

that "the microcosm of the ontogenetic tree is a reflection of the macrocosm of the genealogical tree", is to express a marvellous generalization, to the dangers of which we have already referred. What we wish to understand is, as Hallez expresses it, how the protoplasm is, at each stage, the architect as well as the material of its own development. The metaphors of memory and recapitulation suggest that the developing organism has somehow a feeling for history, or that the dead hand of the past is literally upon the present, while our aim must be to get beyond mere phrases, and to understand the chemical and physical conditions which, more or less modified in the course of history, must still be present to rule each step in the development.

There can be no doubt that, in the modern theory of continuity, there is found the reconciliation between those who maintain that the likeness of offspring to parent is due to the presence of similar conditions, and those who are satisfied in referring the resemblance simply to "heredity". That there is similar material to start with is one half of the truth; that there are similar conditions throughout the development is the other.

The third problem, which we stated at the outset, concerns the inheritance of acquired characters. It is well known that many organisms in the course of their individual life are affected by environmental influences, or by use and disuse of their organs. Thus there result what are conveniently called "modifications"—environmental and functional changes in the body of the individual organism. The question is, whether these may be transmitted to the offspring by the parent which acquires them. Two cautions may be noted in starting: (1) No naturalist doubts the inheritance of *constitutional or organismal* variations. These may be reasonably traced back to the fertilized egg-cell. But what is involved in the fertilized egg-cell may also be by hypothesis involved in the germ-cells which give rise to the next generation. There is no argument on this fact; the present scepticism relates to functional and environmental

Inheritance
of Acquired
Characters.