APPENDIX.

Symbiotic Hydroida living in the Deep-sea Keratosa.

The majority of the Deep-sea Keratosa described in the preceding pages live constantly in symbiosis with certain Hydroids, viz., all the Stannomidæ (nine species), all the Spongelidæ (five species), and a part of the Psamminidæ (two species). No symbiotic Hydroida were found in the remainder of the Psamminidæ (five species) nor in the Ammoconidæ (five species). The symbiosis and the mutual relations between the Deep-sea Keratosa and the Hydroida seem to be so important for both parts of the organism (at least in the majority of the species enumerated) that the whole growth, the general form, and the special structure have been modified by their influence.

In spite of the imperfect state of preservation, which presented great obstacles to the recognition of the symbiotic animals, I have been able, by continuous examination of numerous specimens, not only to state with sufficient certainty the Hydroid nature of the reticular symbiontes hidden in the Keratose body, but also to distinguish at least four different forms, in three of which the genus could be recognised. Two species (one of which is the most frequent inhabitant of the sponges) belong to the genus *Stylactis*, Allman (Pl. II. figs. 5–7); a third species to *Halisiphonia*, Allman (Pl. IV. fig. 9); and a fourth probably to *Eudendrium* or an allied genus (Pl. IV. fig. 4).

The characters common to all these symbiotic Hydroida are: (1) the enormous development of a reticular hydrorhiza; (2) the small size of the hydranths arising from it; (3) the production of sporosacs or sessile gonophores directly from the hydrorhiza; (4) the production of a dark (brown or greenish) pigment in the entoderm cells.

Hydrorhiza of the Symbiotic Hydroida.—The hydrophyton (Allman) or the common basis of the trophosome, by which its zooids are connected into a single colony, is represented in all the symbiotic Hydroids not by a free branched hydrocaulus, but by a reticular hydrorhiza, which is fully enclosed in the body of the hospitable sponge. Usually all the parts of the sponge are traversed by the network of the hydrorhiza, but sometimes this is confined to a certain part of the host, while the other part is free.

The anastomosing branches of the hydrorhiza are usually cylindrical and of nearly equal diameter in the majority of specimens, but sometimes they form irregular dilata-