

Radiolarian earths. The Barbados are outside of the outermost range of islands; and whatever changes of level they have experienced may not have affected the Caribbean Sea. At present the bottom of this sea is made of Globigerina and not of Radiolarian earth. Radiolarian deposits occur also on Haiti, Jamaica, and Cuba; but they have less extent and are less decisive as to change of level.

Whether the following changes of level were epeirogenic or not is undecided.

Over Europe and Asia the same elevation of the land over extensive areas was in progress, especially during the Pliocene. Europe was much changed in elevation contemporaneously with the disturbance in the Alps; and "by the close of the Pliocene all its main features had come into existence." The Alps were carried up probably 12,000 feet or more, and the Pyrenees over 10,000 feet.

The Himalayan chain, a region of upturning at the close of the Miocene (if not before, at the close of the marine, Nummulitic epoch), when 20,000 feet lower than now, began afterward, or simultaneously, its slow emergence and attained its present level according to Blanford by the end of the Pliocene or in the early Quaternary. The Tertiary beds of the Sub-Himalayas, or the Siwalik Hills, which are chiefly freshwater Pliocene and contain the remains of the *Fauna Antiqua Sivalensis*, were laid down during the progress of the uplift. During all this Himalayan elevation, peninsular India underwent little change.

Blanford derives additional evidence as to the remoteness of the time of the uplift, from the existing Mammalian fauna of Tibet. Out of 43 species of Mammals in Tibet, pertaining to 26 genera, 27 species and 4 genera are not known out of Tibet. Out of 16 species of Rodents, only one is not purely Tibetan. The various facts accord with the view that the elevation of the Himalayan Range commenced early in the Tertiary.

During the early Eocene, as well as the Cretaceous period, the British Channel was crossed by an Interior basin, perhaps having, as Jukes-Browne suggests (1892), a range of land over the western part, uniting Brittany to Cornwall. But in the Miocene, on the same authority, even the area of the *Eocene Anglo-Parisian* basin had become dry land; and in the Pliocene, ridges were formed crossing the Channel from northwest to southeast, as the Weald Axis, the Portsdown, the Purbeck corresponding to the axis of Artois, Bresle, and Bray to the south. Only in the Middle Quaternary, after a phase in which a passage extended across from below Dover and Brighton on the north to the Province of Calais in France, did the Channel secure its place through a general subsidence.

"Thus, throughout the Tertiary era, the continents of Europe and Asia, as well as America, were making progress in their bolder surface features, as well as in the extent of dry land. The evidence is sufficient to show that, when the period ended, the continents had in general their mountains raised to their full height." The evidence is stronger now than it was, more than 30 years since, when those words were written.

*Geosynclinal movements over the oceanic basin — the "Coral Island subsidence."* — That there were profound geosynclines over the oceanic basins during the later Tertiary and early Quaternary is put beyond question by