http://www.geology.19thcenturyscience.org/books/1859-Lyell-Elements/README.htm

and, secondly, what is probably a consequence of the former, the great duration of species in this class, for they appear to have surpassed in longevity the greater number of the mammalia and fish. Had each species inhabited a very limited space, it could never, when imbedded in strata, have enabled the geologist to identify deposits at distant points; or had they each lasted but for a brief period, they could have thrown no light on the connection of rocks placed far from each other in the chronological, or, as it is often termed, vertical series.

Many authors have divided the European tertiary strata into three groups—lower, middle, and upper; the lower comprising the oldest formations of Paris and London before-mentioned; the middle those of Bourdeaux and Touraine; and the upper all those newer than the middle group.

When engaged in 1828 in preparing my work on the Principles of Geology, I conceived the idea of classing the whole series of tertiary strata in four groups, and endeavoring to find characters for each, expressive of their different degrees of affinity to the living fauna. With this view, I obtained information respecting the specific identity of many tertiary and recent shells from several Italian naturalists, and among others from Professors Bonelli, Guidotti, and Costa. Having in 1829 become acquainted with M. Deshayes, of Paris, already well known by his conchological works, I learnt from him that he had arrived, by independent researches, and by the study of a large collection of fossil and recent shells, at very similar views respecting the arrangement of tertiary formations. At my request he drew up, in a tabular form, lists of all the shells known to him to occur both in some tertiary formation and in a living state, for the express purpose of ascertaining the proportional number of fossil species identical with the recent which characterized successive groups; and this table, planned by us in common, was published by me in 1833.* The number of tertiary fossil shells examined by M. Deshayes was about 3000; and the recent species with which they had been compared about 5000. The result then arrived at was, that in the lower tertiary strata, or those of London and Paris, there were about 3½ per cent. of species identical with recent; in the middle tertiary of the Loire and Gironde about 17 per cent.; and in the upper tertiary or Subapennine beds, from 35 to 50 per cent. In formations still more modern, some of which I had particularly studied in Sicily, where they attain a vast thickness and elevation above the sea, the number of species identical with those now living was believed to be from 90 to 95 per cent. For the sake of clearness and brevity, I proposed to give short technical names to these four groups, or the periods to which they respectively belonged. I called the first or oldest of them Eocene, the second Miocene, the third Older Pliocene, and the last or fourth Newer Pliocene. The first of the above terms, Eocene, is derived from ηως, eos, *dawn*, and καινος, cainos, *recent*, because the fossil shells of

* See Princ. of Geol. vol. iii. 1st ed.