

writings on the fossils of the Mayence Basin, has lately pointed out several connecting links between the beds commonly called Lower Miocene and the overlying formations coeval with the faluns of Touraine. M. Raulin, also, in a paper just printed on the faluns of the Gironde,* has given the names of Middle and Lower Miocene to the equivalents of the Fontainebleau and Limburg beds, or to Professor Beyrich's "Oligocene" strata, the faluns of Touraine being classed as "Upper Miocene."

M. Hébert published, in 1855, a map descriptive of the areas of two tertiary seas, which succeeded each other in the Paris Basin,—the first that of the Calcaire grossier, and the second, that of the Fontainebleau Sands,—showing how marked is the want of coincidence between them; a fact which implies the occurrence of great geographical changes in the interval of time between the two eras compared. In the explanation of his map he gives his reasons for regarding the zone of *Cerithium plicatum*, or that of the Fontainebleau Sands, as the most convenient line of demarcation between Lower and Middle tertiary, or between Eocene and Miocene.† M. Lartet, also a distinguished French osteologist, whose writings on fossil mammalia are so well known, has favored me with his valuable counsel on this controverted subject; observing, that although the fossil testacea of the Fontainebleau Sands show a preponderance of affinities towards an Eocene fauna, and small connection with the faluns of Touraine, yet, on the other hand, the freshwater "Calcaire de la Beauce," immediately overlying the Fontainebleau Sands, and other lacustrine formations in Auvergne and Central France, as well as the Mayence Basin, cannot be included in the same Eocene system without doing violence to paleontological principles. The grouping of the fossil mammalia, he remarks, becomes less natural by such an arrangement; for not only many genera, but even some species, are found on both sides of the arbitrary line of demarcation thus drawn between Eocene and Miocene. The genera *Dorcatherium*, *Cainotherium*, *Anchitherium*, and *Titanomys*, for example, and *Rhinoceros incisivus* and others, are made common to Eocene and Miocene.

Professor Forbes, in his posthumous memoir on a tertiary formation of fluvio-marine origin in the Isle of Wight,‡ has observed, that there are certain bands of well-marked fossils so widely extended as to indicate definite horizons; and of these perhaps the most constant is "the zone of *Cerithium plicatum*," well-marked among the Tertiaries of France, Belgium, and Germany, and equally so in the Isle of Wight. Referring then to the connection between this zone and the underlying formations, he continues: "There is evidently no break in this part of the series of Tertiary depositions, and it would be harsh and forced to place one portion in the Eocene, and another in the Miocene, as has been done by continental geologists. In the Isle of Wight we have

* Actes de l'Académie de Bordeaux, 1855.

† Bulletin, 1855, tom. xii. p. 760.

‡ Mem. Geol. Survey, London, 1856, p. 99.