

NOTE ON THE GEOLOGY OF THE ISLE OF PINES, CUBA

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It was the good fortune of the writer to be one of a party constituting an expedition of the Carnegie Museum to the Isle of Pines during the month of May, 1910. While primarily busily engaged in collecting and studying the flora of the island, the writer incidentally noted certain geologic features of the island some of which are erroneously reported in our present literature.

The Isle of Pines is situated about 65 miles south and a little west of Batabano, a small seaport on the south coast of Cuba almost directly south of Havana. The area of the island is approximately 1,200 square miles and it is divided by an east-west swamp into an irregularly oblong northern portion measuring about 30 miles east and west and a narrow southern portion about 40 miles long, east and west, with its western end tapering out and upcurving toward the northwest for a considerable distance beyond the remainder of the island. The general features of the northeastern and central portions of the island are well described by Hayes,¹ who notes that the island "consists essentially of a level plain above which rise numerous isolated ridges. The plain itself consists of three distinct elements: (1) a low coastal fringe, (2) elevated terraces, (3) interior plain."

The writer can add little to Hayes's description of the portion of the island covered by the latter; but the lower valley of the Río de las Nuevas was explored to its mouth in the extreme northwestern point of the island, and it may be added that here the shallow sea is being rapidly reclaimed through the agencies of the mangroves and the alluvial materials washed down by the river. This river is the largest one in the island and for several miles back from its

¹ "Report on a Geological Reconnaissance of Cuba, Made under the Direction of General Leonard Wood, Military Governor, by C. Willard Hayes, T. Wayland Vaughan, and Arthur C. Spencer, Geologists, 1901," *Annual Report of Brig.-Gen. L. Wood, Military Governor of Cuba, 1901*. Vol. I.

mouth the whole surrounding region can be seen to have been rescued from the sea by the united efforts of the river and the mangrove.

The twenty-mile trip from Nueva Gerona to Los Indios, on the western coast of the island, was made by automobile, going south from McKinley across the level and fairly fertile plain constituting the upper drainage basin of the Río de las Nuevas. The ridge forming the divide between this river and the rivers draining toward Los Indios was found to have rather easy slopes, with but little rock exposed, this rock being a quartz-mica schist. Toward Los Indios we soon dropped to a slightly elevated level plain whose surface in places consisted of considerable areas of glistening white angular quartz pebbles and was almost bare of vegetation. As noted by Hayes, there is considerable iron lying about in places, evidently left after the erosion of the soft schist. Much of this surface iron was noted in a trip made from Los Indios to the highest point of La Cañada range about 6 miles west of the town.

The Sierra de la Cañada was supposed by Hayes¹, judging from its topography viewed from a distance, to be of the Gerona Marble; but the ridge is made up of quartz-mica schists, distinctly banded, with a general northeast dip. The southwestern exposure is quite steep and precipitous and probably owes this character to wave-cutting during a past period when the land stood at a different level, as is so clearly shown around the bases of the marble mountains in the northeastern part of the island. The top of the ridge was found to attain a height of 985 feet, by barometer, and access was fairly easy by following up the ravines and along the rather gentle slopes of minor ridges. The whole ridge is covered by a sparse pine and star-palm vegetation wherever the plants can get a foothold. At the base of the steeper side of the ridge is a well-developed talus slope, and from this stretches away immediately the quite level sandy or gravelly plain, pine-covered clear to the coastal fringe. Willis, in his "Index"² has unfortunately accepted the erroneous supposition as to the character of the Sierra de la Cañada.

¹ *Op. cit.*, p. 114.

² Bailey Willis, "Index to the Stratigraphy of North America," *Professional Paper 71, U.S. Geol. Surv.*, 1912, p. 349.

From Sigüanea City the writer, in company with Col. T. J. Keenan and Dr. T. D. Atkinson, made the trip across Sigüanea Bay to the peninsula extending out from the southwestern corner of the island. Here the bottom of the bay shallows very gradually out to the low shore and apparently the same general rise continues clear across to the "south coast," a distance of three miles or more. The surface of this part of the peninsula consists of a hard "coral" limestone in the little pockets of which a rich humus soil has collected and which thus supports a rich, broad-leaved vegetation. On the "south coast," at Caleta Grande, the sea was beating against a very rough and jagged coast with a cliff which in many places reaches a height of 80 or 90 feet. A narrow shelf projects out into the sea at a slight depth, bearing numerous projecting jagged rocks, and from this shelf the sea deepens very rapidly to the south. The surface of the coral limestone of this peninsula appears to have about the same general northeast dip as was seen in the Sierra de la Cañada.