

repeatedly under Nature is shown by the many gradations which exist between organs in a perfect state and the merest vestiges of them. Mr. Romanes⁸⁹ has, I think, thrown much light on this difficult problem. His view, as far as it can be given in a few words, is as follows: all parts are somewhat variable and fluctuate in size round an average point. Now, when a part has already begun from any cause to decrease, it is very improbable that the variations should be as great in the direction of increase as of diminution; for its previous reduction shows that circumstances have not been favourable for its development; whilst there is nothing to check variations in the opposite direction. If this be so, the long continued crossing of many individuals furnished with an organ which fluctuates in a greater degree towards decrease than towards increase, will slowly but steadily lead to its diminution. With respect to the complete and absolute abortion of a part, a distinct principle, which will be discussed in the chapter on pangenesis, probably comes into action.

With animals and plants reared by man there is no severe or recurrent struggle for existence, and the principle of economy will not come into action, so that the reduction of an organ will not thus be aided. So far, indeed, is this from being the case, that in some few instances organs, which are naturally rudimentary in the parent-species, become partially redeveloped in the domesticated descendants. Thus cows, like most other ruminants, properly have four active and two rudimentary mammæ; but in our domesticated animals, the latter occasionally become considerably developed and yield milk. The atrophied mammæ, which, in male domesticated animals, including man, have in some rare cases grown to full size and secreted milk, perhaps offer an analogous case. The hind feet of dogs naturally include rudiments of a fifth toe, and in certain large breeds these toes, though still rudimentary,

⁸⁹ I suggested in 'Nature' (vol. viii. pp. 432, 505) that with organisms subjected to unfavourable conditions all the parts would tend towards reduction, and that under such circumstances any part which was not kept up to its standard size by

natural selection would, owing to intercrossing, slowly but steadily decrease. In three subsequent communications to 'Nature' (March 12, April 9, and July 2, 1874), Mr. Romanes gives his improved view.