

ner to this horizon.³² Crocodiles still haunted the waters, for their bones are mingled with those of sea-snakes and turtles, and with tapiroid and other older Tertiary types of terrestrial creatures. The occurrence of the foraminiferal genus *Nummulites* is noteworthy. Though not common in England, it abounds, as already stated, in the Eocene deposits of central and eastern Europe.

UPPER EOCENE.—The highest division of the Eocene strata of England, according to the classification here followed, includes the uppermost part of the Hampshire series, which has long been known as the "Barton Clay," with, perhaps, the Upper Bagshot Sand of the London basin. The Barton Clay does not occur in that basin, but forms an important feature in Hampshire, where, on the cliffs of Hordwell, Barton, and in the Isle of Wight, it attains a thickness of 300 feet. It consists of gray, greenish, and brown clays, with bands of sand, and has long been well known for the abundance and excellent preservation of its fossils, chiefly mollusks, of which more than 500 species have been collected, but including also fishes (*Lamna*, *Myliobates*, *Arius*) and a crocodile (*Diplocynodon*). The following list includes some of the more important species for purposes of comparison with equivalent foreign deposits: *Voluta luctatrix*, *V. ambigua*, *V. athleta*, *Conorbis* (*Conus*) *scabriculus*, *C. dormitor*, *Pleurotoma rostrata* (and numerous other species), *Clavalithes* (*Fusus*) *longævus*, *Leistoma pyrus*, *Ostrea gigantea*, *O. flabellula*, *Vulsella deperdita*, *Pecten reconditus*, *Lima compta*, *L. soror*, *Arvicula media*, *Modiola seminduda*, *M. sulcata*, *M. tenuistriata*, *Arca appendiculata*, *Axinæa* (*Pectunculus*) *deleta*, *Cardita Davidsoni*, *C. sulcata*, *Crassatella sulcata*, *Chama squamosa*, *Nummulites elegans*, *N. variolaria*.

In the London basin the position of the so-called "Upper Bagshot Sands" has been the subject of some discussion, there being no marked separation between them and the group known as "Middle Bagshot." They consist of sands with ferruginous concretions which have yielded *Turritella imbricata*, *Ostrea flabellula*, and other shells found in the Barton Clay.

Above the Barton Clay and forming the highest member of the Eocene series comes a mass of unfossiliferous or sparingly fossiliferous sand, from 140 to 200 feet in thick-

³² Quart. Journ. Geol. Soc. xxxv. p. 227; xxxviii. p. 3. For an account of this deposit and its flora, see W. Pengelly and O. Heer, Phil. Trans. 1862.