

lines indicate the periods (mentioned in vol. ii. p. 14) of the organic history of the earth during which the deposition of the strata containing fossils took place. The vertical lines separate the classes and sub-classes of vertebrata from one another. The tree-shaped and branching lines, by their greater or lesser number and thickness, indicate the approximate degree of development, variety, and perfection, which each class probably attained in each geological period. In those classes which, on account of the soft nature of their bodies, could not leave any fossil remains (which is especially the case with Prochordata, Acrania, Monorrhina, and Dipneusta) the course of development is hypothetically suggested on the ground of arguments derived from the three records of creation—comparative anatomy, ontogeny, and palæontology. The most important starting-points for the hypothetical completion of the palæontological gaps are here, as in all cases, furnished by the *fundamental law of biogeny*, which asserts the inner *causal-nexus existing between ontogeny and phylogeny*. (Compare vol. i. p. 310, and vol. ii. p. 200; also Plates VIII.—XIII.) In all cases we have to regard the individual development (determined by the laws of Inheritance but modified by the laws of Adaptation) as short and quick repetitions of the palæontological development of the tribe. This proposition is the “*ceterum censeo*” of our theory of development.

The statements of the first appearance, or the period of the origin of the individual classes and sub-classes of vertebrate animals (apart from the hypothetical filling in mentioned just now), are taken as strictly as possible from palæontological facts. It must, however, be observed, that in reality the origin of most of the groups probably took place one or two periods earlier than fossils now indicate. In this I agree with Huxley's views; but on Plates V. and XIV. I have disregarded this consideration in order not to go too far from palæontological facts.

The numbers signify as follows (compare also Chapter XX. and vol. ii. pp. 204, 206):—1. Animal Monera; 2. Animal Amœbæ; 3. Community of Amœbæ (Synamœbæ); 4. Ciliated Infusoria without mouths; 5. Ciliated Infusoria with mouths; 6. Gliding