

beginning and controls the whole development. The embryo of the Vertebrate is a Vertebrate from the beginning, and does not exhibit at any time a correspondence with the Invertebrates. The embryos of Vertebrates do not pass in their development through other permanent types of animals. The fundamental type is first developed, afterwards more and more subordinate characters appear. From a more general type, the more special is manifested, and the more two forms of animals differ, the earlier must their development be traced back to discern an agreement between them. It is barely possible that in their first beginning all animals are alike and present only hollow spheres, but the individual development of the higher animals certainly does not pass through the permanent forms of lower ones. What is common in a higher group of animals is always sooner developed in their embryos than what is special; out of that which is most general arises that which is less general, until that which is most special appears. Each embryo of a given type of animals, instead of passing through other definite types, becomes on the contrary more and more unlike them. An embryo of a higher type is, therefore, never identical with another animal type, but only with an embryo.

Thus far do the statements of von Baer extend.¹ It is evident from this, that he has clearly perceived the limitation of the different modes of embryonic development within the respective branches of the animal kingdom, but it is equally certain that his assertions are too general to furnish a key for the comparison of the successive changes which the different types undergo within their respective limits, and that he is still vaguely under the impression, that the development corresponds in its individualization to the degrees of complication of structure.

¹ The account which Huxley gives of Baer's views, (see Baden Powell's *Essays*, Appendix 7, p. 495,) is incorrect. Baer did not "demonstrate that the classification of Cuvier was, in the main, simply the expression of the fact, that there are certain common *plans of development* in the animal kingdom," etc., for Cuvier recognized these plans in the *structure* of the animals, before Baer traced their development, and Baer himself protests against an identification of his views with those of Cuvier. (Baer's *Entwick.*, p. 7.) Nor has Baer demonstrated the "doctrine of the unity of organization of all animals," and placed it "upon a footing as secure as the law of gravitation," and arrived at "the grandest law," that, up to a certain point, the development "*followed a plan common to all animals.*" On the contrary, Baer admits four distinct types of animals, and four modes of development. He only

adds: "It is barely possible that in their first beginning all animals are alike." Huxley must also have overlooked Cuvier's introduction to the "*Règne Animal*," (2d edit., vol. 1, p. 48, quoted verbatim above, p. 193,) when he stated that Cuvier "did not attempt to discover upon what plans animals are constructed, but to ascertain in what manner the facts of animal organizations could be thrown into the fewest possible propositions." On the contrary, Cuvier's special object, for many years, has been to point out these plans, and to show that they are characterized by peculiar structures, while Baer's merit consists in having discovered four *modes of development*, which coincide with the branches of the animal kingdom, in which Cuvier recognized four different *plans of structure*. Huxley is equally mistaken when he says that Cuvier adopted the nervous system "as the base of his great divisions."