

transported by ice from the north, and spread over the surface down to the parallel of about  $40^{\circ}$ , and of finer material still farther south along the great valleys, extending in the Mississippi Valley, as Prof. E. W. Hilgard has shown, even to the Gulf of Mexico. The transportation was probably, for the most part, the work of a continental glacier, covering a large part of the continent north of  $40^{\circ}$ , and of the floods proceeding from its final melting. Europe also had, at the same time, its northern glacier, reaching down to the parallel of  $50^{\circ}$ , along which parallel the temperature is about the same as on the parallel of  $40^{\circ}$  in North America.

The Glacial period in North America was an era of greater continental elevation than now exists—at least for the glacial latitudes, that is, from the parallel of  $40^{\circ}$  northward. It was followed by the *Champlain* era, the era of a subsidence of the land below its present level, over the same northern regions, which subsidence was accompanied by a moderating of the climate, and a melting of the glacier. Next came the *Terrace* era, marked by the elevation of the continent toward, and finally to, its existing height, and a consequent making of terraces along river valleys, around lakes, and on many sea borders.

## II. RADIATES.

Polyps have been described as constituting one of the grand divisions of *Radiates*.

Radiates are characterized by a radiate system of structure, apparent both externally and internally: in other words, they consist of different series of similar parts repeated around a vertical axis. In polyps the tentacles are thus repeated; so, also, the internal septa; the reproductive system; the eyes, where these exist; and so on through the structure. In order to make this distinctive feature of Radiates more intelligible, a few words are here presented on the other grand divisions of the Animal Kingdom, or the Sub-Kingdoms as they are called. The number of Sub-Kingdoms is five, as follows:

1. Sub-kingdom of VERTEBRATES.—This designation refers to a fundamental feature of the species,—the backbone or spinal column, consisting of a series of bones (sometimes cartilaginous only), articulated together, called, in the Latin language, *vertebræ*. In connection with this, they have a cavity above for the great nervous cord, and one below for the viscera. Here belong Mammals (or Man, Quadrapeds, Whales, and the like), Birds, Reptiles, Fishes. All other animals are *invertebrates*, that is, have no vertebral column.

2. Sub-kingdom of AUTICULATES—so named with reference to the fact that the body consists of a series of segments or joints, articulated together; and that all the legs, antennæ, and other appendages, are likewise jointed (articulated). The body has one