THE COLLECTIONS

FROM

RODRIGUEZ.

INTRODUCTORY NOTES.

I. The Physical Features of Rodriguez.—*By Is. Bayley Balfour, Sc.D.*

Situated in the Indian Ocean, 300 miles eastwards from Mauritius, the island of Rodriguez, like the sister Mascarene Islands, is a mass of volcanic rock. A fringing reef of coral, studded with islets, skirts it on every side, extending on the west about three miles from the land, but at the eastern end the edge of the reef is within about a hundred yards of the beach. The island consists of a series of hills. Its extreme length, from a little north of east to a little south of west, is about 11 miles and its breadth from north to south about 5 miles. Within this base the land rises towards the centre of the island, where are several peaks, none attaining any great elevation, the highest point, Mount Limon, being only 1,300 feet above the sea level. A main ridge runs along the island in a direction parallel with its greatest diameter, and rather nearer the southern shore. Its slopes rise with some abruptness from the sea on the eastern side, but on the west extend more gradually seawards, and terminate in a wide coralline limestone plain studded with elevations between Baie Topaze and Anse du Peril. The sides of the ridge as they stretch to the sea are deeply cut into ravines. The slopes on the southern side are shorter, and the ravines deeper and more numerous, than on the north. In their upper parts these ravines are bordered by lofty and inaccessible cliffs, upon which the volcanic structure of the island is well marked, and coulée is seen to succeed coulée, separated only by thin beds of cinder, agglomerate, or variously coloured clays. In some instances these cliffs are 300 feet high, and as many as 12 successive coulées may be counted on one cliff. Through these ravines the

streams as they descend form in their upper parts a series of cascades, and sometimes high falls. One of the finest is the Cascade Victoire at the head of the Rivière Poursuite, where it falls over a cliff more than a hundred feet high. As the sea is approached, the ravines expand into wide valleys flanked by gently sloping and terraced ridges. These ridges too are in some places marked by lofty cliffs, on which the columnar basaltic character of the rocks is well seen. A splendid example of this is Tonnerre Cliff in the valley Rivière aux huitres, a bold perpendicular face of prismatic columns 200 feet high. At Pointe la Fouche also this structure is conspicuous.

On the south-west, the central volcanic ridge gradually descends, the ravines become less deep, and the ground spreads out into a large coralline limestone plain. The demarcation betwixt the limestone and the volcanic rock is very sharp, but isolated patches of limestone are met with on the surface of the volcanic region, in the vicinity of the main mass. The caves from which the bones of the Solitaire and other extinct birds have been obtained occur in this limestone plain. Some of them extend for a great distance through the rock, and are rich in stalactites and stalagmites; others again are mere small holes. The whole plain is riddled with these caves, and on walking over it one constantly passes small apertures and fissures, evidently "blow-holes" of some subterranean cavern. Wide and deep hollows are also met with, on the floor of which large fragments of limestone lie in confused heaps. These are apparently old caves of which the roofs have fallen in, and the continuation of the cavern may be found at either extremity. The floor of these hollows is composed of volcanic soil, often with large masses of volcanic rock on the surface, and commonly clothed richly with vegetation. It is in such places that many of the largest trees on the island are now to be seen. The limestone is not found along the northern or southern shores, until we near the eastern extremity, where patches occur at the mouths of the valleys, and even at some distance from the shore. One mass I discovered in valley Rivière de l'Est, more than a mile from the sea. It is not so abundant at this end of the island.

On the southern shore between Rivière Palmiste and Rivière Poursuite, indications of raised beaches are seen, reaching about 20 feet above the sea level.

The existence of these masses of coralline limestone indicates clearly a former lower level of the island, and the evidence of raised beaches confirms this. But a consideration of the coral reefs points as clearly to a time when the island stood at a higher level. The present coral reef fringes the coast, extending, as I have mentioned, about three miles on the south-west side, but coming close inshore on the east. An older reef, however, exists now quite submerged in some places to a depth of over 90 fathoms. Upon it the present reef rests, and it extends westwards nearly 15 miles from the present coast, while on the east it stretches about six miles.

We have thus proofs of great and intermittent oscillations of the level of the island.

Of the islets scattered over the reef, some are volcanic, and the others are composed of coralline limestone and sand. They are all within the compass of the present reef, and only occur on its wider parts; consequently there are none east of Port Mathurin on the north, and of Port Sud Est on the south. Eight islets are of volcanic origin, Diamond, Booby, Katrine, Marianne, Desinée, Frigate, Crab, and Hermitage. Only the last mentioned is on the south reef, the rest range round from the south-west to the north. The coralline limestone and sand islets are more numerous, and are confined to the southern and western reefs, none occur on the north. Ten of them receive names, as follows:—Gombrani, Pierrots, Platte, Pantad, Pianqui, Misel, Chat, Zozo, Coco, and Sable. The last two are mere accumulations of sand and coral débris close to the western edge of the reef, the others are all on the south. It will be seen, then, that whilst the volcanic islets are chiefly on the north and west, the limestone ones are on the south.

The prevailing type of rock composing the island is a dolerite rich in olivine, in many places greatly decomposed. Interspersed with the coulées of rock are found extensive beds of clay. These, which possibly result from the decomposition in situ of the dolerite, are highly coloured, usually bright red or ochre, and form a prominent feature in the landscape. The lava coulées seem to have flowed with great regularity, but there have been marked periods of intermission of volcanic energy. Here and there dykes are seen, one specially well-marked occurs at the seaward end of the Charpentier ridge of the valley Rivière Bouteille, forming a conical projection through the layers of rock; and it belongs to the same period of formation as do the higher parts of the island,—apparently the last outburst of volcanic activity.

The exact position of old craters is difficult to determine. Probably there were many foci, but the main ones seem to have been situated about the Grande Montagne and Mount Malartic. Many of the small conical isolated hills, such as Montagne du Nord, scattered over the island, no doubt also mark the site of old foci.

The time that has elapsed since the last exhibition of activity has been sufficient to allow of a considerable amount of denudation, as is evidenced by the fragments of rock and débris with which the more level ground is strewn, and which cover the gentle hill slopes, rendering progression a matter of difficulty; and the smooth and rounded outline of the hills, only occasionally interrupted by a projecting torr or pinnacle, as well as the deep ravines, testify to the same.

A curious feature deserves notice. In the Baie aux Huitres are found masses, about a foot in diameter, of shells of a mollusc embedded in or rather cemented by a material resembling tuff. Unfortunately the specimens were lost in transmission, and thus a further determination of their nature is prevented.

The island is comparatively dry, the soil is parched and arid, and during the warm season many of the streams are dried up. But the size of the water-courses and the enormous boulders filling their beds, indicate large torrents in the rainy season. In some places, issuing from the clay, springs occur, of which the water is brackish, has a very disagreeable taste, and is slightly tepid, but has no smell. As a rule the water of the streams is good and safe to drink, but that of some rivers, notably the Rivère Saumâtre, is most unpalatable and apt to cause slight catharsis.

The climate is much like that of Mauritius, where the average annual temperature is 78° Fahr. During the north-west monsoon from November to April, the weather is wet and warm, and frequently in the first months of the year the island is visited by severe hurricanes. From May to October the south-east monsoon prevails, and then the weather is cool and dry. The rainfall is exceedingly irregular, the hills being hardly high enough and not sufficiently wooded to arrest cloud; hence also fogs are rare.