

but the Crustacea exhibit, again, the most striking coincidence. Without entering into details, it appears from the classification of Milne-Edwards that Decapods, Stomapods, Amphipods, and Isopods constitute the higher orders, while Branchiopods, Entomostraca, Trilobites, and the parasitic types, constitute, with *Limulus*, the lower orders of this class.<sup>1</sup> In the classification of Dana,<sup>2</sup> his first type embraces Decapods and Stomapods, the second Amphipods and Isopods, the third Entomostraca, including Branchiopods, the fourth Cirripedia, and the fifth Rotatoria. Both acknowledge in the main the same gradation; though they differ greatly in the combination of the leading groups, and also the exclusion by Milne-Edwards of some types, as the Rotifera, which Burmeister first, then Dana and Leydig, unite justly, as I believe, with the Crustacea.<sup>3</sup> This gradation now presents the most perfect coincidence with the order of succession of Crustacea in past geological ages, even down to their subdivisions into minor groups. Trilobites and Entomostraca are the only representatives of the class in palæozoic rocks; in the middle geological ages appear a variety of Shrimb, among which the Macrouran Decapods are prominent, and later only the Brachyoura, which are the most numerous in our days.

The fragmentary knowledge we possess of the fossil Insects, does not justify us, yet, in expecting to ascertain with any degree of precision, the character of their succession through all geological formations, though much valuable information has already been obtained respecting the entomological faunæ of several geological periods.<sup>4</sup>

The order of succession of Vertebrata in past ages, exhibits features in many respects differing greatly from the Articulata, Mollusks, and Radiata. Among these we find their respective classes appearing simultaneously in the oldest periods of the history of our earth. Not so with the Vertebrata, for though Fishes may be as old as any of the lower classes, Reptiles, Birds, and Mammalia are introduced successively in the order of their relative rank in their type. Again, the earliest representatives of these classes do not always seem to be the lowest; on the contrary, they are to a certain extent, and in a certain sense, the highest, in as far as they embody characters, which, in later periods, appear separately in higher classes, (See Sect. 26,) to the exclusion of what henceforth constitutes the special character of the lower class. For instance, the oldest Fishes known partake of the characters, which, at a later time, are exclusively found in Reptiles, and no longer belong to the Fishes of the present day. It may be said, that the earliest Fishes are rather the oldest representatives of the type of Vertebrata than of the

<sup>1</sup> MILNE-EDWARDS, *Hist. Nat. des Crustacés*, Paris, 1834-40, 3 vols. 8vo.

<sup>2</sup> DANA, (J. D.), *Crustacea*, q. n., p. 32.

<sup>3</sup> LEYDIG, (FR.) *Rüderthiere*, etc., *Zeitsch. f. wiss. Zool.* 1854, vol. 6, p. 1.

<sup>4</sup> HEER, q. n.; BRODIE, q. n., p. 98.