

occurring in two consecutive formations, was confined to the testacea or zoophytes, the characters of which are less marked and decisive than those afforded by the vertebrate animals. But Mr. Owen has lately insisted on the important fact, that not a few of the quadrupeds which now inhabit our island, and among others the horse, the ass, the hog, the smaller wild ox, the goat, the red deer, the roe, the beaver, and many of the diminutive rodents, are the same as those which once co-existed with the mammoth, the great northern hippopotamus, two kinds of rhinoceros, and other mammalia long since extinct. "A part," he observes, "and not the whole of the modern tertiary fauna has perished, and hence we may conclude that the cause of their destruction has not been a violent and universal catastrophe from which none could escape."*

Had we discovered evidence that man had come into the earth at a period as early as that when a large number of the fossil quadrupeds now living, and almost all the recent species of land, freshwater, and marine shells were in existence, we should have been compelled to ascribe a much higher antiquity to our species, than even the boldest speculations of the ethnologist require, for no small part of the great physical revolution depicted on the map of Europe, (Pl. 3.) before described, took place very gradually after the recent testacea abounded almost to the exclusion of the extinct. Thus, for example, in the deposits called the "northern drift," or the glacial formation of Europe and North America, the fossil marine shells can usually be identified with species either now inhabiting the neighbouring sea, or living in the seas of higher latitudes. Yet they exhibit no memorials of the human race, or of articles fabricated by the hand of man. Some of the newest of these strata passing by the name of "raised beaches," occur at moderate elevations on the coast of England, Scotland, and Ireland. Other examples are met with on a more extended scale in Scandinavia, as at the height of 200 feet at Uddevalla in Sweden, and at twice that elevation, near Christiania, in Norway, also at an altitude of 600 or 700 feet in places farther north. They consist of beds of sand and clay, filling hollows in a district of granite and gneiss, and they must closely resemble the accumulations of shelly matter now in progress at the bottom of the Norwegian fiords. The rate at which the land is now rising in Scandinavia, is far too irregular in different places to afford a safe

* Reports to Brit. Assoc. 1842, 1843, and *Introd. to Brit. Foss. Mamm.* p. 31. The conchological evidence respecting the British Miocene, Pliocene, and Pleistocene fossils, examined by Mr. Forbes, in the paper before cited, p. 88. note, bear out some of the most important conclusions of M. Deshayes, quoted by me in the first edition of the *Principles*, 1831, and the recent observations of Philippi in regard to the passage of species from one formation to another. I refer to these authorities more especially

because this doctrine of a gradual transition has been opposed by some living naturalists of high distinction, among whom I may mention M. A. D'Orbigny and M. Agassiz. I have long been convinced that we must abandon many of the indentifications formerly made of Eocene with recent shells; but some errors of this kind do not affect the general reasoning on the subject. See a discussion on this question, *Quarterly Journ. of Geog. Soc.*, No. 5. p. 47., Feb. 1846.