

## NOTES OF TRAVEL IN PORTO RICO.

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By its configuration, Porto Rico is divided into two parts very distinct from each other in almost every respect and of primary importance in all the affairs of the island. The north side, which comprises about two-thirds of the total area, is kept constantly wet with almost daily rains. On the south it has been known not to rain for a whole year in some places. On the north side grows an abundance of luxuriant, tropical vegetation; on the south in many localities are barren hills covered only with scrub brush. But throughout the island there is great local variation in all the climatic and physical conditions.

Along most of the north side there stretches a low, coast plain, out of which rise numberless, small, steep hills. This plain, everywhere well watered, is in most places very fertile, but in the vicinity of Vega Baja it becomes a sandy waste. This sand desert is one of the most peculiar places it has ever been my fortune to visit. There is no grass (turf-making grass is almost unknown in the tropics), neither are there large trees. Everywhere are low bushes not much more than ten feet tall. The sand beneath them is bare in many places, but is covered in others with various forms of herbage, most of which, instead of being composed of desert forms, as would be expected, is made up of the most typical water-loving plants, among which, *Sphagnum* (two species) and *Utricularia* are noteworthy. Imagine, if you can, a sphagnum bog shading into loose sand in a distance of only ten feet with no change in level. The explanation of this peculiar fact is, however, not hard to find. The rainfall is so copious that wherever there is any means of holding it, the hydrophytes take hold and spread, themselves acting as water holders when once started, while in other places the water quickly soaks into the sand and leaves it as dry as ever.

The plain on which this sand desert is located is separated in most places from the sea by low hills. It is very level and was probably once covered with water out of which projected many rocky islands—the limestone hills of to-day. These hills are a very characteristic feature of the country. From an incoming vessel they are plainly seen projecting like saw teeth all along the coast; from an eminence back in the country they appear to have no system or regularity whatever, but stick up anywhere sharp and rugged as though shaken out of a dice box onto a board. Further inland they are closer together with no plain between, though in other respects like those of the coast. It is as though they were eroded when the sea stood lower than it does to-day, perhaps very much lower; then the valleys were

filled up during a period when the sea was slightly higher than at present, whence it has receded and left the island of to-day. They are covered with a characteristic jungle, rising conspicuously out of which is the "Llume" palm (*Aeria attenuata*) whose graceful stem, only about half a foot thick at the base, attains a height of a hundred feet, tapering till it is only three or four inches thick at the top. It is nearly white and at a distance entirely invisible, so that the crown of leaves looks as though it were floating around in the air above the surrounding vegetation.

Further inland the limestone hills give way to others of red clay. The clay, like the limestone, is very deeply eroded. In most places it is so continually washed down that the sides of the hills stand always at the critical angle and are ready to slide from under the feet of the explorer. Indeed it would be impossible to climb them were it not for the numerous bushes everywhere standing ready to lay hold on. Here abound ferns, Melastomaceae and other plants of humid regions. Tree ferns are very common; the largest belong to one species of *Cyathia*. Its beauty is simply beyond description. Imagine, you who have never seen it, a trunk thirty feet tall surmounted by a crown of a dozen or fifteen great leaves made up of a score or two pinnae of the size and grace of ordinary ferns and you have the components—not the ensemble—of the tree fern.

This red clay region is the land of coffee. Everywhere the novice thinks the hillside covered with jungle, which turns out to be only poorly kept coffee plantations. The coffee region is coextensive with the range of several plants. Two or three species of the pepper family, with large peltate or round leaves, are found only here; and with one or two exceptions the Melastomaceae occur only in this wet country. They are a very large group of plants common throughout the tropics, but represented in the northern states by the common *Rhexia*. Its members may be known anywhere by their three-nerved leaves, many of which are beautifully patterned and marked so that even among other tropical plants they are conspicuous for their beauty.

When we cross the summit we come upon a different sort of vegetation; cacti take the place of tree ferns, and instead of wet jungles we have dry scrub brush full of spiny and thorny shrubs with almost every sort of prickle one can think of. One who has never encountered them can scarcely appreciate the abundance and effectiveness of tropical thorns. These thickets of brush extend over most of the undisturbed portion of the south side. Everywhere through them there are scattered cacti of several sorts; but near Guayanilla, a few miles west of Ponce, these become relatively much more numerous so as to form a veritable cactus desert. Only here is the largest form present. It is a large *Opuntia* with a bare stem and long arms radiating in one

or two whorls near the top. Besides it there are several species of *Cereus* and another small *Opuntia* similar to the common prickly pear, together with a species of the same group cultivated for its fleshy branches which are eaten. All through this dry region agaves or century plants are very common. There seem to be several species, but they are such terrors to botanists that it is hard to tell anything about them.

From this brief sketch it will be seen what a diversified flora Porto Rico offers to the student. There are opportunities for several ecological studies of surpassing interest, and on the systematic side the work has only been begun. At present there are scant facilities for the student, but with the fuller occupation of the island by American government and customs, we may hope that some of our enterprising universities will establish there a school of tropical agriculture and botany, fields now white for the harvest but almost without workers.

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