

for the discovery of gradations from Miocene to Eocene, and for the probable necessity of including hereafter in the Miocene series some fossiliferous groups which may diverge in their characters from the standard first set up, or from the type of the faluns of Touraine. But I have seen, as yet, no sufficient evidence that such a passage, as is here spoken of, has been made out. The limits of the Eocene series have been extended, without as yet filling up the gap between that series and the faluns of Touraine. I am desirous at the same time to explain, that the important point now at issue is not simply one of nomenclature. The difficulty is the same, whether we use the terms Lower and Middle Tertiary, or Eocene and Miocene. To one or other of the periods so named we must refer the Limburg and Hempstead beds, and the sands of the Forest of Fontainebleau. Can we, without doing violence to paleontological principles, refer all these to the same period as the faluns of Touraine? If so, it would be immaterial whether we called them Middle Tertiary, Miocene, or "Falunian," or by any other general name. The question is, whether, in the present state of our information, the mass of characteristic fossils of the groups alluded to resemble more nearly the Eocene or the Falunian. I adhere at present to the nomenclature formerly adopted by me for strata described in this chapter, calling them Upper Eocene—not because of the small number of living species of shells found in them, although this is certainly one point of agreement between them and the "nummulitic" Eocene beds, but because of the aspect of the whole fauna, which seems to me to be Eocene rather than Falunian. Among other illustrations of this affinity, I may refer the reader to the numerous and excellent figures of species of the genus *Voluta* given by M. Beyrich from the Limburg beds of North Germany—forms strikingly characteristic of the Barton clay in Hampshire, a regular member of the Middle Eocene group. The faluns are devoid of such forms. Until, therefore, the time arrives when the break between the Limburg beds and the faluns has disappeared more completely, it appears to me safer to include the Limburg and all contemporaneous formations in the Eocene.

At the same time I have drawn the line between Middle and Upper Eocene, as in former editions, excluding from the latter the Bembridge beds of the Isle of Wight, or the gypseous series of Montmartre. A preference is given to this last method, simply for convenience sake, in order that the Upper Eocene of this work may coincide exactly with the strata classed by so many distinguished geologists as Lower Miocene. I am bound, however, to state, that the parting line between the Bembridge and Hempstead series, in the Isle of Wight, has been shown by Professor Forbes to be an arbitrary one—a purely conventional line, if any thing, less marked than the line separating the Bembridge series from the underlying St. Helen's group. (See Table, p. 209.) If retained as more useful, it is, as before hinted, for the sake of conformity with a system of classification adopted by many able geologists, who selected it before the uninterrupted continuity of the Eocene series