

certain fossil sea-urchins permanently retain such features as linear ambulacra and a pentagonal peristome, which characterize the young of their living allies; among Pelecypoda, the stages of early youth in oysters and Pectinidæ may be compared with palæozoic Aviculidæ. Among Brachiopods, according to Beecher, the stages which living Terebratulidæ pass through in the development of their arm-skeleton correspond with a number of fossil genera. Among completely distinct groups also, ontogenetic characters have been successfully traced. The beautiful researches of Hyatt, Würtenberger, and Branco have shown that all ammonites and ceratites pass through a goniatite stage, and that the inner whorls of an ammonite constantly resemble in form, ornament, and suture-line the adult condition of some previously existing genus or other."

But what the evolutionist would fain have from the palæontologist, what he wishes for much more than for "evidences of evolution", is some definite information as to the mode and method of organic progress. When we inquire, we find extreme difference of opinion, and no possibility of experiment to change theory into doctrine. To Cope the facts pointed clearly to use-inheritance; to Osborn this is, to say the least, doubtful; to others, there seems no evidence at all suggestive of such a conclusion. To some, the changes of structure observed in the fossil series seem clearly to indicate progressive variation in definite directions, but others point out that any proof of definiteness assumes the series of specimens to be fairly complete, or that we may have lost the initial stages before the indefinite variants were pruned off by natural selection. In short, as usual, we find interpretations where we require certainties.

As an illustration, however, we shall quote three conclusions from Prof. W. B. Scott's thoughtful and cautious essay on *Palæontology as a Morphological Discipline*.

(a) "Evolution is ordinarily a continuous process of change by means of small gradations" . . . "but this does not imply that a sudden alteration of conditions may not bring about discontinuity, or *per saltum* development."

(b) "Development is, in most instances, direct and unswerving. The rise of new forms, and the decadence and degeneration