

vast areas where the calcareous matter of the pelagic foraminifera has been removed, and the bottom consists of red or gray clay, animal life is scarce; and is represented chiefly by shell-less orders, such as the Holothuridea and the Annelids. This comparative sterility depends, no doubt, to a great degree upon the absence of carbonate of lime, but not entirely so; for the most sterile regions of the whole sea are the mortar-like lime deposits which form the slopes of coral reefs and islands. There appears to be something in the state of aggregation of the lime in the *Globigerina* shells and its intimate union with organic matter which renders the globigerina ooze a medium peculiarly favorable to the development of the higher forms of life. The stomachs of the more highly organized animals living in it or on its surface are always full of the fresher foraminiferal shells, from which they undoubtedly derive not only material for the calcification of their tests, but nitrogenous matter for assimilation likewise.

As we had previously anticipated, the fauna at great depths was found to be remarkably uniform. Species nearly allied to those found in shallow water of many familiar genera were taken in the deepest hauls, so that it would seem that the enormous pressure, the utter darkness, and the differences in the chemical and physical conditions of the water, and in the proportions of its contained gases depending upon such extreme conditions, do not influence animal life to any great extent.

The geographical extension of any animal species, whether on land or in the sea, appears to depend mainly upon the maintenance of a tolerably uniform temperature, and the presence of an adequate supply of suitable food, the latter condition again depending chiefly upon the former; and the conditions both of temperature and of food-supply are very uniform at extreme depths where the nature of the bottom is the same. Possibly the element next in importance is the length of time during which migration may have taken place, and there seems