

nearly 200 miles from north-west to south-east, from Surrey and Hampshire to Beauvais, in France ;”* but he expresses doubt, supposing the formation to have been continuous, if the two areas were contemporaneous, the region having undergone frequent changes, the great estuary having altered its form, and even shifted its place. Speaking of a hypothetical continent, Sir Charles Lyell says: “If it be asked where the continent was placed from the ruins of which the Wealden strata were derived, and by the drainage of which a great river was fed, we are half tempted to speculate on the former existence of the Atlantis of Plato. The story of the submergence of an ancient continent, however fabulous in history, must have been true again and again as a geological event.” †

The proof that the Wealden series were accumulated under fresh-water conditions and as a river deposit ‡ lies partly in the nature of the strata, but chiefly in the nature of the organic remains. The fish give no positive proof, but a number of Crocodilian reptiles give more conclusive evidence, together with the shells, most of them being of fresh-water origin, such as *Paludina*, *Planorbis*, *Lymnæa*, *Physa*, and such like, which are found living in many ponds and rivers of the present day. Now and then we find bands of marine remains, not mixed with fresh-water deposits, but interstratified with them ; showing that at times the mouth and delta of the river had sunk a little, and that it had been invaded by the sea ; then by gradual change it was lifted up, and became an extensive fresh-water area. This episode at last comes to an end by the complete submergence of the Wealden area ; and upon these fresh-water strata a set of marine sands and clays, and upon these again thick beds of pure white earthy limestone of the Cretaceous period were deposited. The lowest of these formations is known as the Lower Greensand ; then followed the clays of the Gault, which were succeeded by the Upper Greensand. Then, resting upon the Upper Greensand, comes the vast mass of Chalk which in England consists of soft white earthy limestone, containing, in the upper part, numerous bands of interstratified flints, which were mostly sponges originally, that have since become silicified and converted into flint. The strata of chalk where thickest are from 1,000 to 1,200 feet in thickness. Their upheaval into dry land brought this epoch to an end ; the conditions which had contributed to its formation ceased in our area, and as the uppermost member of the Secondary rocks, it closes the record of Mesozoic times in England.

* “Elements of Geology,” p. 349. † *Ibid.* p. 350.

‡ “The Physical Geology and Geography of Great Britain,” by A. C. Ramsay, F.R.S., p. 64.