wise be the case. In *Cirripathes* and *Stichopathes* the zooids on the basal portion of the stem become so much reduced that they are only recognisable as discoidal swellings of the cœnenchyma, presenting a median aperture. In such cases the tentacles appear to be lost first, and subsequently the body of the zooid becomes more and more reduced, until finally it is no longer recognisable. In *Pteropathes fragilis* the tentacles appear to be lost in a definite order. In the normal zooid the sagittal tentacles are larger, and situated at a much lower level than the other four. In spite of their size the sagittal tentacles are the first to be lost, and some distance from the apex of a branch the zooids have usually only four tentacles. Still lower down these become lost also, and soon the zooid is no longer recognisable. In the Antipathinæ generally the tentacles appear to be lost before the body of the zooid.

An attempt to indicate the phylogenetic relationship of the Antipatharia must be deferred until my account of the histology of the group has been completed. In the meantime it may be stated that there appears little evidence that the Antipathidæ are such degenerate forms as v. Koch has supposed. His views on the subject were based on a study of *Parantipathes larix*, which in many respects is quite an exceptional form. At first sight the irregularity in the length of the mesenteries of this species might appear to support v. Koch's view, but if the view which I have taken of their origin and homologies be correct, the shorter mesenteries must be regarded as imperfectly developed rather than degenerate. It appears to me more probable that the Actiniaria have become elaborated from a simple hexamerous type, having probably the bilateral symmetry of *Leiopathes*, than that the Antipatharia have become degenerated from Hexactiniæ with a large number of mesenteries. Although *Leiopathes glaberrima* possesses twelve mesenteries, whilst all other Antipathinæ, so far as we know at present, have only ten, it does not necessarily follow that the majority have lost two mesenteries and become degenerate from a hexamerous type having six pairs or more. The available evidence appears to point in the opposite direction. Six well-developed mesenteries (three pairs) are present in all Antipathidæ, whilst none have more than three fully developed pairs. *Cladopathes* amongst the Schizopathinæ has only three pairs of mesenteries in all. Next come *Antipathes*, *Antipathella*, and a number of other genera with five pairs, two of which are short and apparently not fully developed. The two additional pairs are situated one on each side of the transverse mesenteries which bear the reproductive organs. That it is to say, in *Antipathes*, &c., there are four lateral compartments on each side of the stomodæum, whereas in *Cladopathes* there are only two. Finally, in *Leiopathes* two opposite compartments bordering the transverse mesenteries become