of the rainfall on the limestone areas is absorbed and sinks rapidly downward along these channels until its flow is checked, either by striking some less pervious material, such as igneous rock, or by reaching a permanent water table controlled by the sea or by a lake or large stream. At some places beds of chalk or of clayey partings in the limestone act as impervious beds. The water tends to move laterally down the slope of the water table or along the surface of the impervious bed until it reaches an outlet into a stream or into the sea, generally through springs.

In most limestone areas the surface is greatly dissected and the rocks are porous so that the water table undoubtedly lies very deep. Moreover, much of the ground water is concentrated in subterranean streams along solution channels. At many places in the highlands, therefore, wells would not reach water except at great depth, unless they accidentally penetrated channels of circulation. Some of these channels are indicated by sinkhole valleys, especially where surface streams disappear into sunken valleys or springs issue from them. Wells drilled in these sunken areas in regions where water is greatly needed might tap large supplies at no great depth. A suggestion for exploration of this kind at the town of Pestel is given on page 592. In regions where the cover of limestone is thin water might be obtained by wells drilled to the impervious rocks below and tapping the water that circulates along the contact of the limestone with the impervious bed. Considerable supplies of water have been obtained from such wells on the island of Barbados,[1] where conditions, however, are rather less complicated than those in most parts of the Republic of Haiti. A part of the Bombardopolis Plateau might possibly offer opportunity for work of this kind, as the porous limestone that lies above the impervious beds appears to be rather thin at some places.

Water circulates much less freely in the igneous and metamorphic rocks than in limestone because these rocks are denser and the principal open spaces in them are small joints, which are enlarged only very slowly, if at all, by solution. Moreover, these joints generally become closed at depths of a few hundred meters. The residual soil and the upper part of these rocks, however, usually absorb considerable water, which seeps down the hillsides and concentrates beneath the valleys. Shallow dug wells in valleys or ravines, or even on flat uplands in areas of igneous rock, would generally yield plenty of water for domestic use and for stock, and deeper drilled wells would be equally or even more successful, although they probably would not yield so much water as is obtained from many similar wells in the alluvial plains.

GONAVE ISLAND.

With the exception of small patches of alluvium, the only surface rock on Gonave Island is limestone. The limestone is not strongly folded, as it

[1] Harrison, J. B., and Jukes-Browne, A. J., Geology of Barbados, pp. 60-62, published by Barbadian Legislature, 1890.

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