

the clays and soils, and in connection with the internal heat and moisture and external atmospheric conditions, form the basis of all organic life, including man, Mr. Smith's list and arrangement may be desirable to those who take a broad view and are seeking a solution of the great problems of life. His list and arrangement follows :

A—Eruptive Rocks.

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|----------------|--------------|
| 1. Diorite.    | 3. Rhyolite. |
| 2. Porphyrite. | 4. Andesite. |

B—Tuff and Diatomaceous Earth.

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|----------|-----------|
| 1. Tuff. | 2. Shale. |
|----------|-----------|

C—Sedimentary Deposits.

D—Breccia.

E—Basement Series.

- |                |                        |
|----------------|------------------------|
| 1. Quartzite.  | 4. Talc Shists.        |
| 2. Actinolite. | 5. Garnet Amphibolite. |
| 3. Serpentine. |                        |

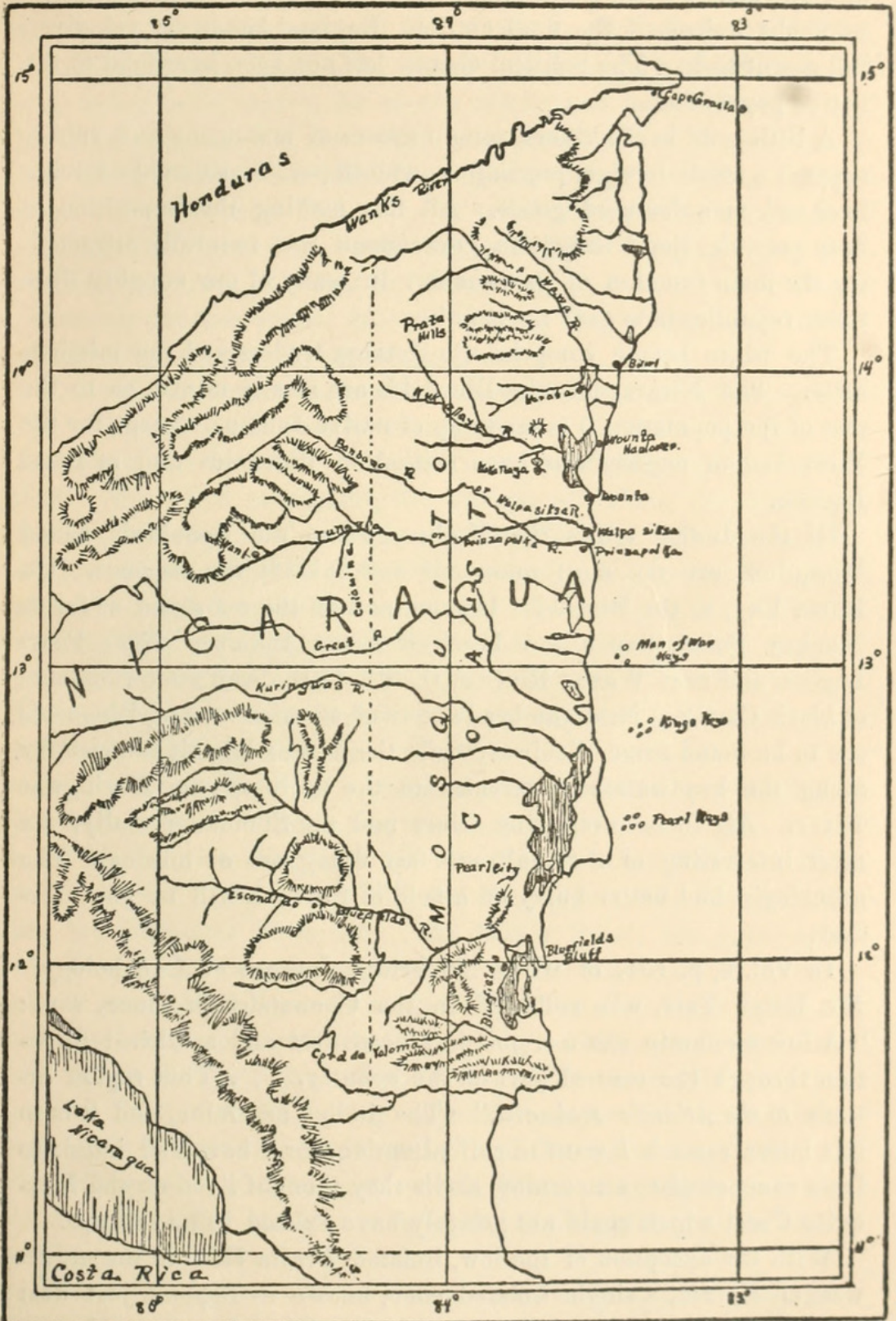
(*To be Continued.*)

