

Pacific and Indian Oceans—namely, lagoon-islands or atolls, encircling reefs, barrier reefs, and coral fringes, all nearly confined to the torrid zone.

“An *atoll* is a ring or chaplet of coral, enclosing a lagoon, or portion of the ocean, in its centre. The average breadth of that part of the ring which rises above the surface of the sea is about a quarter of a mile, often less, and it is seldom more than from six to ten or twelve feet above the waves; hence the lagoon-islands are not visible even at a very small distance, unless when they are covered by the cocoa-nut palm, or the pandanus, which is frequently the case. On the outside, the ring or circlet shelves down for a distance of one or two hundred yards from its edge, so that the sea gradually deepens to about twenty-five fathoms, beyond which the sides of the ring plunge at once into the unfathomable depths of the ocean, with a more rapid descent than the cone of any volcano. Even at the small distance of some hundred yards, no bottom has been reached with a sounding-line a mile and a half long. All the coral in the exterior of the ring, to a moderate depth below the surface of the water, is alive; all above it is dead, being the detritus of the living part washed up by the surf, which is so heavy on the windward side of the tropical islands of the Pacific and Indian Oceans, that it is often heard miles off, and is frequently the first warning to seamen of their approach to an atoll.

“The outer margins of the Maldivé atolls, consisting chiefly of nullipores and porites, are beat by a surf so tremendous, that even ships have been thrown by a single heave of the sea high and dry on the reef. The waves give innate vigour to the polypes by bringing an ever-renewed supply of food to nourish them, and oxygen to aerate their juices; besides, uncommon energy is given and maintained by the heat of a tropical sun, which gives them power to abstract enormous quantities of solid matter from the water to build their stony homes—a power that is efficient in proportion to the energy of the breakers which furnish the supply.

“On the margin of the atolls, close within the line where the coral is washed by the tide, three species of nullipores flourish; they are beautiful little plants, very common in the coral islands. One species grows in thin spreading sheets, like a lichen; the second in strong knobs as thick as a man's finger, radiating from a common centre; and the third species, which has the colour of peach blossom, is a reticulated mass of stiff branches about the thickness of a crow's quill. The three species either grow mixed or separately, and, although they can exist above the line of the corals, they require to be bathed the greater part of each tide; hence a layer two or three feet thick, and about twenty yards broad, formed by the growth of the nullipores, fringes the circlet of the atolls and protects the coral below.

“The lagoon in the centre of these islands is supplied with water from the exterior by openings in the lee-side of the ring, but as the water has been deprived of the greater part of its nutritious particles and inorganic matter by the corals on the outside, the hardier kinds are no longer produced, and species of more delicate forms take their place. The depth of the lagoon varies from fifty to twenty fathoms, or less, the bottom being partly detritus, partly live coral. In these calm limpid waters the corals are of the most varied and delicate structures, of the most charming and dazzling hues. When the shades of evening come on, the lagoon shines like the Milky Way with myriads of brilliant sparks. The microscopic medusæ and crustaceans, invisible by day, form the beauty of the night; and the sea-feather, vermilion by daylight, now waves with green phosphorescent light. This gorgeous character of the sea-bed is not peculiar to the lagoons of the atolls; it prevails in shallow water throughout the whole coral-bearing regions of the Pacific and Indian Oceans.