

sand species of creatures, the inhabitants chiefly of the waters, in whose forms and organic provisions, and in their shelly habitations, the wisdom and goodness of the Creator are displayed with striking beauty. Of those species, the conchologist finds not one in the former strata of the earth's crust, except, with a rapidly decreasing proportion, in the most recent formations: *—he finds not one living species in the chalk and the older systems. Yet he perceives identities of genera, yet decreasing; and, where the genera are different, there is the relation of analogy; all exhibiting the presiding energy of the one mind, with the admirable adaptations of every circumstance in the organization to conditions of temperature and the gaseous composition of the atmosphere. The fossil conchologist finds above four thousand kinds, which have had their respective periods of existence; I speak not of the individuals, but of the species or races, to each of which, from the analogy of living nature, we must assign some thousands of years. He sees those species at length ceasing; even whole genera going out of existence; and others occupying the vacancies, *always adapted* to altered conditions of the earth and the waters. "This fact has now been verified, in almost all parts of the globe; and has led to a conviction, that at successive periods of the past, the same area of land and water has been inhabited by species of animals and plants as distinct as those which now people the antipodes, or which now coexist in the arctic, temperate, and tropical zones. It appears, that from the remotest periods there has been ever a coming in of new organic forms, and an extinction of those which pre-existed on the earth; some species having endured for a longer, others for a shorter time; but none having ever reappeared, after once dying out." (Lyell's Elements, p. 275.) "General and particular results all agree in demonstrating that the physical conditions of the ancient ocean must have been very different, in some respects, from what obtain at present; and that these conditions were subject to great variation during the very long periods which elapsed in the

* In the newest strata of our country, certain parts of Norfolk and Suffolk, and the basin of the Thames, Mr. Lyell has determined the existence of 90 to 95 in the hundred of such species as now live; the same proportion as in the most recent beds of Sicily. (Charlesworth's Mag. Nat. Hist. July 1839, p. 327. Lyell's Princ. iii. 369, 370, 373; fifth ed. his Elements, p. 284—290. In the nearest older formations, the proportion of number runs from 70 to 40; the Norfolk Crag, Red, 30; Coralline, 19; and in older beds diminishing to 26, 17, and finally about 3; till, in the Chalk, crowded with conchological as well as other remains, all existing species are found to have ceased.