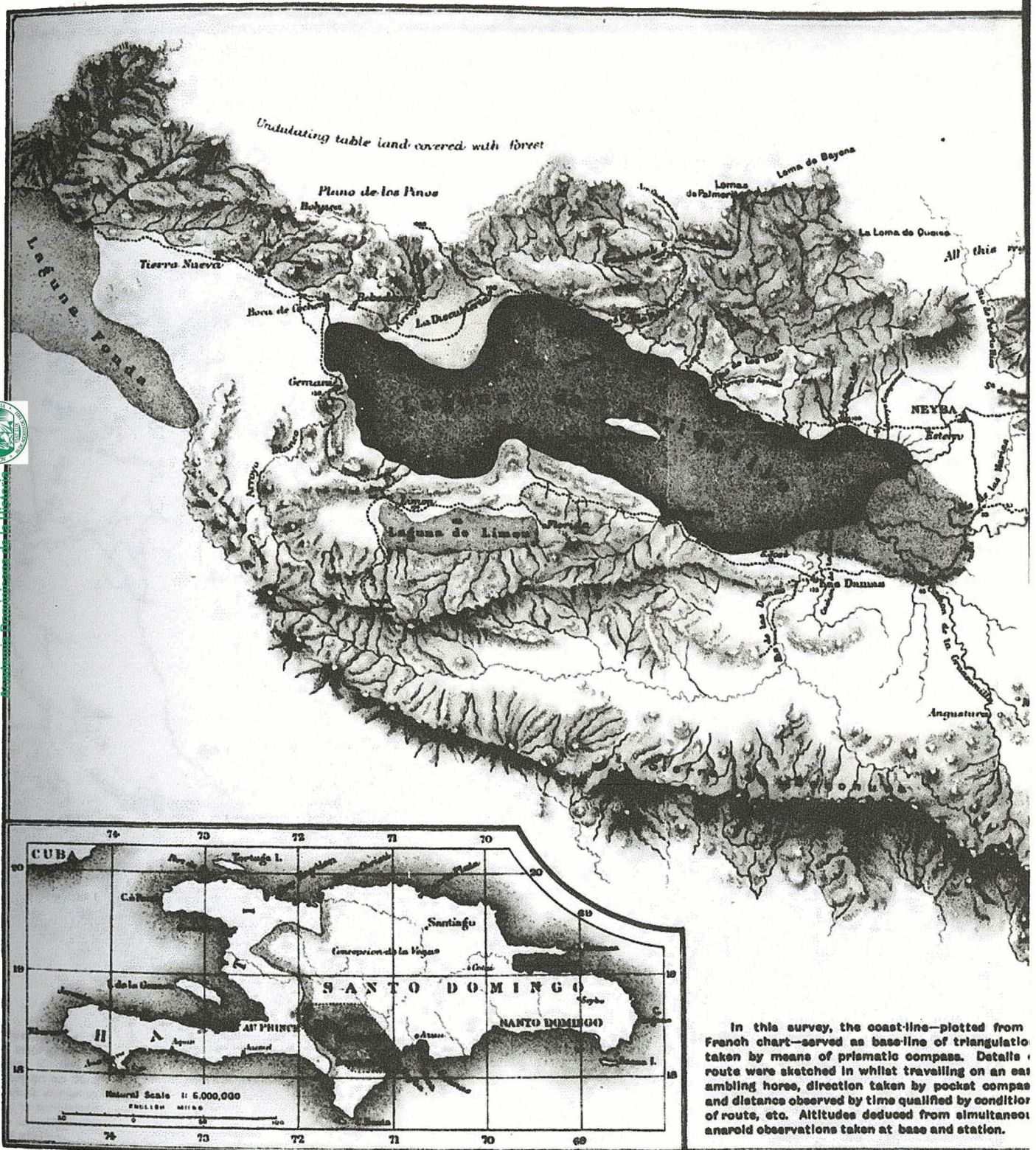
Reference.

-  Salt Water
-  Fresh Water
-  Rivers of constantly running water
-  Dry Watercourses
-  Towns
-  Small Settlements and Farms
-  Altitudes in feet above sea level
-  Route followed in the exploration



In this survey, French chart—served taken by means of route were sketched ambling horse, direct and distance observed of route, etc. Altitude aneroid observations





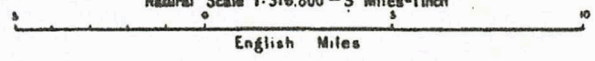
In this survey, the coast-line—plotted from French chart—served as base-line of triangulation taken by means of prismatic compass. Details of route were sketched in whilst travelling on an assembling horse, direction taken by pocket compass and distance observed by time qualified by condition of route, etc. Altitudes deduced from simultaneous aneroid observations taken at base and station.