#### SHELL-COLLECTING ON THE MOSQUITO COAST OF NICARAGUA.

That part of the Central American coast stretching from the Caribbean Sea inland for about 40 or 50 miles and from the Wawa River and Sisin Creek on the north to the Rama River on the south has, until very recently, been known as the Mosquito Coast. In former times it was one of the regular haunts of those historic gentlemen whose lives have given us some thrilling tales of the old Spanish Main, and who had so much regard for the things of others that they soon became their own. The well-primed flint-lock and the handy machette were sometimes brought into play and made said transfers of property more expeditious.

Bluefields, the metropolis of the Mosquito Coast, with its cosmopolitan, variegated population and babel of tongues, owes its name to Blauveldt, one of those old sea-dogs. From 1655 to 1850 this land enjoyed autonomy under Great Britain, being ruled by native kings. But in 1850 under the terms of the Clayton-Bulwer treaty and of the treaty of Managua of 1860 the suzerainty was transferred to Nicaragua. The Indians enjoyed practical independence under their native king until 1895, when Nicaragua troops took actual possession







and the last vestige of native rule disappeared. The United States no doubt welcomed the final act, but England has never yet given full assent to it. The political change has not been beneficial to the native population.

A little gold in the rivers, some exports of mahogany and rubber support a small foreign population, who import considerable foreign food and manufactured goods. All this making the imposition of duty possible, the Nicaraguan government was naturally attracted, for the main function of government in many of our naughty little sister republics is to grab the pennies.

The white people comprise the foreign traders and the missionaries. The Nicaraguans in Bluefields are mostly mixed; as to the rest of the population it is made up of native Indians, except for the West Indian negroes who have settled in Bluefields and at Pearl Lagoon.

Of the Indian tribes the Moskos, whom the Spaniards called Mosquitos, are the most numerous and inhabit the seacoast. On Rama Key, in the Bluefields Lagoon, and on the mainland as far as Monkey Point, live a few hundred Rama Indians. Near Pearl Lagoon and near Wauks River or the Rio Coco dwell some remnants of black Caribs. Near the headwaters of streams west of Bluefields are to be found some Woolwas, while the Sumus inhabit the country along the headwaters of streams to the north of the Kuringwas River. All these interesting tribes and the Sumus especially, the most interesting of them all, are fast dying out or mixing. The ethnologist had better hurry or a field of research will be gone forever.

In Vol. 5, p. 151, of "The American Journal of Conchology," Mr. Ralph Tate, who collected in the Chonatales province, says: "A low mountain chain trends in a northwest and southeast direction through the central part of the country. . . . This region *extends to the Atlantic seaboard.*" The italics are mine, and it is to this latter remark I want to call attention, for I have had inquiries from conchologists concerning shells they thought lived on the Mosquito Coast which could not possibly have existed in its swamps.

