

is so commonly elsewhere, but has a gentle anticlinal arching. Over most of the island open textured and very porous limestone of Miocene age is the surface rock. Beneath this limestone lies similar limestone of Eocene age underlain by less porous chalky limestone, which forms a dissected plateau in the southeastern part of the island. Near the outer edge of this plateau the Miocene limestone rests directly on the chalky limestone. (See Fig. 8, p. 138.)

As might be expected from the geology, most of the drainage is underground and there are no through-flowing streams on the island. There are some springs in the southeastern part of the island, most of which issue at the contact of the porous Miocene or Eocene limestone with the less pervious chalky limestone. The largest is that in the ravine near Picmi. Another is in a ravine southwest of Anse-à-Galets. The water of both these springs disappears in the ravine beds a short distance from its source. The spring at Grande Source, southwest of Étroit, was not examined but is probably of the same type. There is said to be a spring at La Source, on the coast in the northwestern part of the island, but no details about it are known.

In the western part of the interior plateau, where chalky limestone crops out in ravines, water is obtained at several localities from shallow wells dug in the beds of ravines. Such wells were seen at Grande-Ravine, Fond Nègre, and Citadelle. Water could probably be obtained in this way along the ravines at any place where chalky limestone is exposed. Such wells should be guarded carefully from pollution. Small hand pumps would afford a very convenient means of raising water to the surface.

The northwestern part of the island is a plateau underlain by the porous Miocene limestone, and the only fresh water obtained in the interior is that which collects in holes in the bare rock surfaces during rains. This water is carefully stored for use in the dry seasons and is supplemented by brackish water carried for long distances from shallow wells along the coast. The water table in this region probably stands not far above sea level, and wells would have to be 150 to 300 meters deep to reach water. The expense of such wells would not be justified by any reason now apparent, as this region is thinly inhabited.

Wells are sometimes dug along the shore in the beach deposits or in the narrow belt of alluvium that fringes the limestone at some localities. It is said that water from some of these wells is brackish but is used for lack of better water. At some places along the shore there may be salty springs which might perhaps be improved by tapping them farther from the sea as has been suggested for Baie de Henne. (See p. 590.)

TORTUE ISLAND.

Little information was obtained about water on Tortue Island. Most of the island is underlain by porous Oligocene limestone in which underground drainage is developed, and water is therefore scarce. Beneath

the limestone lie metamorphic rocks, which are exposed in some of the valleys, particularly near La Vallée and along the coast. Springs issue along the contact of the limestone with the metamorphic rocks at the head of the valley north of La Vallée and give rise to a short stream. The largest spring seen is about 2 kilometers north-northwest of La Vallée at an altitude of 170 meters above level, where a concrete basin to impound the water was constructed by the company that proposed to exploit the forests of the island. Similar but smaller springs were seen farther east along the south coast, between La Vallée and Pointe des Oiseaux.

Moreau de St. Méry,¹ with his usual care, gives full descriptions of all the known sources of fresh water on the island. On the south coast there are spring-fed streams similar to those of La Vallée at Cayonne, about 2,000 meters west of Basse Terre and just west of Pointe des Oiseaux, as well as two smaller ones between Pointe des Oiseaux and La Vallée. There is said to be a stream on either side of Pointe Tête de Chien on the north coast. Both streams flow for only short distances in deep gorges, and disappear before reaching the sea. On the south coast at Pointe Masson, about 2,400 meters east of Basse Terre, a spring issues from a steep sea cliff. Its outlet is covered at high tide but exposed at low tide, when fresh water is obtainable.

Well water probably could be obtained by shallow wells at places in the ravines where the metamorphic rocks are exposed. There is not much hope of obtaining water easily in the interior of the island.

QUALITY OF WATER.

GENERAL FEATURES.

Most of the waters of the Republic are of good quality for domestic use when not polluted by sewage or waste. They are also generally good for irrigation and for many industrial uses. There are, however, notable exceptions to this general rule, particularly for the water from a few salt lakes and certain springs. As the rocks of a large part of the Republic are calcareous the characteristic feature of most of its waters is hardness, chiefly in the form of calcium bicarbonate. Twenty samples of water from the Republic were recently analyzed in the United States Geological Survey. These samples probably represent most of the available types.

STREAMS, FRESH LAKES, AND COMMON SPRINGS.

The following analyses cover the waters of two large rivers, the largest fresh-water lake, and five springs of the more common type. They represent by far the greater part of the water in use.

The total solids in all these waters are moderately high. The main difference between the spring waters and the surface waters is that the spring waters are generally a little more highly mineralized. Hardness

¹ Op. cit., vol. 1, pp. 733-739.