

veniently this may be fitted out; the differences in temperature, pressure, saltness, &c., are too great and the change too abrupt. Thus I think that a slow continuous emigration seawards is going on in the manner above sketched out, and there seems to be scarcely any doubt that the present deep-sea fauna will be changed in character in the course of time, chiefly on account of an emigration from the shore.

It is rather peculiar that such an emigration is not always necessarily accompanied with any very obvious alterations of the organisation of the animals. Striking examples of this fact are afforded, for instance, by those *Cucumariæ* which are met with in the depths. Nevertheless it must be admitted that, as a rule, judging at least from the Holothurioidea, alterations of a more or less essential nature are produced during the migration. But, on the other hand, there are strong grounds for supposing that most forms which have once surmounted the difficulties of the migration, and reached a more considerable depth, are in several respects endowed with the faculty of preserving "certain" of the characteristics of their ancestors, *i.e.*, the original shallow-water forms, longer than those descendants of the same ancestors which, from being able to maintain the struggle for existence with greater advantage, have remained in the littoral region. Indeed, natural selection ought to have played a far more important rôle in the latter region than in the monotony of the abysses, and to have in general called forth swifter and more perceptible changes. It is within the shore region that the Synaptidæ occur, which are of all Holothurids the most thoroughly modified and least Echinoderm-like in shape. Even the Molpadidæ, which are, in my opinion, somewhat older than the Synaptidæ, are extremely altered forms, although, like certain *Cucumariæ*, they have emigrated at a later period, and seem now to thrive principally at considerable depths.

Supposing that there is some truth in the hypothesis, which I shall attempt to prove below, that the common progenitors of all the Holothurioidea were not apodous *Synapta*-shaped animals, as has been hitherto asserted, but of the form of *Cucumariæ*, and provided with an open stone-canal, feet along the ambulacra, and a well-developed water-vascular system somewhat like that of the Echinids, it might appear strange that even among the present shallow-water forms there are to be found species which have in some respects maintained themselves almost like the primitive form. On the other hand, it ought not to be forgotten that, notwithstanding this similarity, these very forms have undergone great and sweeping changes. They have lost the communication of the stone-canal with the exterior, the calcareous ring is highly altered, the tentacles, which must originally have been simple and foot-like, have been transformed into very complicated dendroid organs, &c. And if we review the whole family of Dendrochirotæ more closely, they are found to have varied in every possible direction so as to adapt themselves to the various modes of life that necessarily follow from the infinitely varying conditions of the littoral region. The Dendrochirotæ have been split up, so to