the axis of *Isis elongata*, Esper, and other forms, and surround their bases with a black horny mass which becomes separated from a portion of the ectoderm and is homologous with the axial skeleton of Antipatharia. The polyps of a colony are united to each other by basal processes, but have no true cœnenchyma. Koch admits that this species appears at first glance to belong to the true Actiniæ, but believes it to differ on account of the presence of a chitinous base secreted by the polyps, which is not distinguishable from that of the Antipatharia. In his discussion of the phylogenetic relations of the Antipatharia, Koch calls attention to the fact that Lacaze Duthiers first showed their relationship to the Hexacoralla through *Gerardia*, but that on account of the peculiarity of the skeleton of the Antipathidæ, the latter still remained an isolated group. Koch thinks he has added a link in *Gephyra*, which by its skeleton unites the Antipathidæ with the Hexacoralla, and proposes to derive *Antipathes* from skeletonless Hexacoralla similar to the Actiniæ of the present day. The polyps in their anatomical and histological structure are quite like many small Actiniæ, but in *Gephyra* and *Antipathes* there are simplifications, particularly in the musculature, to be attributed to a reduction in the size of the polyps, and their union into colonies. The tentacles for the same reasons have become fewer, but scarcely altered. The mouth and œsophagus show no marked variation in *Gephyra*, *Gerardia*, and *Antipathes*. In *Antipathes* only two mesenteries are fully developed, the remaining eight being more or less rudimentary, but by their position and kind of degeneration we may judge that the ancestor of *Antipathes* had six tentacles and the same number of antimeres. *Gerardia* has twenty-four mesenteries and the same number of tentacles, whilst *Gephyra* approaches the Actiniæ closely in the number of tentacles and mesenteries. *Gerardia* stands alone in having a network of canals uniting the polyps, but *Gephyra* would in this respect approach it more closely were it shown that the colony results from budding.

Koch suggests the following as the most probable stages in the phylogenetic history:—

1. Soft Actiniæ which secrete for their support a horny substance by means of the basal ectoderm.
2. Those situated on a slender cylindrical base surround it and enclose it with horny matter.
3. The polyps, by budding, form a colony. Axis ceases to be solely secreted around some foreign substance, and now grows independently beyond the limits of supporting substance.
4. Degeneration sets in in certain parts.
5. The axis becomes entirely independent. With increase in number, the polyps become reduced in size, and connected with this is a reduction in the number of mesenteries and tentacles.