

## ARTIBONITE PLAIN AND VALLEY.

## NAME AND GENERAL FEATURES.

The name Artibonite Plain has been applied since early colonial days to the seaward flood plain and deltas of Rivière Artibonite and Rivière l'Estère, and to the contiguous flood plain of Rivière la Quinte, which is also known as the Gonaïves Plain. The name Artibonite Valley is here used for the part of the valley of the Artibonite above Petite-Rivière and its southeastward prolongation, the valley of Rivière Fer-à-Cheval. The plain and valley form a southeastward tapering wedge separating the Montagnes Noires from the Chaîne des Mateux and Montagnes du Trou d'Eau. Near the Dominican border the wedge tapers out, and the Montagnes Noires unite with the Montagnes du Trou d'Eau. Northwest of Mirebalais the valley trends N. 50° W., parallel to the inclosing mountains, but southeast of Mirebalais the trend of the valley and of the inclosing mountains changes to N. 70° W. The length of the plain and valley is about 120 kilometers, and the width decreases southeastward from a maximum of 30 kilometers near the sea.

## LAND FEATURES.

## ARTIBONITE PLAIN.

The Artibonite Plain as defined in the preceding paragraph has a maximum altitude above sea level of not more than about 50 meters. Virtually all the region is covered with Recent alluvium, which near the sea forms a true plain. (See Pl. VI, *B*, p. 64.) The surface deposits consist principally of fine silt, but near the mountains there are beds of gravel and boulders. A large part of the plain is periodically flooded during the rainy seasons. As the entire region is semiarid it is not dissected rapidly, and the great quantities of silt deposited when the rivers overflow diminish the surface irregularities. An extensive playa flat between Gonaïves and Dessalines, east of Morne Grammont, apparently has no surface outlet. (See Pl. XXV, *B*, p. 334.)

Several isolated hills and a conspicuous ridge, Morne Grammont, rise above the surface of the plain in the northeastern part near the Montagnes Noires. These surface features are more fully described on page 384.

## ARTIBONITE VALLEY.

A narrow flood plain, at few places more than 1 or 2 kilometers wide, extends along the river from Petite-Rivière southeastward to Mirebalais. Its surface gradually rises southeastward and at Mirebalais is about 100 meters above sea level. On the north side of the river, in the region between Petite-Rivière and La Chapelle, a belt of low, rounded hills and remnants of a smoothly sloping terrace plain separate the flood plain from

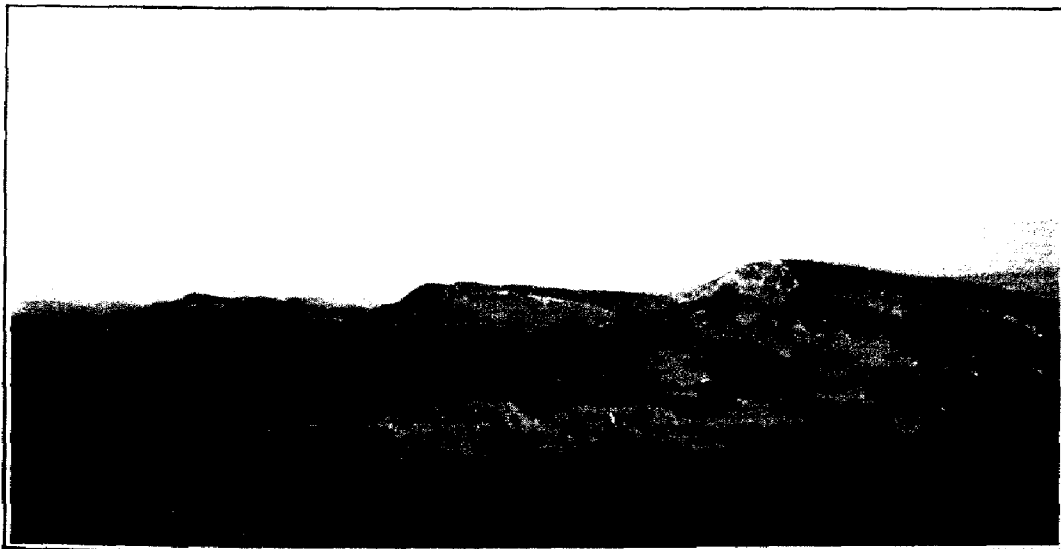
the flanks of the Montagnes Noires. These hills and the terrace plain are the dissected remnants of a former flood plain. Near Petite-Rivière this higher flood plain is strongly dissected and includes an area, several kilometers wide, of low hills that rise perhaps 50 meters above the present flood plain. Farther southeast, near Savane-à-Roche, the higher flood plain is a dissected terrace. The outer edge of this terrace is 20 or 30 meters higher than the present flood plain and its surface rises rather steeply toward the base of the near-by mountains. The terrace material consists of gravels, and the surface is in many places strewn with boulders and cobbles. Part of this terrace is a smoothly sloping grass-covered savanna. (See Pl. XXX, A.)

