

Accordingly, I have introduced in the table, at p. 105, the name of "Lower Miocene" as a synonym much in vogue on the Continent for strata of that age, called by me "Upper Eocene." It is unnecessary to repeat the reasons so fully set forth in the text, which induced the late Professor E. Forbes and me to employ this arrangement and nomenclature in preference to one which throws into the same division the faluns of Touraine (originally selected by me as the type of the Miocene) and a fauna so distinct as that of the Fontainebleau Sands, which contains no species of shells in common with the "faluns," and which approaches so nearly in the general character of its fossils to the typical Eocene fauna. I observed, however (pp. 186, 187), that I was not unprepared for the necessity of including hereafter the deposits above alluded to in one and the same Miocene Period, should sufficient evidence be brought to light of intermediate and connecting links between the Fontainebleau sands or Limburg beds and the faluns of Touraine.

In the course of the last two years some progress has certainly been made in bridging over the wide gulf which formerly separated the so-called "Lower Miocene" from the "faluns," while on the other hand the Eocene system is becoming so comprehensive and so complicated in its details by the continual intercalation of new formations, and by the addition below its former base of the Thanet sands and Lower Landenian of Belgium; that the desirability of limiting its extension in an upward direction is becoming more and more obvious. The Thanet Sands, moreover, exhibit a testaceous fauna, almost as divergent from that of the Barton clay as are the shells of the Fontainebleau Sands from those of the faluns; so that, if we comprise the Thanet and Barton beds in one Eocene Period, we may be called upon, with almost equal propriety, to class the Fontainebleau and Falunian faunas in one and the same great Miocene system.

Professor Beyrich, in a recently published memoir on the tertiary strata of the North of Germany,\* has made known to us the existence of a long succession of marine strata, leading almost gradually from the equivalents of the Lowest Limburg or Tongrian beds of Dumont to others approaching in age the faluns of the Loire. Consequently he has thought fit to introduce a new term—that of "Oligocene"—for all the beds intermediate between Eocene and Miocene; and, having distributed the strata in question into seven subdivisions, each characterized by a certain proportion of peculiar fossils, he refers the uppermost of all, or his Sternberg beds, to the "Upper Oligocene;" the next five, comprising among others the Upper and Middle Limburg, to the "Middle Oligocene;" and the remaining two to the Lower Oligocene, comprehending the Lower Tongrian of Dumont with the Brown-coal of Germany, which is classed as the lowest of all.

M. Alcide d'Orbigny had previously (1852), in his Paleontology, considered all these "Oligocene" beds as a Lower Falunian division, classing the faluns of the Loire as Upper Falunian. Dr. Sandberger, in his

\* Abhandlungen der Königl. Acad. der Wissen. zu Berlin, 1855.