

Angelo Andres (*Quart. Jour. Micros. Sci.*, new ser., vol. xvii. p. 221, 1877) and my brother and myself (*Actinien*, p. 127) had already pointed out that the position of the septa in the Zoantheæ was regulated on an entirely different principle from that in other Actiniaria, though G. v. Koch was the first to find out the true nature of it. He discovered what I fully corroborate, that the septa present are of two different sizes (*Morphol. Jahrb.*, Bd. vi. p. 359, 1880). The larger or macrosepta only reach the œsophagus and bear reproductive organs and mesenteric filaments, whilst the smaller or microsepta are sterile and end on the oral disk; the latter are not, as I formerly supposed, young septa destined to be developed into larger, but are really rudimentary formations.

Both the larger and the smaller septa bear muscles on both sides: one side bears longitudinal fibres, the layer of which is, however, only slightly pleated, the other side bears fibres which rise obliquely, and are homologous with the transverse muscular fibres of the other Actiniæ, though they can easily be mistaken for longitudinal fibres in transverse sections. There is here, therefore, a predisposition to the paired arrangement of the septa, the existence of which was first recognised by G. v. Koch. Each pair consists of a small and a large septum, having longitudinal muscles on the faces turned towards one another (Pl. XIV. fig. 2). The two pairs of directive septa form an exception, however, as one pair of them, the ventral, contains large septa only,—the other pair, the dorsal, only small septa; in some Zoantheæ, we must also except two pairs of ordinary septa which lie right and left at a little distance from the small directive septa, and contain macrosepta only (Pl. XIV. fig. 3).

The manner in which the larger and smaller septa are distributed can be more accurately determined if we start from the directive septa, and disregard provisionally the grouping in pairs. In the Zoantheæ, as in all Actiniæ, two kinds of septa alternate; in the septa of the one system the muscles are disposed in the same way as they are in the ventral pair of directive septa, whilst in the other system the case is reversed, and they have the same disposition as they have in the dorsal pair of directive septa. The septa which have the same arrangement of the muscles as the small dorsal directive septa, viz., the dorsal septa, are likewise small, whilst the others, the ventral septa, are strong; it is only in the neighbourhood of the small directive septa that the conditions are reversed as the dorsal septa are strong, and the ventral septa are weak. We can therefore divide the ordinary pairs of septa into two different regions; in the one (the larger, or ventral region), the ventral septa of the single pairs are macrosepta, and the dorsal septa are microsepta, whilst in the other (the dorsal region), the reverse is the case, and the dorsal septa are macrosepta. When all the pairs of septa are equally developed, the two regions are bounded on either side by microsepta, but those two microsepta are often wanting left and right, and in this way the pairs formed of macrosepta alone, which have been already mentioned, are produced: these contain two large dorsal septa of the dorsal region and two large ventral septa of the ventral region.