

Altogether, while I hold it utterly illogical to impute to "natural selection" a power of *originating* any varietal forms whatever (since it can only take effect upon varieties which have already come into existence), and find it difficult to conceive that it can have had any share in even *perpetuating* the particular types of Orbitoline structure which form the subject of this Report, the developmental advances by which they have been successively evolved seem to me to lie altogether beyond the power of any known influence of "environment" to account for. We have evidence, in the size and luxuriance of the specimens of *Orbitolites complanata* growing in the rock-pools of the reef, that a warm temperature and abundance of food may stimulate *growth*; but we have no evidence whatever that they can of themselves cause an advance in *development*; and it seems inconceivable that they should produce a complete change in the *plan* of a fabric. There must have been an inherent capacity for elevation in certain of these organisms, for any change in the "environment" to produce *developmental* advances; for without such capacity, no amount of warmth or food could do more than produce an increase of *growth* on the lower grade. And there must have been some fundamental difference between that primordial jelly-speck which could evolve itself in a long series of generations into the highest type of *Orbitolites*, and that which perpetuates the humble form of *Cornuspira* still living under precisely the same conditions. Moreover, the passage from the lower type to the higher has always taken place (so far as we know) through the same series of intermediate forms; and each of these—as already pointed out—continues to maintain its existence on its own grade. Finally, it would seem as if the developmental capacity of the primordial germ exhausted itself in the production of the most complex form of *Orbitolites*; there being no reason whatever to believe that it leads up to any higher form of organic structure.

The general pointing of this study seems, therefore, to be, that the evolution of the highly complex Orbitoline type from the simplest monothalamous Milioline, has taken place according to a definite *plan*, of which we have the evidence in the wonderful uniformity and regularity of the entire sequence of developmental changes; whilst we are entirely unable to account for those changes, without attributing to the subjects of them a capability of being affected by external agencies in modes so peculiar as to indicate a *previous adaptation*. The question whether the variations on which "natural selection" takes effect are *aimless*, or whether they have a *fixed direction*, has so important a teleological bearing, that I have thought it worth while to work out with considerable care an instance in which that fixity seems to me very conspicuous. And I would specially point to the doubling of the radial stolons in the "duplex" type (pp. 27, 28) as a change altogether meaningless in itself, but very significant when considered as *anticipatory* of that greatest of all the developmental advances—the duplication of the annular canals (p. 40)—which marks the passage from the "simple" to the "complex" type.