

coral, for it is without a pore; and layer is added to layer until it has considerable thickness. It is thus an important protection to the reef against the wash of the waters.

Darwin states that on Keeling's Island, the Nullipore bed has a thickness of two or three feet and a breadth of twenty feet. Nullipores are abundant on the Paumotu reefs. Still, they are not essential to the formation or protection of an outer reef, and are not always present; the outer margin is higher than the rest of the reef when they are absent.

The Nullipores are not alone on this outer edge, for there are always sprigs of Madreporas, small *Astræas*, and some other corals, lodged in the cavities, with many echini, star-fishes and sea-anemones, besides barnacles and serpulas; and fish of many colours dart in and out of the numerous recesses.

Outer reefs are far more liable than the inner to become covered with accumulations of coral fragments and sand, through the force and inward movement of the waves. The *débris* gathered up by the waters finds a lodgment some distance back from the margin—it may be one or two hundred feet, or as many yards, and gradually increases, until in many instances dry land is formed, and an islet covered with vegetation appears. Such effects are confined chiefly to the reef on the sides open to the prevailing wind, and the final result, a green islet, is not of common occurrence. But occasionally the reef for miles has become changed from the coral bank, bare at low or middle tide, to habitable land, and makes literally, as at Bolabola, a green belt to the island of volcanic rocks and lofty hills within. The causes and the result are much the same as in a coral island, and the steps in the process are more particularly described further on, where treating of atolls.

The rock of the outer reef, wherever broken, exhibits usually a compact texture. In some parts it consists of coral fragments, rounded or angular, of quite large size, firmly cemented. Other portions are a finer coral breccia or conglomerate. Still others, more common, are solid white limestones,