Cephalopods are most diversified within the tropics; yet the Nautilus is a reminiscence of past ages. Among Gasteropods, the Stromboids belong to the tropics; but among the lamellibranchiate Acephala, the Naiades, which seem to me to stand very high in their class, have their greatest development in the fresh waters of North America. The highest Echinoderms, the Holothurians and Spatangoids are most diversified within the tropics, while Echini, Starfishes, and Ophiuræ extend to the arctics. The presence of Pentacrinus in the West Indies has undoubtedly reference to the prevalence of Crinoids in past ages. The Madrepores, the highest among the Actinoid Polypi, are entirely tropical, while the highest Halcyonoids, the Renilla, Veretillum, and Pennatula, extend to the tropics and the temperate zone.

Another interesting relation between the geographical distribution of animals and their representatives in past ages, is the absence of embryonic types in the warm regions. We find in the torrid zone no true representatives of the oldest geological periods; Pentacrinus is not found before the Lias; among Cephalopods we find the Nautilus, but nothing like Orthoceras; Limulus, but nothing like Trilobites.

This study of the relations between the geographical distribution of animals, and their relative standing, is rendered more difficult, and in many respects obscure, by the circumstance that entire types, characterized by peculiar structures, are so strangely limited in their range; and yet, even this shows how closely the geographical distribution of animals is connected with their structure. Why New Holland should have no Monkeys, no Carnivora, no Ruminants, no Pachyderms, no Edentata, is not to be explained; but that this is the case, every zoölogist knows, and is further aware, that the Marsupials[1] of that continental island represent, as it were, the other orders of Mammalia, under their special structural modifications. New Holland appears thus as a continent with the characters of an older geological age. No one can fail, therefore, to perceive of how great an interest for Classification will be a more extensive knowledge of the geographical distribution of animals in general, and of the structural peculiarities exhibited by localized types.

SECTION XXIX.

MUTUAL DEPENDENCE OF THE ANIMAL AND VEGETABLE KINGDOMS.

Though it had long been known, by the experiments of De Saussure, that the breathing process of animals and plants are very different, and that while the for-

[1] See Sect. 11.