

Hæckel has been one of the most convinced and luminous exponents of the idea of recapitulation, which he called "das biogenetisches Grundgesetz", and expressed in the now familiar words, "ontogeny tends to recapitulate phylogeny". He also drew the distinction between *palingenetic* characters, dating from the ancient ancestral stock, and *kainogenetic* characters, regarded as relatively recent adaptations.

Such is, at least, part of the intellectual pedigree of a theory which has had a profound influence on zoological embryology, and in much wider inquiries, throughout the Darwinian era. It seems to have found but little acceptance among botanists.

Of recent years there has been a strong reaction from belief in the recapitulation doctrine, and the reasons for this must be briefly considered.

(a) Everyone, of course, resents the popular travesties of the doctrine that have got afloat, *e.g.* that the human embryo is at one stage like a little fish, later like a little reptile, and so on; but it will be admitted that even the doctrine of evolution suffers similar violence. (b) Although even an expert embryologist, such as Milnes Marshall, may have said, "Every animal in its own development repeats its history, climbs up its own genealogical tree", we know that this was meant "in a wide and metaphorical sense". As Hæckel has clearly emphasized, the recapitulation asserted is general, not exact, there is frequently a tendency to abbreviation, and *kainogenetic* adaptations may disguise the *palingenetic* features. It hardly needs to be mentioned that one term in the comparison, the phylogeny, is in most cases very imperfectly known either from the actual fossil records or from the inferences of the comparative anatomists. (c) The recapitulation-theory was not intended as a contribution to the physiology of development, but rather as an historical interpretation. It is, so to speak, a light from a distance, and does not touch the question of the immediate conditions which lead on from stage to stage. It is a fact that the frog ovum gives origin to a larva with various fish-like structures—gill-slits, gills, two-chambered heart, &c.; it is a