

It appears to me, however, that neither of the foregoing explanations gives a clue to the real arrangement of mesenteries in Antipathidæ, and I now propose to indicate in outline my own views on the subject, which appear not only to meet the case, but also to throw considerable light on the homologies of the mesenteries in the Anthozoa generally.

The arrangement of the mesenteries in pairs consisting of adjacent members, as found in adult Hexactiniæ, does not necessarily imply that the members of a pair when at first developed all bore the same relation to one another as they do ultimately. This we know from the researches of Lacaze Duthiers, Kowalevsky, and the brothers Hertwig on various types. Unfortunately the order of development of the first six pairs of mesenteries is not thoroughly understood, and the various investigators give somewhat different accounts. One point, however, appears clear, and that is that the earliest formed mesenteries are not developed on precisely the same plan as those which appear subsequently. After the first twelve mesenteries have been formed, four of them situated two at each end of the long axis of the stomodæum become the pairs of "directives," and have the retractor muscles on the intraseptal surfaces; the other eight are arranged in so-called "pairs," having the retractor muscles on their interseptal surfaces. It is, however, to be noted that the two mesenteries forming each pair of "directives" were in point of time developed together and embryologically form true pairs. The other four pairs each consist, on the other hand, of mesenteries which are not of the same age, and therefore do not come under the same category. This is clearly seen from Hertwig's figures of *Peachia*. The first twelve mesenteries arise from single rudiments and developmentally form pairs, the members of which are on opposite sides of the stomodæum. Owing to the development of the retractor muscles on adjoining surfaces of the couplets along the lateral walls of the stomodæum, each couplet, consisting of mesenteries of different ages, comes to be regarded as a "pair." After this stage the further addition of mesenteries in Hexactiniæ takes place in a different manner. Buds appear on the body-wall in the interseptal spaces and opposite to one another as before, but in this case each bud gives rise to two mesenteries, having the retractor muscles on their adjoining surfaces. In this way the majority of the mesenteries in Hexactiniæ are formed, and it will be seen that these "pairs," like the "directives," consist of mesenteries of the same age, but that unlike them the members of a "pair" in this case were formed as adjacent and not as opposite mesenteries. Perhaps two opposite pairs of this type should be considered analogous to one pair of the primary mesenteries. Whatever number may ultimately be present, the new pairs are always added in the lateral sections of the cœlenteron, and the original "directives" are never separated, but, on the other hand, tend to become more closely pressed together. As already stated, previous authors are not agreed as to the order in which the first twelve mesenteries (six "pairs") are developed, and so far as the Actiniaria are concerned, I do not at present propose to discuss the matter further.