

phases of development, which are not included within the limits of its own type; no Vertebrate is, or resembles, at any time an Articulate, no Articulate a Mollusk, no Mollusk a Radiate, and *vice versa*. Whatever correlations between the young of higher animals and the perfect condition of inferior ones may be traced, they are always limited to representatives of the same great types; for instance, Mammalia and Birds, in their earlier development, exhibit certain features of the lower classes of Vertebrates, such as the Reptiles or Fishes; Insects recall the Worms in some of their earlier stages of growth, etc., but even this requires qualifications to which we shall have to refer hereafter. However, thus much is already evident, that no higher animal passes through phases of development recalling all the lower types of the animal kingdom, but only such as belong to its own branch. What has been said of the infusorial character of young embryos of Worms, Mollusks, and Radiates, can no longer stand before a serious criticism, because, in the first place, the animals generally called Infusoria cannot themselves be considered as a natural class; and in the second place, those to which a reference is made in this connection, are themselves free-moving embryos.¹

With the progress of growth and in proportion as the type of an animal becomes more distinctly marked, in its embryonic state, the plan of structure appears also more distinctly in the peculiarities of that structure, that is to say, in the ways in which and the means by which the plan, only faintly indicated at first, is to be carried out and become prominent, and by this the class character is pointed out. For instance, a wormlike insect larva will already show, by its tracheæ, that it is to be an Insect and not to remain a Worm, as it at first appears to be; but the complications of that special structure, upon which the orders of the class of Insects are based, do not yet appear; this is perfected only at a late period in the embryonic life. At this stage, we frequently notice already a remarkable advance of the features characteristic of the families over those characteristic of the order; for instance, young Hemiptera, young Orthoptera may safely be referred to their respective families, from the characteristics they exhibit before they show those peculiarities which characterize them as Hemiptera or as Orthoptera; young Fishes may be known as members of their respective families before the characters of their orders are apparent, etc.

It is very obvious why this should be so. With the progress of the development of the structure, the general form is gradually sketched out, and it has already reached many of its most distinctive features, before all the complications of the structure which characterize the orders have become apparent; and as form characterizes essentially the families, we see here the reason why the family type

¹ See above, Chap. I., Sect. 18, p. 75.