

natatory exopodites on a certain number of the limbs would seem to remove these Crustacea far from the Isopoda, and to bring them in closer approximation to the Schizopoda, but this character is, perhaps, the only one pointing to a genetic connection between these two groups. In all other respects I find the difference so very great as quite to forbid the adoption of the view of a direct descent of the one from the other. In some characters the Cumacea would seem to occupy a still more primitive position than even the Mysidæ. Thus, in the development of the higher Crustacea we find the Cumacean type, as it were, imitated by the early stage preceding the Mysis-stage, and to which the name of Zoea has been applied, the tail being in this stage, as in the Cumacea, very mobile and slender, and at first without any trace of ventral limbs, and the natatory exopodites confined to the anterior limbs only. Moreover, the general form of the body in the Cumacea, and especially that of the tail, strongly remind us of that ancient group to which Mr. Packard has given the name of Phyllocarida, and of which the recent genus *Nebalia* is regarded as a direct descendant. True, the limbs in the Cumacea are very different from those in *Nebalia*, but it is by no means proved that the limbs in all of the ancient Phyllocarida were of exactly the same structure as in the recent genus *Nebalia*. It has been generally admitted that the phyllopodous form of the limbs is the most primitive one in Crustacea, and that all other forms might be derived from this type. But the legs in the oldest of all known Crustacea, the Trilobita, have been stated by Mr. Walcott to exhibit a totally different form, and this fact does not seem to corroborate the general validity of the above supposition. The structure of the branchial apparatus in the Cumacea is very remarkable and quite unlike all that is observed in other Crustacea. It is true that the part to which the gills are affixed represents the epipodite of the maxillipeds, and that this part is also found in the Mysidæ, but here it always constitutes a simple membranous plate without any trace of gills, and may be assumed only indirectly to subserve a respiratory function. As is well known, we also find the same part peculiarly developed for respiratory purposes in the cheliferous Isopoda, but even here without any trace of gills. The antennæ in the Cumacea are totally different in structure from those in the Mysidæ or any other form of the Podophthalmia, whereas they exhibit, especially as regards their peculiar modification in the males, a certain similarity to those in *Nebalia*, as also to those in the Amphipoda.

In conclusion, I am inclined to regard the Cumacea as representing the descendants of a very ancient form, long ago extinct, which may have combined some characters of both the Phyllocarida and Trilobita. Perhaps even some of the palæozoic forms placed among the Phyllocarida may have formed a direct transition to the Cumacean type.