

are associated with one another in such a way that they may be regarded as having taken origin simultaneously." Humboldt admitted that fossils were useful in identifying the age of certain rocks, but thought they could not supply a sufficient basis for establishing a chronological succession of the formations and the different horizons in the formation.

In the year 1822, Conybeare¹ and Phillips published a work on the geology of England and Wales, which, although it has a distinct local colouring, gives a fairly complete representation of the geological knowledge of the sedimentary rocks at the time. The two authors applied throughout the work William Smith's principle of determining the age of the rocks upon the evidence of the fossils contained in them. The introduction contains a succinct historical sketch of the progress of geology in Great Britain. The stratigraphical part begins with a short description of the Alluvium and Diluvium, then enters in fuller detail into the consideration of the "Formations above the Chalk,"—the formations that were afterwards grouped as Tertiary. Conybeare and Phillips differentiated the successive horizons in this group, upon the basis of Webster's and Buckland's researches, into four horizons:—

Upper Marine Formation (Crag and Bagshot Sand).

Fresh-water ,,

London Clay ,,

Plastic Clay ,,

Between these and the Oolite formation Conybeare and Phillips distinguished two main sub-divisions in the Cretaceous formation:—

Upper Cretaceous System, comprising the Chalk deposits.

Lower Cretaceous System, comprising Chalk Marl, Greensand, Weald Clay, and ferruginous sand.

The sub-division of the Oolite formation was carried out on the basis of W. Smith's observations. Conybeare and Phillips distinguished four main divisions:—

Upper Oolite System, with (a) Purbeck Series, (b) Portland Oolite, (c) Kimmeridge Clay.

Middle Oolite System, with (a) Coral Rag, (b) Oxford Clay.

¹ William Daniel Conybeare, born 1787 in Bishopsgate, studied in Oxford, entered the Church and became Dean of Llandaff; died in August 1857.