Sketch Map
of the
COUNTRY BETWEEN
THE BAY OF NEYBA & LAGUNA FONDA
IN THE
REPUBLIC OF SANTO DOMINGO

by James W. Wells, M.I.C.E., F.R.G.S.

1892

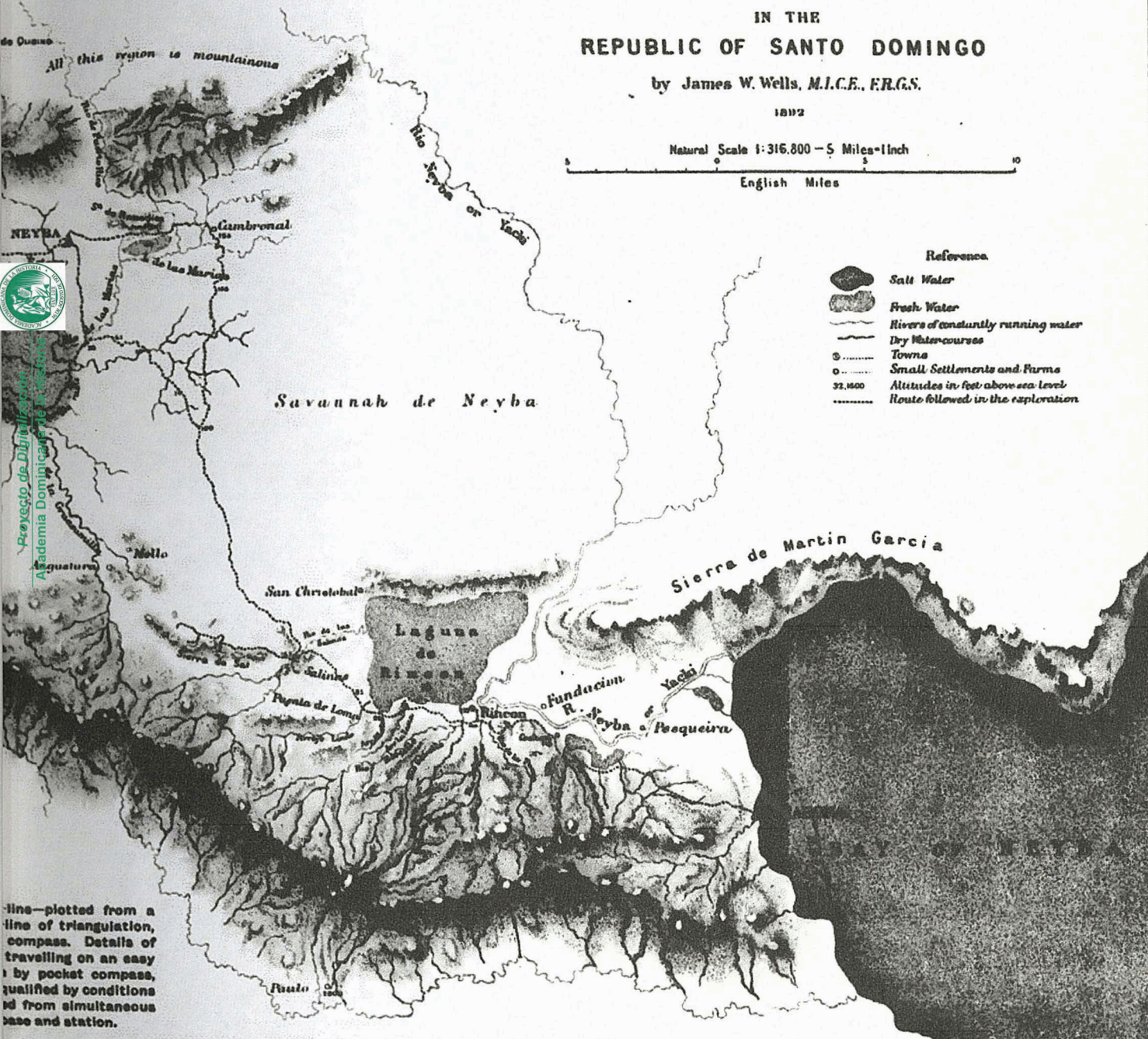
Natural Scale 1:316,800 — 5 Miles-Inch



English Miles

Reference

- Salt Water
- Fresh Water
- Rivers of constantly running water
- Dry Water-courses
- Towns
- Small Settlements and Farms
- Altitudes in feet above sea level
- Route followed in the exploration



All this region is mountainous

Proyecto de Dificultad
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lines—plotted from a line of triangulation, compass. Details of travelling on an easy by pocket compass, qualified by conditions from simultaneous base and station.







Proyecto de Digitalización
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