

## CHAPTER XIII.

## THE INDIVIDUAL DEVELOPMENT OF ORGANISMS. THE HISTORY OF THE DEVELOPMENT OF THE ANIMAL TRIBES.

General Importance of Individual Development (Ontogeny).—Defects of our Present Education.—Facts in the Individual Development.—Agreement in the Individual Development of Man and the Vertebrate Animals.—The Human Egg.—Fertilization.—Immortality.—The Cleavage of the Egg.—Formation of Germ-layers.—Gastrulation.—History of the Development of the Central Nervous System, of the Extremities, of the Branchial Arches and of the Tail in Vertebrate Animals.—Causal Connection between Ontogenesis and Phylogenesis.—The Fundamental Law of Biogenesis.—Palingenesis or Recapitulative Development.—Cenogenesis or Disordered Development.—Stages in Comparative Anatomy.—Its Relation to the Palæontological and Embryological Series of Development.

THE greater number of educated persons who nowadays show more or less interest in our theories of development unfortunately know next to nothing of the facts of organic development from actual observation. Man, like other mammals, appears at birth in an already developed form. The chicken, like other birds, creeps out of the egg in a completely developed form. But the wonderful processes by which these completed animal forms arise are entirely unknown to most persons. And yet these but little con-