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XVII.—*The Spiral Character of Cœlenterate Development.*

By Prof. JOHN YOUNG, University of Glasgow.

IN the Anthozoa fundamental numbers have been recognized—four for the *Cerianthus* group, six for the Stone Corals, eight for the Alcyonarians. Mereschkowsky considers the fundamental number for the Hydrozoa to be two (Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 220). Gegenbaur speaks of the tentacles as varying so that “we cannot suppose that the secondary axes are definitely differentiated.” Hæckel refers the Cœlenterate type to an imaginary six-sided pyramid. Metschnikoff and Mereschkowsky have stated the mode of development of the tentacles among the Hydroids in such fashion as to give support to the view that the partition of the Cœlenterates may be explained by analogy of the floral axis in phænogamous plants. The septa of the Anthozoa are developed in successive cycles, and symmetrically with reference to the bilateral symmetry, of which the young and even the adult stage give evidence. Huxley, following Lacaze-Duthiers, gives (*Manual of the Invertebrates*, p. 158) the following formula for the chambers of the hexamerous Anthozoon :—

$$\begin{array}{c} A \text{ CE } \div \text{ FDB } \\ \text{CE } \div \text{ FDB } A' \end{array}$$

Mereschkowsky shows that the partition of the reproductive sacs in the gonophore of *Monobrachium* takes place similarly in paired fashion, the bilateral symmetry being there also not lost sight of. As the later septa are successively shorter than those immediately preceding, it appears as if the radiate appearance of the Cœlenterata were due, not to the production of equivalent antimeres round a common centre, but to the shortening of an axis which had given off successive pairs of buds, the last pairs being represented on the shortened axis by the septa of least development. Whether the shortened axis is raceme or corymb depends on the development of the reproductive organs, on the order in which they reach maturity on the free margin of the mesenteries. The formula quoted above seems to be the expression of the spiral development. Any one who follows the development of the tentacles of a well-fed *Hydra* may see that the order of their appearance is not irregular, but that it follows a definite rule. No doubt the view here proposed has occurred to other anatomists; but as it has not, to my knowledge, been published, I now seek to put it on record as a protest, were it nothing more, against the geometric method of classifying animal forms.