

parts which have become rudimentary under domestication. We do not know through what steps under nature rudimentary organs have passed in being reduced to their present condition; but we so incessantly see in species of the same group the finest gradations between an organ in a rudimentary and perfect state, that we are led to believe that the passage must have been extremely gradual. It may be doubted whether a change of structure so abrupt as the sudden loss of an organ would ever be of service to a species in a state of nature; for the conditions to which all organisms are closely adapted usually change very slowly. Even if an organ did suddenly disappear in some one individual by an arrest of development, intercrossing with the other individuals of the same species would tend to cause its partial reappearance; so that its final reduction could only be effected by some other means. The most probable view is, that a part which is now rudimentary, was formerly, owing to changed habits of life, used less and less, being at the same time reduced in size by disuse, until at last it became quite useless and superfluous. But as most parts or organs are not brought into action during an early period of life, disuse or decreased action will not lead to their reduction until the organism arrives at a somewhat advanced age; and from the principle of inheritance at corresponding ages the reduction will be transmitted to the offspring at the same advanced stage of growth. The part or organ will thus retain its full size in the embryo, as we know to be the case with most rudiments. As soon as a part becomes useless, another principle, that of economy of growth, will come into play, as it would be an advantage to an organism exposed to severe competition to save the development of any useless part; and individuals having the part less developed will have a slight advantage over others. But, as Mr. Mivart has justly remarked, as soon as a part is much reduced, the saving from its further reduction will be utterly insignificant; so that this cannot be effected by natural selection. This manifestly holds good if the part be formed of mere cellular tissue, entailing little expenditure of nutriment. How then can the further reduction of an already somewhat reduced part be effected? That this has occurred