end of the long axis of the stomodæum. It now becomes necessary to enquire whether the mesenteries of Antipathidæ may not be arranged in pairs, and whether, if this be the case, the arrangement corresponds with that in other Zoantharia. In the Hexactiniæ all the mesenteries are usually supposed to be arranged in pairs, which consist of adjoining mesenteries. The section of the cœlenteron situate between a pair of mesenteries is termed "intraseptal," that between adjoining pairs "interseptal." Two pairs are known as "directives;" these are situated in the sagittal axis, and usually terminate the long axis of the mouth. On these the retractor muscles occupy the interseptal surfaces; in all other cases, the intraseptal. Thus the position of the retractor muscles enables one to determine the paired arrangement of the mesenteries, and also to decide which are to be considered "directives." Unfortunately in nearly all the Antipathidæ the muscular system is so feebly developed that I have not yet been able to make out any special collection of muscular fibres on either side of a mesentery. On account of the extremely small size of the zooids of most species, the mesenteries are rarely well developed, and even in such species as *Parantipathes larix*, where those in the transverse axis are much elongated, there appears no corresponding increase in the importance of their musculature. Thus the sure guide to the paired arrangement in many other Zoantharia is not available here. In this connection it should, however, be remembered that in the Cerianthidæ there are apparently no retractor muscles, and the protractors are very feebly developed, added to which the mesenteries are not arranged in pairs on the Hexactinian plan. In the Zoanthidæ also the musculature is more rudimentary than in Hexactiniæ.

Undoubtedly, the fact that there are twelve mesenteries and six tentacles in *Leiopathes* would seem to indicate, on *a priori* grounds, a paired arrangement of the mesenteries. This seems the more probable when it is remembered that, in all other genera of Antipathidæ of which the zooids are known, there are either ten or six mesenteries, and that in both cases the number might be regarded as directly derivable from the arrangement in *Leiopathes*. If the twelve mesenteries found in *Leiopathes* are to be interpreted according to the usual arrangement in Actiniaria and Madreporaria, *i.e.*, on the Hexactinian basis, it is necessary that the mesenteries numbered 1 and 12 (fig. 16) should form a pair, as also should numbers 6 and 7. These must then be considered the two pairs of "directives." In this case numbers 2–3, and 4–5 form pairs, and there is a similar paired arrangement on the opposite side of the stomodæum. The effect of this arrangement would be that, of six pairs present in the upper portion of the oral cone, two, the directives, remain intact, two are lost entirely, and the other two pairs become reduced in the lower section of the cœlenteron to a single member each. In this case the sagittal tentacles correspond to intraseptal spaces. The arrangement of the tentacles on each side of the transverse axis is really not the same. Mesenteries 3 and 10 are the two which ultimately occupy the transverse axis, and the tentacles to the