

great types of the animal kingdom. While, however, homologies show the close similarity of apparently different structures and the perfect identity of their plan, within the same branches of the animal kingdom, yet, they daily exhibit more and more striking differences, both in plan and structure, between the branches themselves, leading to the suspicion that systems of organs which are generally considered as identical in different types, will, in the end, prove essentially different, as, for instance, the so-called gills in Fishes, Crustacea, and Mollusks.

It requires no great penetration to see already that the gills of Crustacea are homologous with the tracheæ of Insects and the so-called lungs of certain spiders, in the same manner as the gills of aquatic Mollusks are homologous with the so-called lungs of our air-breathing snails and slugs. Now, until it can be shown that all these different respiratory organs are truly homologous, I hold it to be more natural to consider the system of respiratory organs in Mollusks, in Articulates, and in Vertebrates, as essentially different among themselves, though homologous within the limits of each type; and this remark I would extend to all their systems of organs, to their solid frame, to their nervous system, to their muscular system, to their digestive apparatus, to their circulation, and to their reproductive organs, etc. It would not be difficult to show now that the alimentary canal with its glandular appendages, in Vertebrata, is formed in an entirely different way from that of Articulates or Mollusks, and that it cannot be considered as homologous in all these types. And if this be true, we must expect soon an entire reform of our methods of illustrating comparative anatomy.

Finally, it ought to be remembered, in connection with the study of classes as well as that of other groups, that the amount of difference existing between any two divisions is nowhere the same. Some features in nature seem to be insisted upon with more tenacity than others, to be repeated more frequently and more widely, and to be impressed upon a larger number of representatives. This unequal weight of different groups, so evident everywhere in the animal kingdom, ought to make us more cautious in estimating their natural limits, and prevent us from assigning an undue value to the differences observed between living beings, never overrating apparently great discrepancies, nor underrating seemingly trifling variations. The right path, however, can only be ascertained by extensive investigations, made with special reference to this point.

Everybody must know that the males and females of some species differ much more one from the other than many species do, and yet the amount of difference observed between species is constantly urged, even without a preliminary investigation, as an argument for distinguishing them. These differences, moreover, are not only quantitative, they are to a still greater extent also qualitative. In the