

## THE RIDDLE OF THE UNIVERSE

bryonic agencies. As I have endeavored to give a complete, popular presentation of this very interesting but difficult study in the first section of my *Anthropogeny*, I will confine myself here to a brief survey and discussion of the most important phenomena. Let us first cast a historical glance at the older ontogeny, and the theory of preformation which is connected with it.

The classical works of Aristotle, the many-sided "father of science," are the oldest known scientific sources of embryology, as we found them to be for comparative anatomy. Not only in his great natural history, but also in a special small work, *Five Books on the Generation and Development of Animals*, the great philosopher gives us a host of interesting facts, adding many observations on their significance; it was not until our own days that many of them were fully appreciated, and, indeed, we may say, discovered afresh. Naturally, many fables and errors are mixed up with them; it was all that was known at that time of the hidden growth of the human germ. Yet during the long space of the next two thousand years the slumbering science made no further progress. It was not until the commencement of the seventeenth century that there was a renewal of activity. In 1600 the Italian anatomist Fabricius ab Aquapendente published at Padua the first pictures and descriptions of the embryos of man and some of the higher animals; in 1687 the famous Marcello Malpighi, of Bologna, a distinguished pioneer alike in zoology and botany, published the first consistent exposition of the growth of the chick in the hatched egg.

All these older scientists were possessed with the idea that the complete body, with all its parts, was