

were deposited. The occurrence of salt water in a well in an area like the Central Plain, however, which is entirely isolated from the present sea, might be less serious than its occurrence in wells near the sea and directly affected by it. Salt water in wells in the plain could possibly be successfully cased out, and fresh water might be found in beds below it.

Shallow wells dug in the alluvium at some places, particularly in lowlands along the streams, would probably supply small quantities of water. In the northwestern part of the plain, however, the water table no doubt lies rather deep. A dry shaft about 25 meters deep is said to have been dug near the plantation of the United West Indies Corporation, which is about 5 kilometers east of St.-Michel de l'Atalaye.

ARBRE PLAIN.

The Arbre Plain is the small, flat lowland south and west of the Sources Chaudes, or Eaux Boynes, in the center of which stand the chapel and settlement of l'Arbre. This region probably receives an annual rainfall of less than 500 millimeters and is the most arid part of the Republic. All the permanent streams that descend from the mountains disappear at the border of the plain. Along the principal stream channels in the western part of the plain there are two or three playa lakes, which contain water during most if not all of the year. The water of these lakes is rather salty but is used for watering stock and to some extent for domestic supplies. There are other playas on the plain, most of them nearly always dry.

The French colonists apparently did not attempt irrigation here, but a crude system is now in use. During the annual rainy seasons there are usually one or two floods which spread large volumes of water over the plain, especially in the temporary playa lakes. A system of open earth ditches has been dug to distribute part of this flood water over the more fertile and accessible land, especially near the temporary playas, wherever the soil is not too alkaline. Irrigation appears to be practiced by sheet flooding. Cotton is the principal crop, but petit-mil, vegetables, and plantains are raised when water is abundant. Unfortunately the irregularity of seasonal floods causes many disastrous failures of the crops. The system of distribution could probably be improved, but there is no adequate source of water for the irrigation of any large part of the plain.

Over much of the plain there is a thin cover of alluvium, beneath which lies a thick series of Miocene beds, consisting of limestone, sandstone, and marl, which generally has a pronounced dip seaward. No wells are known in the area, and no springs except the Sources Chaudes, which are near the inland border of the plain. These springs, however, appear to afford some slight indication of the presence of water under pressure beneath the plain. (See pp. 558-562.) Fresh water could probably be obtained by deep drilled wells, and in the low parts of the plain weak flows might possibly

be obtained. Drilling might be tried to obtain a supply for the adjacent town of Anse Rouge. (See p. 591.) The water of deep wells in this area may be salty, for it is not at all certain that the original sea water in the deep beds has ever had a chance to drain away. Well water, if obtainable would not be sufficient for very extensive irrigation, as the rainfall is scanty and the recharge is probably small.

Shallow wells might possibly supply water for domestic use at some places, although no really favorable locations were noted. In the higher parts of the plain, where the alluvium is coarse and porous, the water table probably lies very deep, and in the lower areas the surficial beds are compact and probably not very porous.

TROIS RIVIÈRES VALLEY AND JEAN RABEL VALLEY.

The Trois Rivières Valley and Jean Rabel Valley include all the valley of Les Trois Rivières from Gros-Morne to Port-de-Paix, the immediate valley of Rivière de Jean Rabel, and a connecting lowland near the coast extending from Port-de-Paix to Jean Rabel. The region as a whole gets only scanty rainfall, and much of the lowland between Port-de-Paix and Jean Rabel is semiarid. The surface of the region is broken. The valleys are rather narrow and have steep sides, and the areas of level land are small and discontinuous.

The two rivers mentioned are the only large streams. Rivière de Moustique, about midway between them, is small and is usually dry during part of the year, but it is subject to terrific floods. Les Trois Rivières is the second largest stream of the Republic. Rivière de Jean Rabel flows throughout the year but is not included in the streams listed on p. 34.

The French colonists irrigated small patches of land along Les Trois Rivières, especially near Port-de-Paix, and a few small tracts near the river between Gros-Morne and Port-de-Paix are irrigated at present. No irrigation was practiced in colonial days on the lowland west of Port-de-Paix and little if any at Jean Rabel, although very fertile fields in that locality are irrigated now. The intervening lowland between Jean Rabel and Port-de-Paix was not visited by any of our party, and the statements here made regarding it are based either on inference or reports. The region is very much like the Arbre Plain with regard to its surface and underground features, but it receives somewhat more rain.

There is abundant water in Les Trois Rivières to supply all the land in its valley that is favorably situated for irrigation, and perhaps a good deal of that in the lowland to the west. The Rivière de Jean Rabel probably could serve more land, particularly by storing flood water, for which purpose good dam sites could probably be found.

The French colonists proposed a plan for diverting the headwaters of Les Trois Rivières into La Quinte in order to irrigate land near Gonaïves.¹

¹ Moreau de St. Méry, *op. cit.*, vol. 2, pp. 95-96.