gills, or that the Siredon has, under certain circumstances, the capacity to have its period of reproduction arrested until it has gone on a stage further in growth and has lost its gills. In any case the same species—nay, the same individual—is capable of existing in a state of maturity as a creature half fish and half reptile in regard to its circulation, or in a more perfect reptilian state in which it breathes solely by lungs. Further, we may suppose conditions of the earth's surface in which there would only be Siredons or only Amblysomas, and a change in these conditions inducing the opposite state. Here we have for the first time actual facts on which to base a theory of development. These facts point to the operation of two causes—first, the possible *Retardation* or *Acceleration* of development, and secondly, the action of outward circumstances on the organism capable of this retardation or acceleration. We here substitute for the tendency to vary of Owen's theory, the ascertained fact of reproductive retardation or acceleration, and for the struggle for existence, the action of changed physical conditions, and for the question as to the change of one species into another, the change of the same species from one genus into another. Further, instead of vague speculations as to possible changes of allied animals, we are led to careful consideration of the embryonic changes of the individual animal, and as to the differences that would obtain were its development accelerated or retarded. We can thus range animals in genetic series within which anatomical characters would show change to be possible. I cannot follow these series out into the elaborate lists tabulated by Mr. Cope, but may proceed to notice the limitations which his views put to the doctrine of derivation. It is obvious that, if this be the real nature of derivation as a possible hypothesis, then derivation must follow the same law with metamorphism and embryonic development. Those animals which undergo a metamorphosis must be those most liable to such changes; for example, a Batrachian would be more likely to be so than a true reptile,—consequently those lower forms of animals in which metamorphosis is most decided would be those in which derivation would be most active, and when they had attained to a condition in which metamorphosis is of less amount, the tendency to change would be diminished. When we compare this with the actual succession of animals in geological time, we can see, as many Palæontologists have remarked, that order of succession in time and order of