he observes, "of coral reefs very highly inclined, no bottom is sometimes found with a line of 2000 or 3000 feet, and this is by no means a rare case. It follows that the reef ought to have this thickness; and Mr. Darwin's diagrams show that he understood it so. Now, if such masses of coral exist under the sea, they ought somewhere to be found on *terra firma;* for there is evidence that all the lands yet visited by geologists, have been at one time submerged. But neither in the great volcanic chain, extending from Sumatra to Japan, nor in the West Indies, nor in any other region yet explored, has a bed or formation of coral even 500 feet thick been discovered, so far as we know."

When considering this objection, it is evident that the first question we have to deal with, is, whether geologists have not already discovered calcareous masses of the required thickness and structure, or precisely such as the upheaval of atolls might be expected to expose to view. We are called upon, in short, to make up our minds both as to the internal composition of the rocks that must result from the growth of corals, whether in lagoon islands or barrier reefs, and the external shape which the reefs would retain when upraised gradually to a vast height,—a task by no means so easy as some may imagine. If the reader has pictured to himself large masses of entire corals, piled one upon the other, for a thickness of several thousand feet, he unquestionably mistakes altogether the nature of the accumulations now in progress. In the first place, the strata at present forming very extensively over the bottom of the ocean, within such barrier reefs as those of Australia and New Caledonia, are known to consist chiefly of horizontal layers of calcareous sediment, while here and there an intermixture must occur of the detritus of granitic and other rocks brought down by rivers from the adjoining lands, or washed from sea-cliffs by the waves and currents. Secondly, in regard to atolls, the stone-making polypifers grow most luxuriantly on the outer edge of the island, to a thickness of a few feet only. Beyond this margin broken pieces of coral and calcareous sand are strewed by the breakers over a steep seaward slope, and as the subsidence continues the next coating of live coral does not grow vertically over the first layer, but on a narrow annular space within it, the reef, as was before stated (p. 761.), constantly contracting its dimensions as it sinks. Thirdly, within the lagoon the accumulation of calcareous matter is chiefly sedimentary, a kind of chalky mud derived from the decay of the softer corallines, with a mixture of calcareous sand swept by the winds and waves from the surrounding circular reef. Here and there, but only in partial clumps, are found living corals, which grow in the middle of the lagoon, and mixed with these and with fine mud and sand, a great variety of shells, and fragments of testacea and echinoderms.

We owe to Lieutenant Nelson the discovery that in the Bermudas the calcareous mud resulting from the decomposition of the softer corallines is absolutely undistinguishable when dried from the