

share in the movement, and some parts at least of the island before spoken of (fig. 330, p. 282) would become submerged.

Fourthly. After the London clay and the overlying Bagshot sands had been deposited, they appear to have been upraised in the London basin, during the Eocene period, and their conversion into land in the north seems to have preceded the upheaval of beds of corresponding age in the south, or in the Hampshire basin; because none of the fluvio-marine Eocene strata of Hordwell and the Isle of Wight (described in CH. XVI.) are found in any part of the London area.

Fifthly. The fossils of the alternating marine, brackish, and freshwater beds of Hampshire, of Middle and Upper Eocene date, bear testimony to rivers draining adjacent lands, and to the existence of numerous quadrupeds in those lands. Instead of these phenomena, the signs of an open sea might naturally have been expected, as a consequence of the vast subsidence of the Middle Eocene beds before mentioned, had not some local upheaval taken place at the same time in the Isle of Wight or in regions immediately adjacent. Whatever hypothesis be adopted, we are entitled to assume that during the Middle and Upper Eocene periods there were risings and sinkings of land, and changes of level in the bed of the sea in the southeast of England, and that the movements were by no means uniform over the whole area during these periods. The extent and thickness of the missing beds in the Weald should of itself lead us to look for proofs of that area having by repeated oscillations changed its level frequently, and, oftener than any adjoining area, been turned from sea into land; for the submergence and emergence of land augment, beyond any other cause, the wasting and removing power of water, whether of the waves or of rivers and land-floods.

Sixthly. As yet we have discovered no Marine Miocene (or *falunian*) formations in any part of the British Isles, nor any of older Pliocene date south of the Thames; but the Upper Eocene strata of the Isle of Wight (the Hempstead beds before described) have been upraised above the level of the sea in which they were originally formed, and some of them have been thrown into a vertical position, as seen in Alum and Whitecliff Bays, attesting great movements since the origin of the newest tertiaries of that district. Such movements may have occurred, in great part at least, during the Miocene period, when a large part of Europe is supposed to have become land as before suggested (p. 180). Hence we are entitled to speculate on the probability of revolutions in the physical geography of the Weald in times intermediate between the deposition of the Hempstead beds and the origin of the Suffolk crag.

Seventhly. But we have still to consider another vast interval of time—that which separated the beginning of the older Pliocene from the beginning of the Pleistocene era,—a lapse of ages which, if measured by the fluctuations experienced in the marine fauna, may have sufficed to uplift or sink whole continents by a process as slow as that which is now operating in Sweden and in Greenland.