

the Cambrian age onwards there were, on the two sides of the ocean, many species of invertebrate animals which were either identical or so closely allied as to be possibly varietal forms, indicating probably the shallowness of the ocean in these periods. In like manner, the early plants of the Upper Silurian, Devonian, and Carboniferous present many identical species; but this identity is less marked in more modern times. Even in the latter, however, there are remarkable connections between the floras of oceanic islands and the continents. Thus the Bermudas, altogether recent islands, have been stocked by the agency chiefly of the ocean currents and of birds, with nearly 150 species of continental plants; and the facts collected by Helmsley as to the present facilities of transmission, along with the evidence afforded by older oceanic islands which have been receiving animal and vegetable colonists for longer periods, go far to show that, time being given, the sea actually affords facilities for the migration of the inhabitants of the land, comparable with those of continuous continents.

In so far as plants are concerned, it is to be observed that the early forests were largely composed of cryptogamous plants, and the spores of these in modern times have proved capable of transmission from great distances. In considering this, we cannot fail to conclude, that the union of simple cryptogamous fructification with arboreal stems of high complexity, so well illustrated by Dr. Williamson, had a direct relation to the necessity for a rapid and wide distribution of these ancient trees. It seems also certain that some spores, as, for example, those of the Rhizocarps,¹ a type of vegetation abundant in the Palæozoic, and certain kinds of seeds, as those named *Æthoetesta* and *Pachytheca*, were fitted for flotation. Further, the periods of Arctic warmth permitted the passage around

¹ See paper by the author on Palæozoic Rhizocarps, *Chicago Trans.*, 1886.