

life-activities. He points out to what a great extent they are strengthened by the use of the organs, and weakened by their non-use; the former brings about Hypertrophy and the growth of the organs, the latter Atrophy and degeneration of the organs. He very justly lays great stress upon the undoubted transmission of such acquired variations, and emphasizes the differentiating and constructive effect of the functional stimuli. Specially important, however, are his explanations of the far-reaching and direct variations, which affect the increased or lessened use of the organs in the tissues of which they are composed, and in the cells of which the tissues are built up. In my "General Morphology" I had, in 1866, already pointed to these significant variations in my endeavours to trace back all *adaptations* to *nutrition* as their physiological fundamental bases (vol. ii. p. 193). Roux enters more fully into the subject, and explains the trophic action of the functional stimulus as the actively and passively working parts. He points out in the case of the finer structure of the bones and muscles, of the glands and blood-vessels, that their extremely suitable arrangement may have proceeded directly from the trophic influence of functional stimulus. From this it is clear how the utmost conceivable perfecting of the organization can be accomplished directly by means of the vital activity of organisms themselves, as a teleological piece of mechanism, which has no conscious object or so-called plan of structure. But it at the same time shows how the new suitable arrangements may be directly transmitted by inheritance, without there being any *necessary* or special selection.

In close connection with the two preceding series of