

mals (1843). Mr. Owen observes that the arrangement of animals into *Vertebrate* and *Invertebrate* which prevailed before Cuvier, was necessarily bad, inasmuch as no *negative* character in Zoology gives true natural groups. Hence the establishment of the *sub-kingdoms*, *Mollusca*, *Articulata*, *Radiata*, as co-ordinate with *Vertebrata*, according to the arrangement of the nervous system, was a most important advance. But Mr. Owen has seen reason to separate the *Radiata* of Cuvier into two divisions; the *Nematoneura*, in which the nervous system can be traced in a filamentary form (including *Echinoderma*, *Ciliobrachiata*, *Cœlemintha*, *Rotifera*,) and the *Acrita* or lowest division of the animal kingdom, including *Acalepha*, *Nudibrachiata*, *Sterelmintha*, *Polygastria*.¹

Sect. 3.—Attempts to establish the Identity of the Types of Animal Forms.

SUPPOSING this great step in Zoology, of which we have given an account,—the reduction of all animals to four types or plans,—to be quite secure, we are then led to ask whether any further advance is possible;—whether several of these types can be referred to one common form by any wider effort of generalization. On this question there has been a considerable difference of opinion. Geoffroy Saint-Hilaire,¹¹ who had previously endeavored to show that all vertebrate animals were constructed so exactly upon the same plan as to preserve the strictest analogy of parts in respect to their osteology, thought to extend this unity of plan by demonstrating, that the hard parts of crustaceans and insects are still only modifications of the skeleton of higher animals, and that therefore the type of *vertebrata* must be made to include them also:—the segments of the *articulata* are held to be strictly analogous to the *vertebræ* of the higher animals, and thus the former live *within* their vertebral column in the same manner as the latter live *without* it. Attempts have even been made to reduce molluscous and vertebrate animals to a community of type, as we shall see shortly.

Another application of the principle, according to which creatures the most different are developments of the same original type, may be discerned¹² in the doctrine, that the embryo of the higher forms of animal life passes by gradations through those forms which are perma-

¹¹ Mr. Jenyns, *Brit. Assoc. Rep.* iv. 150.

¹² Dr. Clark, *Report*, *Ib.* iv. 113.