On the south side of the river a conspicuous ridge adjoining the present flood plain extends from Verrettes past La Chapelle toward Mirebalais. The ridge consists of resistant coralliferous limestone dipping northeastward on the north flank of a secondary anticline toward the trough of the main syncline. The ridge rises to an altitude of 100 to 150 meters above sea level. Its inner slope is a steep escarpment, but its outer slope is a long dip slope. A long, narrow lowland separates the ridge from the base of the mountains. The lowland contains a series of stream valleys carved in soft marl and sandstone, which underlie the coralliferous limestone. The many small streams that drain this lowland originate in the mountains to the southwest and many of them are deflected into courses parallel to the Artibonite by the ridge of coralliferous limestone. All of them ultimately break across the ridge in deep, narrow gaps and reach the Artibonite. The lowland and escarpment are shown in Plate XXX, B. Southeast of La Chapelle the lowland and ridge are interrupted by Morne Saut d'Eau, which extends northward from the Chaîne des Mateux.

Southeast of Morne Saut d'Eau the width of the Artibonite Valley increases to 20 kilometers. The flood plain of the Artibonite is very narrow and discontinuous, as the river swings against bluffs cut in clay and marl of Miocene age. The ridge of northeastward-dipping coralliferous limestone is not so conspicuous in this area as it is northwest of Morne Saut d'Eau, but it persists in the ridge southeast of Mirebalais on which Fort Anglais is situated. At the fort the altitude of the ridge is 190 meters above sea level, 60 meters higher than that of the town. The Miocene rocks between Mirebalais and the foot of the mountains to the south are intricately dissected. The divides are covered with gravels deposited along the tributaries of the Artibonite at a time when the flood plain of the Artibonite stood at a higher level. Near the mountains these gravels are at an altitude of 250 meters above sea level. The town of Mirebalais stands on a gravel-covered bench at an altitude of 130 meters above sea level, or about 30 meters higher than the present flood plain.



A. GRAVEL COVERED TERRACE IN THE ARTIBONITE VALLEY NEAR  
SAVANE-À ROCHE.



B. LOWLAND OF MIOCENE MARL AND RIDGE OF MIOCENE CORALLIFEROUS  
LIMESTONE NEAR LA CHAPELLE.

The lowland is floored with marl arched in an anticline. The overlying coralliferous limestone dips northeastward toward Rivière Artibonite on the northeast limb of the anticline.

The surface features on the north side of the Artibonite from Mirebalais to La Chapelle resemble those on the south side and are the result of the erosion of rocks of different hardness that are arched in a secondary anticline parallel to the main syncline. A high ridge on the crest of the anticline corresponds to Morne Saut d'Eau on the south side but apparently is completely isolated from the Montagnes Noires. This ridge is surrounded by a narrow lowland, at the outer edge of which the Miocene coralliferous limestone crops out in a low, narrow ridge that has a long dip slope facing outward from the lowland and a steep escarpment facing inward. Softer rocks underlie the lowland between the low ridge and the narrow flood plain of the Artibonite. These rocks are intricately dissected. The divides are covered with gravels, which reach an altitude of 240 meters above sea level near the foot of the mountains.

All the surface features of the Artibonite Valley continue southeastward from Mirebalais along the valley of Rivière Fer-à-Cheval, which is underlain by the same rocks and is structurally part of the same northwestward-plunging syncline. The flood plain of Rivière Fer-à-Cheval is very narrow and is flanked by low rolling hills covered with gravels deposited at the same time as the gravels in the Artibonite Valley. On the south side of the river, between Mirebalais and the mouth of Rivière Gascogne, the highest of these hills has an altitude of 290 meters above sea level, or 60 meters above the level, grass-covered savannas bordering the hills near the river. The Miocene rocks of the Artibonite Valley extend up Rivière Gascoyne, a tributary of Rivière Fer-à-Cheval, and underlie the intricately dissected spurs along the base of the mountains.

East of Poste de Flandé, where the road from Mirebalais to Las Cahobas turns northward through the gap in the Montagnes Noires, the valley of the Fer-à-Cheval abruptly narrows and is hemmed in by the Montagnes Noires and a range that separates the Fer-à-Cheval and Gascogne valleys. The rocks in this narrow valley are the same as those in the Artibonite Valley but are more strongly folded. They underlie the grass-covered spurs that lead up to the more densely wooded and more rugged limestone mountains. The west end of the range between the valleys of Rivière Fer-à-Cheval and Rivière Gascogne is composed entirely of these Miocene detrital rocks. Farther east older limestone crops out in the central part of the range. The difference in surface features between the detrital rocks and limestone is strikingly shown in this range. The detrital rocks are more intricately dissected, but the slopes on the limestone are steeper and are scarred by cliffs.

