

the true clue to their relation clearly exhibited in unmistakable and perfect sections; the importance of which clue in its bearing on continental geology may be estimated very highly."

The opinion of my late lamented friend, so emphatically expressed in this passage in favor of the classification which I formerly adopted, will convince every reader that the old nomenclature might be defended by many cogent arguments; and some of these M. Deshayes has lately set forth in the preliminary chapter of his supplement to "The Fossil Shells of the Paris Basin;"* where he says, that while, on the one hand, the dissimilarity is enormous between the fossils of the Fontainebleau Sands and those of the faluns of the Loire, we find the fauna of the former to be allied to that of the marine beds below the Paris gypsum by a predominance of certain genera of shells. These he enumerates, and his observations are in harmony with what I have said (p. 184) respecting the "Eocene aspect" of the testaceous fauna of those strata which occupy the debatable ground.

Notwithstanding these and many other arguments which might be adduced in support of the classification formerly advocated by me, and given in my Table at pp. 104-5, I have come to the conclusion that it will be more convenient to draw the line of separation in the place so generally adopted in France, provided that we always regard it as an arbitrary and purely conventional line,—one which has no pretensions to be founded on any great change of species, still less on any general revolution in the earth's physical geography assumed to have happened at the era referred to. The classification was originally suggested in France by an accidental break in the regular succession of *marine* strata, caused by the intercalation on the site of Paris of certain freshwater gypseous marls, in which the *Paleothere* and other quadrupeds were discovered. By these marls the marine sands of Beauchamp, often called the "Sables Moyens," were separated from the marine sands of Fontainebleau. In countries where no such interruption occurs, the series, whether composed of freshwater, fluvio-marine, or marine strata, will exhibit "beds of passage" between Eocene and Miocene, such as those of Hempstead, in the Isle of Wight, or those recently discovered in the Alps by MM. Hébert and Renevier, and described by them in the Bulletin of the Statistical Society of the Department of the Seine (1854). In this interesting memoir an account is given of a formation termed by the authors "the Upper Nummulitic," which occurs in the neighborhood of Gap, and in the Diablerets in Savoy, where the *Cerithium plicatum* and other shells usually accompanying it in the Fontainebleau Sands and in Belgium are abundantly intermixed with species frequent in the Grès de Beauchamp, and even in the inferior Calcaire Grossier. Here, therefore, we have an example, among the highly elevated and contorted strata of the Alps, of marine beds of passage of the period under consideration, remarkable for many reasons,

* Description des Animaux sans Vertèbres, &c. Paris, 1857, p. 17.