

between the creation of man and the deluge. They have imagined that the antediluvian bed of the ocean, after having been the receptacle of many stratified deposits, became converted, at the time of the flood, into the lands which we inhabit, and that the ancient continents were at the same time submerged, and became the bed of the present seas. This hypothesis, although preferable to the diluvial theory before alluded to, since it admits that all fossiliferous strata were successively thrown down from water, is yet wholly inadequate to explain the repeated revolutions which the earth has undergone, and the signs which the existing continents exhibit, in most regions, of having emerged from the ocean at an era far more remote than four thousand years from the present time. Ample proofs of these reiterated revolutions will be given in the sequel, and it will be seen that many distinct sets of sedimentary strata, hundreds and sometimes thousands of feet thick, are piled one upon the other in the earth's crust, each containing peculiar fossil animals and plants of species distinguishable for the most part from all those now living. The mass of some of these strata consists almost entirely of corals, others are made up of shells, others of plants turned into coal, while some are without fossils. In one set of strata the species of fossils are marine; in another, lying immediately above or below, they as clearly prove that the deposit was formed in a lake or brackish estuary. When the student has more fully examined into these appearances, he will become convinced that the time required for the origin of the rocks composing the actual continents must have been far greater than that which is conceded by the theory above alluded to; and likewise that no one universal and sudden conversion of sea into land will account for geological appearances.

We have now pointed out one great class of rocks, which, however they may vary in mineral composition, color, grain, or other characters, external and internal, may nevertheless be grouped together as having a common origin. They have all been formed under water, in the same manner as modern accumulations of sand, mud, shingle, banks of shells, reefs of coral, and the like, and are all characterized by stratification or fossils, or by both.

*Volcanic rocks.*—The division of rocks which we may next consider are the volcanic, or those which have been produced at or near the surface whether in ancient or modern times, not by water, but by the action of fire or subterranean heat. These rocks are for the most part unstratified, and are devoid of fossils. They are more partially distributed than aqueous formations, at least in respect to horizontal extension. Among those parts of Europe where they exhibit characters not to be mistaken, I may mention not only Sicily and the country round Naples, but Auvergne, Velay, and Vivarais, now the departments of Puy de Dôme, Haute Loire, and Ardèche, towards the centre and south of France, in which are several hundred conical hills having the forms of modern volcanoes, with craters more or less perfect on many of their summits. These cones are composed moreover of lava, sand, and ashes, similar to those