

lent to the Sequanian stage. These are succeeded by a massive limestone (330 feet) with *Terebratula diphya* (janitor) and *Amm. transitorius*, and this by a compact white limestone (500–650 feet) with *Terebratula moravica* (Repellini), *Cidaris glandifera*, corals, etc. At the top lie some limestones (200 feet) with *Terebratula diphyoides* and many ammonites (*A. Calypso*, *A. privasensis*, *A. berriasensis*, etc.).

9. *Kimeridgian* = Kimeridge Clay, divided in central and northern France into the following sub-stages in ascending order: 1, Sequanian or Astartian (*Ostrea deltoidea*, zone of *Ammonites tenuilobatus*); 2, Pteroceran (*Pterocera Oceani*, zone of *Amm. acanthicus*); 3, Virgulian (*Exogyra virgula*). In Normandy, the Corallian clays with *Diceras arietinum* are covered by other clays with *Ostrea deltoidea* (Sequanian), and nodular limestone with *Pterocera Oceani* (Pteroceran), followed by blue clays and lumachelles with *Exogyra virgula* (Virgulian). In the Pays de Bray, these various strata are 330 to 400 feet thick, and are surmounted by calcareous marls, sandstone and limestone (115–160 feet) containing *Ostrea catalaunica*, *Anomia lævigata*, *Hemicidaris Hofmanni*, *Echinobrissus Brodiei*, *Ostrea bruntrutana*, and representing the Bononian sub-stage. The coast-section near Boulogne-sur-mer exposes a series of clays, sands, and sandstones (180 feet), from which a large series of characteristic fossils has been obtained, and which, as the type section of the Bononian beds, indicate a local littoral deposit in the upper part of the Kimeridge Clay.

In the French Ardennes, the Sequanian, Pteroceran, and Virgulian sub-stages are composed of a succession of marls and limestones (500–560 feet), the Sequanian marls and lumachelles being marked by *Ostrea deltoidea*, etc., the Pteroceran limestones by *Waldheimia humeralis*, *Pterocera ponti*, etc., and the Virgulian marls by immense numbers of *Exogyra virgula*. In the Meuse and Haute Marne, a group of compact limestones, more than 500 feet thick (Calcaires de Barrois), with Ammonites (*Stephanoceras*) *gigas*, etc., represents the Bononian sub-stage. In Yonne, the Sequanian sub-stage consists of oolites and contains a reef of coral full of bunches of *Septastræa*, *Montlivaltia*, etc. Toward the Jura, this sub-