About 4 kilometers west of Savanette a northward-trending arch brings the older limestone to the surface and for a distance of almost 2 kilometers Rivière Fer-à-Cheval flows in a gorge cut in older limestone. About 3 kilometers west of Savanette the Miocene rocks again

appear and they underlie the narrow river valley. Immediately west of Savanette the river cuts through a narrow ridge consisting of Miocene rocks folded into a narrow, asymmetric anticline. (See Pl. XXVI, A, p. 336.) This ridge extends southeastward across the valley and then eastward along the south side of the valley for a distance of about a kilometer east of Savanette. The slope of the mountains into the narrow valley is remarkably steep, especially on the south side.

#### DRAINAGE.

Rivière Fer-à-Cheval and Rivière Artibonite below Mirebalais occupy the trough of a northwestward-plunging syncline. It seems that the drainage of the lower Artibonite was formerly limited to the drainage of this syncline. At that time the Central Plain drained southeastward toward the present Rio Yaque del Sur, and the volume of water in the system that comprised the Fer-à-Cheval and the Artibonite was much less than it is now. The gravels about 30 meters above the present flood plain were deposited at that time when the flood plain was much wider than it is today. The altitude of the gravels increases toward the mountains along the lateral streams. The trenching of this old flood plain is probably due to the greatly increased volume of water derived from the Central Plain through the Las Cahobas gap. (See pp. 381-382.) The valley of Rivière Fer-à-Cheval between Mirebalais and the Las Cahobas gap is much wider than the valley east of the gap and is the direct continuation of the Artibonite Valley below Mirebalais. These features of the Fer-à-Cheval valley support the conclusion that the Central Plain drainage formerly entered the Artibonite Valley through the Las Cahobas gap. The probable history of the second deflection of the Central Plain drainage to its present course across the Montagnes Noires is considered on page 382. Between the gorge and the mouth of Rivière Fer-à-Cheval the Artibonite is intrenched in the flood-plain deposits of the earlier Artibonite and its lateral streams.

The large number of streams that cut across the ridge of coralliferous limestone on the south side of Rivière Artibonite, between Verrettes and Morne Saut d'Eau, suggests that their course was determined during the time when the Artibonite flood plain was higher and when the valley was nearly leveled. The courses of these streams across the ridge that were uncovered during the renewed erosion were retained.

#### SHORE FEATURES.

The shore features of the Artibonite Plain are very uniform. Extensive mud flats, saline lagoons, and mangrove thickets extend from Gonaïves to the southern edge of the plain at Point Diable. The shore line is very irregular and is being continually modified by the deposition of sediments.

## SUBLITTORAL FEATURES.

A shallow platform that has a minimum width of 4 kilometers extends along the shore line of the Artibonite Plain. The 20-fathom line at the outer edge of the platform is indented off Gonaïves Bay, but the head of this indentation is 11 kilometers from the head of the bay. The outer edge of the platform extends almost due southward from the head of this indentation to Pointe Diable, and the platform gradually narrows southward.

## MONTAGNES DU TROU D'EAU.

## NAME AND EXTENT.

The mountains on the north side of the Cul-de-Sac Plain and Étang Saumâtre are here called the Montagnes du Trou d'Eau. The name is derived from Morne Trou d'Eau, a conspicuous peak northeast of Thomazeau.

The Montagnes du Trou d'Eau lie between the Artibonite Valley and the Cul-de-Sac Plain, but near the Dominican border they merge into the eastward extension of the Montagnes Noires, forming the Sierra de Neiba of the Dominican Republic. From the Dominican border the Montagnes du Trou d'Eau trend about N. 70° W., but as they approach the sea their trend changes to N. 50° W., and although the mountains are continuous this part of the range is known as the Chaîne des Mateux. The length of the Montagnes du Trou d'Eau is about 50 kilometers. Their maximum width at the eastern end is 18 kilometers, but along the road from Port-au-Prince to Mirebalais their width is 8 kilometers.

## SURFACE FEATURES.

## EASTERN PART.

From the Dominican border westward to Morne Trou d'Eau the surface rock is limestone. Basaltic volcanic rocks, which underlie the limestone, are exposed in some of the deep ravines on the north and south slopes of the mountains. Near Morne Trou d'Eau the mountains form a single range, the crest of which is close to the southern margin, overlooking the Cul-de-Sac Plain. Farther east the mountains are wider and are not clearly aligned in ranges.

Rounded spurs project from the mountains down to the edge of the plain, but the upper slopes are more rugged. Deep ravines gash the mountain front, but no through-flowing surface streams enter the plain from these mountains. Morne Trou d'Eau, which has an altitude of 1,385 meters above sea level as determined trigonometrically by the Service des Levés Topographiques, is the highest peak on the south side of the mountains. As seen from the plain its crest is rounded, but cliffy slopes lead down to a deep ravine, which severs it from the mountains