

(f) The existence of different conditions of climate in former geological periods is satisfactorily demonstrated from the testimony of fossils. Thus, an assemblage of the remains of palms, gourds, and melons, with bones of crocodiles, turtles, and sea-snakes, proves a sub-tropical climate to have prevailed over the south of England in the older Tertiary ages (Book VI. Part IV. Sect. i. § 1). On the other hand, the extension of a cold or arctic climate far south into Europe during post-Tertiary time can be shown from the existence of remains of arctic animals, even in the south of England and of France (Book VI. Part V.). This is a use of fossils, however, where great caution must be observed. We cannot affirm that, because a certain species of a genus lives now in a warm part of the globe, every species of that genus must always have lived in similar circumstances. The well-known examples of the mammoth and woolly rhinoceros that lived in the cold north, while their modern representatives inhabit some of the warmest regions of the globe, may be usefully remembered as a warning against any such conclusion. When, however, not one fossil merely, but the whole assemblage of fossils in a group of rocks, finds its modern analogy in a certain general condition of climate, we may, at least tentatively, infer that the same kind of climate prevailed where that assemblage lived. Such an inference would become more and more unsafe in proportion to the antiquity of the fossils, and their divergence from existing forms.¹⁷

As an illustration of this application of the evidence of fossils in the interpretation of ancient conditions of geography at different geological periods, reference may be made more especially to the investigation of the various basins in which the Jurassic rocks of Europe were deposited. The positions of the seas and lands, and the variations of climate have been ascertained with sufficient definiteness to give us

¹⁷ See Neumayr, *Nature*, xlii. 1890, pp. 148, 175. This author specially devoted himself to the study of ancient climates as indicated by fossils. As an illustration of his methods consult his essay on the climatic zones of Jurassic and Cretaceous time, *Denksch. Akad. Wien*, xlvii. 1883; also the same work, vol. 1. 1885. "Fossil plants as tests of Climate"—the Sedgwick Prize Essay for 1892. By A. C. Seward. Cambridge, C. J. Clay, 1892.