

a remarkable agreement with the embryonic growth of animals; though the state of our knowledge in Embryology and Palæontology justifies now such a conclusion. The facts most important to a proper appreciation of this point, have already been considered in the preceding paragraph, as far as they relate to the order of succession of animals, when compared with the relative rank of their living representatives. In examining now the agreement between this succession and the phases of the embryonic growth of living animals, we may, therefore, take for granted, that the order of succession of their fossil representatives is sufficiently present to the mind of the reader, to afford a satisfactory basis of comparison. Too few Corals have been studied embryologically, to afford extensive means of comparison; yet so much is known, that the young polyp, when hatched, is an independent, simple animal, that it is afterwards incased in a cup, secreted by the foot of the actinoid embryo, which may be compared to the external wall of the *Rugosa*,<sup>1</sup> and that the polyp gradually widens until it has reached its maximum diameter, prior to budding or dividing, while in ancient corals this stage of enlargement seems to last during their whole life, as, for example, in the Cyathophylloids. None of the ancient Corals form those large communities, composed of myriads of united individuals, so characteristic of our coral reefs; the more isolated and more independent character of the individual polyps of past ages presents a striking resemblance to the isolation of young corals, in all the living types. In no class is there, however, so much to learn still, as in Polypi, before the correspondence of their embryonic growth, and their succession in time, can be fully appreciated. In this connection I would also remark, that among the lower animals, it is rarely observed, that any one, even the highest type, represents in its metamorphoses all the stages of the lower types, neither in their development, nor in the order of their succession; and that frequently the knowledge of the embryology of several types of different standing, is required, to ascertain the connection of the whole series in both spheres.

No class affords, as yet, a more complete and more beautiful evidence of the correspondence of their embryonic changes, with the successive appearance of their representatives in past ages, than the Echinoderms, thanks to the extensive and patient investigations of J. Müller upon the metamorphoses of these animals.<sup>2</sup> Prior to the publication of his papers, the metamorphosis of the European Comatula alone was known. (See Sect. XVIII., p. 85.) This had already shown, that the early stages of growth of this Echinoderm exemplify the peduncated Crinoids of past ages. I have myself seen further, that the successive stages of the embryonic growth of Comatula typify, as it were, the principal forms of Crinoids which characterize the successive

<sup>1</sup> MILNE-EDWARDS et HAIME, q. n., p. 31.

<sup>2</sup> MÜLLER, (J.) Seven papers, q. n., p. 71.