

which the natural orders have been most fully investigated. It is so among Polyps, if the Actinoids and Haleyonoids constitute natural orders in that class; for the Haleyonoids, with their eight spheromeres, and lobed tentacles, stand higher than the Actinoids. It is so among Echinoderms, the orders of which truly correspond to different degrees of complication of their structure, and most naturally mark the relative rank of these animals. It is so among Crustacea, taking the Rotifera, the Entomostraca, the Isopods, the Amphipods, the Stomatopods, and the Decapods as their natural orders. It is so among Acephala, if the Bryozoa, the Brachiopods,<sup>1</sup> the Tunicata, and Lamellibranchiata constitute natural orders. This gradation, in accordance with the complication of structure, is equally apparent among the Batrachians and the true Reptiles; and if it is not traceable at present with the same certainty in all the classes of the animal kingdom, I am inclined to believe that it is not because this principle is incorrect, but because we have not yet obtained a satisfactory standard, by which to determine the relative importance of their structural differences. At all events, a majority of the classes, and those best known to me, coincide with the view I have expressed respecting the meaning of orders. It would be surprising should there be some classes in which no such gradation exists, when it is so apparent in others. Let us now see what are the different degrees of complication of structure observed among Acalephs.

After tracing the special homologies of the Ctenophoræ, and ascertaining their close relationship to the ordinary Medusæ, it is evident that they belong to the class of Acalephs; but in this class they constitute a natural and distinct order. Their chief difference from the Discophoræ consists in the mode of ramification of the chymiferous tubes, originating in two main trunks, in opposite directions, each of which is divided into two horizontal branches, and each branch into two horizontal forks; so that the number of horizontal chymiferous tubes is always eight. But, unlike other Acalephs, these tubes do not terminate at the periphery, but open into eight vertical branches, converging in opposite directions towards the actinal and the abactinal ends of the body, and giving out minor branches into the spherosome. The main trunks of these vertical branches are parallel to the surface of the spherosome, and follow the same course as the rows of locomotive flappers, which extend, like eight ribs, upon the surface of the body. Towards the actinal and towards the abactinal poles of the spherosome, the vertical branches of

<sup>1</sup> The position I have assigned to the Brachiopods, near the Bryozoa, has been confirmed by a paper just published, in which a Brachiopod is described, resembling so closely a young Bryozoan just hatched from the egg, that the conclusion is

irresistible that Bryozoa and Brachiopods are more closely related to one another than any other groups of Acephala. See Beschreibung einer Brachiopodenlarve von FRITZ MÜLLER in Desterro (Brasilien), in Archiv für Anat. Phys. und wiss. Med. 1860, p. 72.