

grown life, the unification of thought on these matters, is quite as important in the history of science as the abolition of the supposed fundamental difference between animal and vegetable growth or between normal and abnormal (or pathological) development. The reduction of all these seemingly so different changes to the one great problem of cellular structure, cellular growth, and cellular division marks one of the greatest achievements of our century. "Our position with regard to the cell is similar to that of investigators towards the whole animal or vegetable body a hundred years ago, before the discovery of the cell theory."¹

Anticipations of this generalisation, of the condensation of the whole problem of animal and vegetable embryology, of generation, growth, and organic development in the formula, "*omnis cellula ex cellula*," have indeed existed since the time of Harvey, who, in addition to the great discovery of the circulation of the blood, laid down the thesis, "*omne vivum ex ovo*."² The further correct

¹ See O. Hertwig, "The Cell," 'Outlines of General Anatomy and Physiology.' Transl. by Campbell, 1895, p. 11.

² One of the best expositions of Harvey's ideas is to be found in Huxley's article on "Evolution in Biology" in the ninth edition of the 'Encyclopædia Britannica.' He there also refers to Aristotle's opinions. "One of Harvey's prime objects is to defend and establish, on the basis of direct observation, the opinion already held by Aristotle, that in the higher animals at any rate the formation of the new organism by the process of generation takes place, not suddenly by simultaneous accretion of rudiments of all, or of the most

important of the organs of the adult, nor by sudden metamorphosis of a formative substance into a miniature of the whole, which subsequently grows, but by epigenesis, or successive differentiation of a relatively homogeneous rudiment into the parts and structures which are characteristic of the adult." In the sequel of his exposition, after maintaining epigenesis or after-formation against evolution in the older sense or pre-formation, Huxley, however, makes a passing remark that "though the doctrine of epigenesis, as understood by Harvey, has definitely triumphed over the doctrine of evolution, . . . it is not impossible that, when the analysis of the process of develop-