

of the crag period, resting on the summit of the North Downs at various points between Folkestone and Dorking. These ferruginous sands include layers of iron sandstone, and of quartzose sand, with flint pebbles, and occasionally green earth, the whole deposit resembling precisely in mineral character the sands of Diest, in Belgium, which have long been considered as of the same age as the older crag of Suffolk. The same *Terebratula grandis*, which abounds in the English crag, and in the sands of Diest; and the casts of *Astarte*, *Pyrula*, and other fossils, concur with the mineral character of the beds to prove the contemporaneous origin of these British and Belgian strata. At Paddlesworth, 4 miles W.N.W. of Folkestone, the iron sands, above mentioned, rest on an older flint gravel, at an elevation of between 600 and 700 feet above the sea, and near the edge of the chalk escarpment. Some idea of their exact position may be gained by the reader by supposing them placed on the heights marked by the strong black line above fig. 6, in the woodcut 321 (p. 272 of the text of this edition, and 4th edition p. 243), or he may suppose the tertiary outlier *b*, fig. 329 (p. 282 of this edition), to consist of Coralline crag, instead of being a mass of Eocene clay and sand.

It follows from such facts, that although the first elevation of the Wealden took place, as shown in the 19th chapter, in the early Eocene, or partly, perhaps, in the cretaceous period; and although much denudation was then effected, yet the same area was again submerged during the Older Pliocene epoch. The latest denudation, therefore, as well as the present escarpments, were brought about after the sea had become already peopled with species of mollusca, half of which are still living. The great upheaval of land in the Wealden area, thus proved to be subsequent in date to the Lower Crag, may, as Mr. Prestwich observes, help to explain the difference observed in the fauna and climate of the several successive crag periods (see above, p. 636); for we may now with more confidence assume that the sea of the Coralline Crag was open to the south, so that shells of southern forms lived in it, until at length, the bed of that sea having upraised 650 or 700 feet, all communication with warmer latitudes was cut off, and the fauna of the Red Crag acquired its more boreal character.

We also learn from these recent discoveries how impossible it may often be to demonstrate the former presence of the sea on any given area by organic remains, or by sea-beaches. Long and diligent inquiries had been made before the year 1856, for sea shells of recent or crag species, and for the signs of old sea margins within the Wealden area, or on Nos. 3, 4, 5, 6, and 7 of the map (p. 272 of this edition, and p. 242, 4th edition), and on the chalk downs and tertiary area between the Weald and the Thames (Nos. 1 and 2, *ib.*); but in vain, until at last a few casts of shells prove incontestably the long sojourn of the Older Pliocene sea in those very spaces. We must now, therefore, admit the retreat of its waters to have been an event of times comparatively modern. It follows that in many cases the land may have sunk and have emerged