

indicate submergence. The slope from the outer edge of the platform is very steep. A depth of 2,130 fathoms (3,895 meters) is recorded 12 kilometers southeast of the southeast end of Ile à Vache.

From Aquin Bay eastward to Côtes-de-Fer the sublittoral platforms decrease in width. The outline of the 20-fathom line is more irregular than the shore line. East of Côtes-de-Fer the platform is narrow, and its outer edge closely parallels the shore line. At Bainet Bay the 20-fathom line is deeply indented parallel to the indentation of the shore line.

GONAVE ISLAND.

GENERAL RELATIONS.

Gonave Island is the largest outlying island embraced by the Republic of Haiti. It has a length of 57 kilometers and a maximum width of 15 kilometers. The axis of the island extends from northwest to southeast, almost paralleling the shore and the structural features of the mainland from Cap St.-Marc southeastward to the Cul-de-Sac Plain. The average width of the channel on the northeast side of the island, St.-Marc Canal, is 20 kilometers. The width of Gonave Canal, on the south side, increases from 27 kilometers at the southeast end of the island to 44 kilometers at the northwest end.

LAND FEATURES.

Structurally the island is an asymmetric anticline, the crest of which plunges both northwestward and southeastward. Some of the most striking surface features are due to the solution of limestone, which is the only surface rock on the island. The island may be divided into two almost equal parts, having different kinds of surface features. The southeast half is more rugged and has a greater variety of surface features than the northwest half.

SOUTHEAST HALF.

The southeast half of the island contains a ridge along the south coast, an interior dissected plateau at an altitude of 300 to 500 meters above sea level, and a dissected plateau along the north coast extending from sea level to an altitude of 300 to 400 meters above sea level.

RIDGE ALONG SOUTH COAST.

A high ridge near the south coast, extending from the longitude of Picmi to a locality northwest of Pointe à Raquette, is the most conspicuous surface feature of the southeastern half of the island. This ridge coincides with the crest of the Gonave Island anticline. The eastern part of the ridge is narrower than the western part. Along its entire length the crest is flat and several hundred meters wide. The central part of the ridge is more eroded than the extremities. The highest knobs on the crest of the

ridge are Morne Chien Content at the east end and Morne la Pierre at the west end, both of which have an altitude of about 755 meters above sea level and rise about 100 meters above the lowest part of the crest of the ridge. The south slope of the ridge is steeper than the north slope, corresponding to the steeper south limb of the anticline, and is scarred by cliffs. The south slope extends down to the shore line, but the north slope is bounded by the dissected plateau described on page 420.

Southeast of Morne Chien Content the ridge is interrupted by a broad saddle called Fond-l'Aurore, which extends from Picmi northeastward across the island toward Trou à l'Eau. Southeast of the saddle the ridge is much lower but apparently is composed of the same rocks. The region that includes the highest part of the ridge southeast of the saddle is called Fond-Plaisir, and the highest knob in this region has an altitude of about 460 meters above sea level.

MAPOUX PLAIN.

The Mapoux Plain is a remarkable inclosed depression on the north slope of the ridge northeast of Morne la Pierre. It is about 5 kilometers long and about 1 kilometer wide, and it trends N. 70° W. It is completely encircled by ridges of limestone. The main trails enter the plain at the east and west ends, where the limestone wall is lowest. Plate XXXII, *B*, shows part of the ridge along the north side of the plain. The crest of this ridge is very jagged, and its slope is scarred by cliffs. The crest of the ridge on the south side, although higher than the ridge on the north, is more even, and its slope into the plain is more gentle and uniform.

The features of the ridges encircling the plain indicate that the depression owes its origin to the enlargement of solution channels down the dip along bedding planes and the subsequent deepening of the channels by the solution of underlying beds. The smooth, relatively gentle northward slope of the ridge on the south side of the plain corresponds to the northward dip of the rocks. The jagged southward slope of the ridge on the north side is due to the undermining of overhanging ledges of limestone. The open-textured limestone in which the plain has been etched overlies more impervious chalky limestone, which controls the floor of the depression, although in the plain itself the chalky limestone is concealed by residual clay and soil. Continued widening of the plain by undermining of the ridge on the north side is indicated by the blocks of limestone that have tumbled down from overhanging ledges and are strewn along the foot of the ridge. If the open-textured Eocene limestone in which the plain is etched has been exposed to weathering since its emergence at the end of Eocene time it seems reasonable to believe that most of it would have been removed and that the underlying less pervious chalky limestone would now be the surface rock in this part of the island. It is inferred that the open-textured limestone was long protected by a cover of Miocene lime-

stone that has been entirely removed. Depressions similar to the Mapoux Plain are striking features of the limestone plateau of the island of Jamaica.¹

INTERIOR DISSECTED PLATEAU.

A strongly dissected plateau that has an altitude of 300 to 500 meters above sea level extends along the north side and west end of the high ridge that parallels the south coast. The area of this plateau approximately coincides with the outcrop of chalky limestone of Eocene age, which underlies the open-textured limestone that forms the ridge along the south coast. On the north side of the ridge the plateau slopes northward, and if its surface were restored the slope would closely correspond to the northward dip of the rocks. At the west end of the plateau the surface slopes northwestward along the plunging crest and more steeply southward along the steep south limb of the anticline. On the north side of the coastal ridge the plateau is deeply dissected by ravines that extend back to the coastal ridge. The interstream areas are wide and rolling.

