

ordinary white chalk of Europe\*, and this mud is carried to great distances by currents, and spread far and wide over the floor of the ocean. We also have opportunities of seeing in upraised atolls, such as Elizabeth Island, Tonga, and Hapai, which rise above the level of the sea to heights varying from ten to eighty feet, that the rocks of which they consist do not differ in structure or in the state of preservation of their included zoophytes and shells from some of the oldest limestones known to the geologist. Captain Beechey remarks that the dead coral in Elizabeth Island is more or less porous and honeycombed at the surface, and hardening into a compact rock which has the fracture of *secondary limestone*. †

The island of Pulo Nias, off Sumatra, which is about 3000 feet high, is described by Dr. Jack as being overspread by coral and large shells of the *Chama (Tridacna) gigas*, which rest on quartzose and arenaceous rocks, at various levels from the sea-coast to the summit of the highest hills.

The cliffs of the island of Timor in the Indian Ocean are composed, says Mr. Jukes, of a raised coral reef abounding in *Astræa*, *Meandrina*, and *Porites*, with shells of *Strombus*, *Conus*, *Nerita*, *Arca*, *Pecten*, *Venus*, and *Lucina*. On a ledge about 150 feet above the sea, a *Tridacna* (or large clam shell), two feet across, was found bedded in the rock with closed valves just as they are often seen in barrier reefs. This formation in the islands of Sandlewood, Sumbawa, Madura, and Java, where it is exposed in sea cliffs, was found to be from 200 to 300 feet thick, and is believed to ascend to much greater heights in the interior. It has usually the form of a "chalk-like" rock, white when broken, but in the weathered surface turning nearly black. ‡

It appears, therefore, premature to assert that there are no recent coral formations uplifted to great heights, for we are only beginning to be acquainted with the geological structure of the rocks of equatorial regions. Some of the upraised islands, such as Elizabeth and Queen Charlotte, in the Pacific, although placed in regions of atolls, are described by Captain Beechey and others as flat-topped, and exhibiting no traces of lagoons. In explanation of the fact, we may presume that, after they had been sinking for ages, the descending movement was relaxed; and while it was in the course of being converted into an ascending one, the ground remained for a long season almost stationary, in which case the corals within the lagoon would build up to the surface, and reach the level already attained by those on the margin of the reef. In this manner the lagoon would be effaced, and the island acquire a flat summit.

It may, however, be thought strange that many examples have not been noticed of fringing reefs uplifted above the level of the sea. Mr. Darwin, indeed, cites one instance where the reef preserved, on dry land in the Mauritius, its peculiar moat-like structure;

\* Trans. Geol. Soc., London, 2d series, vol. v.

† Beechey's Voyage, vol. i. p. 45.

‡ Paper read to Brit. Assoc., Southampton, 1846.