

The coral zoöphyte is especially adapted for such a mode of reef-making. Were the nourishment drawn from below, as in most plants, the solidifying coral rock would soon destroy all life: instead of this, the zoöphyte is gradually dying below while growing above; and the accumulations of débris cover only the dead portions.

But on land, there is the decay of the year and that of old age, producing vegetable débris; and storms prostrate forests. And are there corresponding effects among the groves of the sea? It has been shown that coral plantations, from which reefs proceed, do not grow in the "calm and still" depths of the ocean. They are to be found amid the very waves, and extend but little below a hundred feet, which is far within the reach of the sea's heavier commotions. To a considerable extent they grow in the very face of the tremendous breakers that strike and batter as they drive over the reefs. Here is an agent which is not without its effects. The enormous masses of upturned rock found on many of the islands may give some idea of the force of the lifting wave; and there are examples on record, to be found in various treatises on geology, of still more surprising effects.

During the more violent gales, the bottom of the sea is said, by different authors, to be disturbed to a depth of three hundred, three hundred and fifty, or even five hundred feet; and De la Beche remarks, that when the depth is fifteen fathoms, the water is very evidently discoloured by the action of the waves on the sand and mud of the bottom. M. Siau mentions (*Comptes Rendus* t. xii. 744) that ripple-marks are formed on the bottom by the motion of the water, which may be readily distinguished at a depth of at least twenty metres. The hollows between such ridges or zones are occupied by the heavier substances of the bottom. Similar ripple-marks were distinguished at a depth of one hundred and eighty-eight metres, to the north-west of the St. Paul's Roads.

In an article on the Force of Waves, by Thomas Stevenson, of Edinburgh, published in the Transactions of the Royal Society of Edinburgh (vol. xvi., 1845), it is stated as a deduc-