

that which Haeckel has termed "Ontogenesis," the genesis of the individual being. From this Haeckel distinguishes "Phylogenesis," the genesis of the phyla, the genera, and species. Now, in discussing the relation of the order which prevails in the natural systems of animals to the stages of development of individual embryos, von Baer does not seem to have had before his mind the genesis of one species out of another, a view which he in fact ridicules¹ after a very modern fashion. He looked

¹ *Loc. cit.*, p. 200; transl., p. 187 (1828): "This idea—viz., that the higher forms of animals in the single stages of the development of the individual, from its first origin to its completed development, answer to the permanent forms of the animal series— . . . could not fail to be widely accepted, since it was supported by a multitude of special demonstrations. Certain of its advocates were so zealous that they no longer spoke of similarity but of perfect identity, and assumed that the correspondence had been demonstrated in all cases and to the minutest details. . . . By degrees it became the custom to look upon the different forms of animals as developed out of one another, and then many appeared to forget that this metamorphosis was after all only a mode of conceiving the facts. . . . At length, in sober seriousness, and with all due particularity, we were informed exactly how they arose from one another. Nothing could be easier. A fish, swimming towards the shore, desires to take a walk, but finds his fins useless. They diminish in breadth for want of use, and at the same time elongate. This goes on with children and grandchildren for a few myriads of years, and at last, who can be astonished that the fins become

feet? It is still more natural that the fish in the meadow, finding no water, should gape after air, thereby, in a like period of time, developing lungs; the only difficulty being that in the meanwhile a few generations must manage to do without breathing at all. The long neck of the heron arose from a habit its ancestors acquired of stretching out their necks for the purpose of catching fish. . . . An immediate consequence of the assumption of this idea as a natural law was that a view which had once been very general, but had subsequently been pretty generally given up,—that of the universal progression of the different forms of animals,—gradually got footing again. . . . It must be confessed that the natural law being assumed, logical consequence required the admission of the view in question. There was then only one road of metamorphosis, that of further development, either attained in one individual (individual metamorphosis) or through the different animal forms (the metamorphosis of the animal kingdom); and disease was to be considered as a retrogressive metamorphosis, because universal metamorphosis, like a railroad, allows motion backwards or forwards, but not to one side."