With the exception of the low, isolated Pratta Hills to the northwest of Karata, a single isolated cone, known as Lappan, just west of Wounta Haulover; a solitary ridge near Pearl Lagoon, and some spurs of Cord. de Yoloma south of Bluefields, the entire Mosquito



Coast, together with much of the country beyond its limits, especially up the Kuringwas and the Avultara (Rio Grande) is low, swampy, savanna land. For twenty miles back from the sea, except in the rainy season, the rivers, creeks and lakes are salty. A glance at the map will show that the sea has invaded the land along the whole coast. The Indians say the coast is settling. Trees planted 80 years ago, high and dry and back from the sea, were at the high-tide line, being washed away in 1903. Lagoons once separated by a strip of forest or connected by a very narrow *tingui* (channel) are now united as one. Banks that once sloped to the water's edge are now being submerged.

Dense forest covers the country along all the streams and lagoons. Near the sea is the ubiquitous mangrove. Between the rivers are large savannas on which roam the cattle of the Indians, as well as deer. With few exceptions, the villages are along the rivers and lagoons, and consist of wattled and thatched huts. The entire population cannot exceed 15,000. The country is a paradise for naturalists, although I never met any there. It *abounds* in insects, birds, fish and interesting quadrupeds, such as tapirs, peccary, jaguars, pumas and ocelots, besides lizards, alligators, turtles and manatees. I also observed at least three kinds of monkeys. Last, and of course not least, there are molluscs.

Along the seashore the country is sandy, and one is reminded of the Jersey beach. There are, however, three isolated spots on the coast which form exceptions. At the entrance to the harbor at Bluefields there is a strong "Bluff" standing high above the surrounding low stretches of country. At Walfa Siksa, the meaning of which is black stone, are to be found on the north side of the river mouth some black igneous rocks. They are also found under the river bed and crop out back of the village, which stands back from the sea, on the south bank of the river. This outcrop forms quite a conical knoll of rocks, having remarkable, square-like cavity structures. It is hidden in the "bush," and few white men know that the hill exists. To the north of the Wawa river there are some high banks of clay and stones along the sea, and the place is known as Bragman's Bluff.

The sand of the sea-beach extends back only a short distance—from a few feet to a few hundred yards, where clay and igneous-looking earth takes its place. Back twenty or thirty miles the river



banks get high enough to prevent overflow, and then the country begins to be stony. Rapids and falls are found on nearly all the rivers along the western border of the old reserve, and doubtless indicate an ancient seacoast.

From the shore line seaward there extends a very gradually sloping continental shelf, making shallow water and calm seas.

From three to forty miles out there are keys of various sizes, the largest being (Great) Corn Island. Some are treeless, while others are covered with mangroves and cocoanut palms.

From 1899 to 1903 it was my privilege to live at Wounta Haulover, a little Indian village of wattled and thatched huts. Being the only white man within twenty miles in any direction, loneliness sometimes drove me out into the forest, along the rivers or down by the sea—to collect shells. Although my time was fully occupied with professional duties, I succeeded in getting together a nice cabinet of specimens. In another paper I shall name them and append some notes.

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#### NOTES.

CYPRÆA XANTHODON GRAY.—Dr. T. H. May, Government Health and Medical Officer of the Port of Bundaberg, Queensland, Australia, has sent me three beautiful specimens of *Cypræa xanthodon* Gray, which he says his children picked up last Christmas when at his seaside cottage. The shells were alive when taken and were found under rocks at low water. This species has been supposed to have a deep-water habitat.—S. RAYMOND ROBERTS.

WHOLESALE PEARL FISHING.—A great pearl fishery will take place at Marichchikkaddi, in the Island of Ceylon, on or about February 20, 1905. The banks to be fished are the southwest Cheval Paar, which is estimated to contain 3,500,000 oysters, sufficient to employ 200 boats for two days; the mid-east Cheval Paar, estimated to contain 13,750,000 oysters, sufficient to employ 200 boats for seven days; the north and south Moderagam, with 25,700,000 oysters, sufficient to employ 200 boats for thirteen days; the south Cheval Paar, estimated to contain 40,220,000 oysters, sufficient to employ 200 boats for twenty days, each boat being fully manned with divers.—*London Globe*.



Fluck, W H. 1905. "Shell-collecting on the Mosquito Coast of Nicaragua." *The Nautilus* 19, 8-12.

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