

Purbeck beds, which, however, properly belong to the Wealden formation described in the next chapter. Between the Portland and Purbeck limestone, there is a bed of dark earth, called the dirt-bed, in which roots and stumps of trees occur, sometimes erect, proving that this bed was once dry land, and the soil on which the plants grew.

It would not be compatible with the plan of the present work, to enter into a detailed description of the numerous beds in this great formation: they present general features of resemblance, both in their characters and fossils. There is one bed, however, which is so remarkable for its extraordinary organic remains, that it merits the particular attention of the geologist. This is the Stonesfield slate in Oxfordshire, before mentioned: it is now regarded as an undoubted member of the oolite series, comprised in the forest marble of the lower division.

The Stonesfield slate consists of two beds of yellowish or greyish oolitic limestone, each about two feet thick, and separated by a bed of loose calcareous sandstone about the same thickness. The Stonesfield slate, on exposure to frost, divides into thin plates, which are used for roofing. The stone is obtained by working horizontal galleries in the hill, which galleries communicate with deep perpendicular shafts. It is to be regretted, that no account has been yet published of the different strata of stone sunk through by these shafts, as we might hence derive decisive evidence, respecting the true geological position of the Stonesfield slate.

The fossil remains in the Stonesfield slate consist of the impressions of the outer cases or elytra of winged insects, and the bones of small animals of the opossum or didelphis genus, and also the bones of the megalosaurus or gigantic lizard, supposed to be analogous to the Monitor. From the size of these bones, it is estimated that the animal to which they belonged was forty feet in length and twelve feet high. Legs and thigh bones of birds are also found in the Stonesfield slate, with the teeth, palates, and vertebræ of fishes, and two or three varieties of crabs and lobsters. Several varieties of marine shells and of plants occur in the same beds. The most remarkable circumstance attending these fossil remains, is, that they should occur in strata which are generally believed to have been deposited before the creation of terrestrial mammalia. If, however, there were islands, inhabited by the higher class of animals, when the oolite beds were forming, their bones may have been carried down by rivers into the sea, and deposited with those of marine animals. But though this hypothesis might satisfactorily explain the occurrence of these remains in the Stonesfield slate, it would still be not less extraordinary, that similar remains should have been nowhere found in any of the upper secondary strata in England, nor in other countries; and that they are never met with, except in strata considerably above the chalk formation. The occurrence of wood, and beds of lignite, (or wood coal,) in oolite, confirms the opinion