The trail from Grande Ravine to Fond-Nègre crosses the western part of this plateau. Near its west end small isolated outliers of limestone rise abruptly from the surface. Some of these outliers are strikingly similar to ruined walls. They are remnants of a formerly more extensive cover of Miocene limestone, most of which has been removed, principally by solution. Similar isolated patches of limestone are characteristic features of the limestone plateau of Jamaica² and of the plain along the north coast of Porto Rico, where they are called haystack or pepino hills.³

DISSECTED PLATEAU ALONG NORTH COAST.

A dissected plateau extends back from the north coast to an altitude of 300 to 400 meters above sea level. The surface of this plateau approximately coincides with the outcrop of Miocene limestone. The inland part of the plateau slopes seaward at a rate that corresponds to the seaward dip of the rocks, but near the coast the slope is more abrupt. The plateau is dissected by ravines that head back in the higher interior plateau or in the ridge along the south coast. On this plateau outcrops of bedrock are much more common than on the interior plateau.

Fond-l'Aurore, the broad saddle extending across the island northeast of Picmi, is part of this plateau. The crest of the saddle has an altitude of about 340 meters above sea level. East of Fond-l'Aurore the plateau surface is hardly recognizable on account of the steep seaward slope.

¹ Hill, R. T., *The geology and physical geography of Jamaica*: Mus. Comp. Zool. Harvard College Bull., vol. 34, pp. 28-30, 1899.

² Hill, R. T., *op. cit.*, pp. 25-26.

³ Berkey, C. P., *Geological reconnaissance of Porto Rico*: New York Acad. Sci. Ann., vol. 26, pp. 51-53, 1915.

NORTHWEST HALF.

The northwest half of the island comprises only the northwestward extension of the plateau along the north coast of the southeast half. This plateau widens in the northwest half and embraces the entire width of the island except a narrow strip of mud flats along the coasts. Limestone of Miocene age is the surface rock in the entire northwest half of the island, as in the coastal plateau of the southeast half, and the surface features of the two regions are similar. The drainage channels are poorly defined, and the relief is largely the result of solution of the limestone.

The eastern part is low and has little relief, but the western part is more rugged. In the eastern part of the region called Grande Vide there are low, irregularly trending ridges that have a maximum altitude of about 300 meters above sea level. In the western part of Grande Vide the surface of the plateau has an altitude of 310 meters above sea level. A low rounded knob, the highest point in this part of the island, attains an altitude of 320 meters above sea level. Between Grande Vide and the northwest end of the island the plateau surface is lower, but along the coast at the northwest end a low ridge rises above the plateau.

DRAINAGE.

There are no through-flowing streams on the entire island. The small flows of water that seep out in the deep ravine northeast of Picmi and in the ravine southwest of Anse-à-Galet rapidly disappear.

In the southeast half of the island the main divide is at most places the crest of the high ridge along the south coast. Relatively long northward-draining ravines head in this ridge and extend across the interior plateau and the coastal plateau to the sea. The shorter southward-draining ravines have a much steeper gradient. East of Morne Chien Content one of the southward-draining ravines has pierced the crest of the ridge and captured part of the drainage on the north slope. The deep ravine northwest of Picmi heads in the saddle called Fond-l'Aurore, where the divide swings far northward.

SHORE FEATURES.

At the northwest end of the island high cliffs truncate the ridge along the coast. Along the north and south coasts of the northwest half the limestone plateau is bordered by mud flats, which at many localities embrace mangrove thickets. The mud flats continue along the north coast of the island as far as a locality between Etroit and Anse-à-Galets, where the limestone plateau extends down to the shore. Near Anse-à-Galets there is a similar mud flat. The mud flats apparently are the result of the filling in of inlets behind offshore bars, and the lagoons on the north coast, such as Grande Lagune and Chérissable Lagune, are isolated remnants of inlets. Plate VI, *C* (p. 64) is a view of Chérissable Lagune

showing the mud flat on the landward side and the mangrove thicket on the seaward side.

West of Picmi the steep slope of the coastal ridge is truncated by sea cliffs. Near Picmi there is a mud flat similar to the flats on the north and south coasts farther west.

Along the south shore of the east end of the island promontories truncated by sea cliffs are separated by shallow indentations that have bay-head beaches. The peninsula at the southeast extremity of the island may be an island tied to the main island. This interpretation would account for Grande Baie and Baie du Parc and the inclosed body of water in the isthmus that joins the peninsula to the main island. This part of the island was seen only from a distance.

SUBLITTORAL FEATURES.

A narrow sublittoral platform encircles the island. The platform is slightly wider along the south coast than along the north coast. At its southeast end it widens and forms the apex of the extensive V-shaped platform enclosing the depression in the seaward prolongation of the Cul-de-Sac Plain, described on pages 397-398.

An inspection of the chart would suggest recent emergence of the island, for in other parts of the Republic such narrow and shallow sublittoral platforms are associated with shore lines of emergence. The littoral features, however, indicate that the shore line has stood still for a relatively long time. The platform probably was not very wide at any time. As the island lies in the deep gulf between the Northwest and the Southern Peninsula it is protected from the waves of the open ocean, and the effectiveness of wave attack is thus reduced. On the north coast west of Anse-à-Galets and on the south coast west of La Mahoterie the platform was probably once wider than it is now, its width having been reduced by filling behind offshore bars, as outlined on page 421. The small islands on the outer edge of the platform east of Etroit on the north coast probably are offshore bars covered with mangrove thickets and represent an early stage in the building of the mud flats and inclosed lagoons.