

the "Results" of a course of detailed and exact induction, involving extensive and precise knowledge of several collateral sciences, and especially of conchology, botany, and comparative anatomy.

The chapter, although detached from its documents, is mainly intelligible without them, and presents a fine example of the course of induction now pursued by the most able geologists and is precisely in point in support of our present argument. Mr. Mantell, remarks:—

Happily, the evidence of the great physical mutations, and important changes in organic life, which have taken place in this part of the earth during the geological periods to which our researches refer, is so clear and satisfactory, that even the general reader will perceive that our deductions, extraordinary as they may appear, naturally result from the facts themselves.

The several formations or groups of strata, previously described, may be regarded as geological chronometers, marking certain distinct epochs or periods; the lowermost or most ancient of which (as we have already noticed) is of fluviatile origin, and reposes on the *Oolite*, a marine formation of great extent, that forms an important feature in the physical structure, not only of England, but also of the Continent. The *Portland Limestone* constitutes the uppermost division of the *Oolite*, and contains marine remains only; it is succeeded by the *fresh-water strata of the Isle of Purbeck*, which may be considered as the lowermost deposits of the Wealden.

But there is a fact connected with the history of the Portland and Purbeck beds, so highly interesting, and which illustrates in so striking a manner the nature of one of those grand geological mutations which have taken place in the south of England, that it will be necessary to notice it here, although it occurs without the limits of the district, which it is the professed object of this work to describe.

In the island of Portland, the oolitic limestone is extensively quarried for architectural purposes, and supplies most of the cities and towns in the south-east of England. On these oolitic strata are placed deposits of a totally different character. Immediately on the uppermost marine stratum (which abounds in *ammonites*, *terebræ*, *trigonia*, &c.) is a bed of limestone, much resembling, in appearance, some of the tertiary lacustrine limestones. Upon this stratum is a layer of what appears to have been an *ancient vegetable soil*; it is of a dark brown colour, contains a large proportion of earthly lignite, and, like the modern soil on the surface of the island, many water-worn stones. This layer is called the *dirt-bed* by the quarrymen; and in, and upon it, are a great number of silicified trunks of coniferous trees, and plants allied to the recent *cycas* and *zamia*. Many of the stems of the trees, as well as the plants, are still erect, as if petrified while growing undisturbed in their native forest; the former, having their roots in the soil, and their trunks extending into the superincumbent strata of limestone. On a late visit to the quarries, a large area of the surface of the *dirt-bed* having been cleared, preparatory to its removal for the purpose of extracting the building-stone from beneath, several stems, from two to three feet in height, were