

IN THE BAGSHOT SANDS, ENGLAND. — *Nummulites levigatus* Lam., *Cardita planicosta* Lam., *Pleurotoma attenuata* Sow., *Turritella multisulcata* Lam., *Conus deperditus* Brngt., *Lucina serrata* Sow.; *Myliobatis Edwardsi* Dixon, *Carcharodon angustidens* Ag., *Otodus obliquus* Ag., *Galeocerdo latidens* Ag., *Lamna elegans* Ag. Reptiles, *Palæophis typhæus* Owen, *Gavialis Dixoni* Owen, *Crocodylus Hastingsiæ* Owen; Mammals, *Dichodon cuspidatus* Owen, *Lophiodon minimus* Cuv., *Microchærus erinaceus* Wood, *Paloplotherium annectens* Owen.

Barton Series. — *Mitra scabra* Sow., *Voluta ambigua* Lam., *Typhis pungens* Morr., *Voluta athleta* Sow., *Terebellum fusiforme* Lam., *T. sopita* Morr., *Cardita sulcata* Morr., *Crassatella sulcata* Sow., *Nummulites variolarius* Morr. (variety of *N. radiatus* Sow.), *Chama squamosa* Brand.

The CALCAIRE GROSSIER contains many species of Fishes, and also of other tribes identical with those of the Upper Eocene of England.

Oligocene. — **LUDIAN** (= Uinta beds). The Montmartre gypsiferous marls of Paris, Bembridge and Headon beds of the Isle of Wight. **TONGRIAN** (= White River beds; Upper Oligocene, of Europe). Includes the Hempstead beds of the Isle of Wight, the Fontainebleau sandstone, in France, clays with *Cyrena convexa*, near Tongern in Belgium, the Lower marine Molasse of Switzerland. The name *Rupelian* is given in Belgium to an upper portion of the beds; and *Bolderian* to still higher beds.

Headon Series. — *Planorbis euomphalus* Sow., *Helix labyrinthica* Say, *Neritina concava* Sow., *Limnæa caudata* Edw., *Cerithium concavum* Desh.; *Lepidosteus*; Reptiles, *Emys*, *Trionyx*; Mammals, *Palæotherium minus* Cuv., *Anoplotherium*, *Anthracotherium*, *Dichodon*, *Dichobune*, *Spalacodon*, *Hyænodon*.

Bembridge Series (120 feet thick). — *Cyrena semistriata* Desh., *Paludina lenta* Desh., *P. orbicularis* Voltz., *Melania turritissima* Forbes, *Cerithium mutabile* Lam., *Cyrena pulchra* Morr., *Bulimus ellipticus* Sow., *Helix occlusa* Edw., *Planorbis discus* Edw.; MAMMALS: *Palæotherium magnum* Cuv., *P. medium* Cuv., *P. minus* Cuv., *P. minimum* Cuv., *P. curtum* Cuv., *P. crassum* Cuv., *Anoplotherium commune* Cuv., *A. secundarium* Cuv., *Dichobune cervinum* Owen, *Chæropotamus Cuvieri* Owen.

From the Montmartre gypsum beds of France, and equivalent beds, have been obtained species of the genera *Palæotherium*, *Anoplotherium*, *Xiphodon* (*X. gracilis*); the Carnivores, *Hyænodon* (*H. leptorhynchus* Blv.), *Cynodon Parisiensis* Pomel, Bats, and Opossum.

The *Phosphorite beds of Quercy*, referred to the Oligocene, have afforded *Palæotherium*, *Anoplotherium*, *Xiphodon*, *Hyænodon*, *Cynodictis*, *Cebochærus*, along with *Amphitragulus*, *Aceratherium*, *Necrolemur*, and others.

Lapparent divides the Oligocene into the *Tongrian* and *Aquitanian* stages; and the Tongrian into *Sannoisian* and *Stampian* substages.

The Hempstead beds of England have afforded *Corbula pisum*, *Cyrena semistriata* Desh., *Cerithium plicatum*, *C. elegans*, *Rissoa Chastelii*, *Paludina lenta*, *Melania fasciata*, *M. costata* Sow.; the Mammal, *Hyopotamus bovinus* Owen.

Lower Miocene (= John Day Beds, Lower Miocene, in Germany, etc.). — Lacustrine limestone of Beauce and Meulières de Montmorency, in France, and limestone of Agenais in Aquitania, southwest France; Red Molasse, Lignitic Molasse in Switzerland.

1. **MAYENCIAN** (*Langhian*, *Burdigalian*). — Freshwater Molasse of Switzerland; beds at Mayence, Belgium.

2. **HELVETIAN**. — Marine Molasse of Switzerland, Faluns of Anjou with *Ostrea crassissima*, etc., of *Touraine*, in western France, Molasse of the Superga, Italy.

Upper Miocene. — **TORTONIAN**. — Marls with *Helix Turonensis* in western France; Eningen beds, Leitha limestone near Vienna, Blue marls of Tortone in Italy. Above