

into a prominent position by the struggle of two antagonistic schools of physiologists. On the one hand, it has been maintained that this doctrine of final causes is altogether unphilosophical, and requires to be replaced by a more comprehensive and profound principle: on the other hand, it is asserted that the doctrine is not only true, but that, in our own time, it has been fixed and developed so as to become the instrument of some of the most important discoveries which have been made. Of the views of these two schools we must endeavor to give some account.

The disciples of the former of the two schools express their tenets by the phrases *unity of plan*, *unity of composition*; and the more detailed developement of these doctrines has been termed the *Theory of Analogies*, by Geoffroy Saint-Hilaire, who claims this theory as his own creation. According to this theory, the structure and functions of animals are to be studied by the guidance of their analogy only; our attention is to be turned, not to the fitness of the organization for any end of life or action, but to its resemblance to other organizations by which it is gradually derived from the original type.

According to the rival view of this subject, we must not assume, and cannot establish, that the plan of all animals is the same, or their composition similar. The existence of a single and universal system of analogies in the construction of all animals is entirely unproved, and therefore cannot be made our guide in the study of their properties. On the other hand, the plan of the animal, the purpose of its organization in the support of its life, the necessity of the functions to its existence, are truths which are irresistibly apparent, and which may therefore be safely taken as the bases of our reasonings. This view has been put forward as the doctrine of the *conditions of existence*: it may also be described as the principle of a *purpose in organization*; the structure being considered as having the function for its end. We must say a few words on each of these views.

It had been pointed out by Cuvier, as we have seen in the last chapter, that the animal kingdom may be divided into four great branches; in each of which the *plan* of the animal is different, namely, *vertebrata*, *articulata*, *mollusca*, *radiata*. Now the question naturally occurs, is there really no resemblance of construction in these different classes? It was maintained by some, that there is such a resemblance. In 1820,¹ M. Audouin, a young naturalist of Paris,

¹ Cuv. *Hist. Sc. Nat.* iii. 422.