

SECTION II.

CLASSES OF ANIMALS.

Before Cuvier had shown that the whole animal kingdom is constructed upon four different plans of structure, classes were the highest groups acknowledged in the systems of Zoölogy, and naturalists very early understood upon what this kind of division should be founded, in order to be natural, even though in practice they did not always perceive the true value of the characters upon which they established their standard of relationship. Linnæus, the first expounder of the system of animals, already distinguishes, by anatomical characters, the classes he has adopted, though very imperfectly; and ever since, systematic writers have aimed at drawing a more and more complete picture of the classes of animals, based upon a more or less extensive investigation of their structure.

Structure, then, is the watchword for the recognition of classes, and an accurate knowledge of their anatomy the surest way to discover their natural limits. And yet, with this standard before them, naturalists have differed, and differ still greatly, in the limits they assign to classes, and in the number of them they adopt. It is really strange, that, applying apparently the same standard to the same objects, the results of their estimation should so greatly vary; and it was this fact which led me to look more closely into the matter, and to inquire whether, after all, the seeming unity of standard was not more a fancied than a real one. Structure may be considered from many points of view: first, with reference to the plan adopted in framing it; secondly, with reference to the work to be done by it, and to the ways and means employed in building it up; thirdly, with reference to the degrees of perfection or complication it exhibits, which may differ greatly, even though the plan be the same, and the ways and means employed in carrying out such a plan should not differ in the least; fourthly, with reference to the form of the whole structure and its parts, which bears no necessary relation, at all events no very close relation, to the degree of perfection of the structure, nor to the manner in which its plan is executed, nor to the plan itself, as a comparison between Bats and Birds, between Whales and Fishes, or between Holothurians and Worms, may easily show; fifthly and lastly, with reference to its last finish, to the execution of the details in the individual parts.

It would not be difficult to show, that the differences which exist among naturalists in their limitation of classes have arisen from an indiscriminate consideration of the structure of animals, in all these different points of view, and an