

## Chapter IV.

## Study of Structure (Animal Morphology).

*The Scope of Morphology—Foundations laid by Aristotle—Rise of Comparative Anatomy—Cuvier and Correlation—Cuvier's Contemporaries—Richard Owen—Huxley—Hæckel—Gegenbaur—Criteria of Homology—Physiological Morphology.*

The term morphology, introduced by Goethe, is here used in its widest sense, to designate the science of organic form and structure. As Geddes puts it, morphology is the study of the organism in its *static* relations, while physiology is the study of the organism in its *kinetic* relations. At different levels of analysis morphology seeks an answer to the question, "*What is this in itself and in its parts?*" It includes anatomy and histology, not only of the adult, but of the young and embryonic stages, and not only of modern forms, but of extinct types as well. And although we have, for convenience sake, discussed classification or taxonomy separately, this is also part of morphology, one of the main aims of which is to detect structural affinities, now known to express genetic relationship.

As in many other departments, the work of Aristotle is fundamental in morphology. He knew about five hundred different animals, he studied the internal structure of a few, and he suggested the first scientific classification. It is true that he failed to discriminate between nerves and tendons, or to understand what either brain or muscles meant, but he approached some of the great generalizations of morphology, such as the correlation of organs and the conception of homology. The remarkable historical fact has already been noted, that apart from the works of Galen (born A.D. 130), who made some anatomical researches on Mammals, the foundations laid so securely by Aristotle remained practically unbuilt upon until the sixteenth century.

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