

and families are introduced in some classes,¹ only orders are noticed in others,² and even some exhibit only a succession of genera under the head of their class, without any further grouping among them into orders or families.³ Other classifications exhibit the most pedantic uniformity of a regular succession in each class, of sub-classes, orders, sub-orders, families, sub-families, tribes, sub-tribes, genera, sub-genera, divisions, sections, and sub-divisions, sub-sections, etc., but bear upon their face, that they are made to suit preconceived ideas of regularity and symmetry in the system, and that they are by no means studied from nature.

To find out the natural characters of orders from that which really exists in nature, I have considered attentively the different systems of Zoölogy in which orders are admitted and apparently considered with more care than elsewhere, and in particular the *Systema Naturæ* of Linnæus, who first introduced in Zoölogy that kind of groups, and the works of Cuvier, in which orders are frequently characterized with unusual precision, and it has appeared to me that the leading idea prevailing everywhere respecting orders, where these groups are not admitted at random, is that of a definite rank among them, the desire to determine the relative standing of these divisions, to ascertain their relative superiority or inferiority, as the name order, adopted to designate them, already implies. The first order in the first class of the animal kingdom, according to the classification of Linnæus, is called by him *Primates*, expressing, no doubt, his conviction that these beings, among which Man is included, rank uppermost in their class. Blainville uses here and there the expression of "degrees of organization," to designate orders. It is true Lamarck uses the same expression to designate classes. We find, therefore, here as everywhere, the same vagueness in the definition of the different kinds of groups adopted in our systems. But if we would give up any arbitrary use of these terms, and assign to them a definite scientific meaning, it seems to me most natural, and in accordance with the practice of the most successful investigators of the animal kingdom, to call orders such divisions as are characterized by different degrees of complication of their structure, within the limits of the classes. As such I would consider, for instance, the Actinoids and Halcyonoids in the class of Polypi, as circumscribed by Dana; the Hydroids, the Discophoræ, and the Cte-

¹ In the classes Mammalia, Birds, Reptiles, and Fishes, Cuvier distinguishes mostly families as well as orders. In the class of Mammalia, some orders number no families, whilst others are divided into tribes instead of families. In the class of Gasteropods, Annelids, Intestinal Worms, and Polyps, some of the orders only are divided into families, while the larger number are not.

² The classes Echinoderms, Acalephs, and Infusoria, are divided into orders, but without families.

³ Such are his classes of Cephalopods, Pteropods, Brachiopods, and Cirripeds (Cirrhopods.) Of the Cephalopods, he says, however, they constitute but one order (*Règn. An.* vol. 3, p. 11), and, p. 22, he calls them a family, and yet he distinguishes them as a class, p. 8.