

MONOGRAPH OF THE CIRRIPEDIA.

CHAPTER XXXIV.

A.—*The Ray Society.* B.—*Older Accounts.* C.—*The Monograph.*

INVESTIGATING the great work contributed by Charles Darwin to the study of animals, it will be well to speak of the Ray Society, of the former history of the animals described, of the book itself.

A. In the year 1628, at Braintree, in that flattest of counties, Essex, was born John Ray. To this Cambridge man belongs the credit of being the first Botanist of real note in England. A fellow of Trinity, in succession lecturer on Greek and on Mathematics, and then humanity reader, holder thereafter of various offices in connexion with the government of the College, notable as a preacher in both his own college and the University, John Ray found time to spend many hours in the open air and to lay the foundations of the science of Botany in this country. Four years after the founding of the Royal Society in 1663, Ray was invited to join the body doomed in after time to be so illustrious, and in his day numbering among its members the handful of men that represented scientific thought in the reign of Charles II.

In 1844, a resolve was formed to erect a fitting monument to the memory of John Ray. The memorial, very happily for all, did not take the shape of a statue nor even of a dinner. The Ray Society was formed. The worthy object of that Society was to print and publish important scientific works, the nature whereof precluded the possibility of a sufficiently large purchase on the part of the general public to repay author or publisher. This would seem to be the noblest way of at once perpetuating the memory of a great scientific man, and continuing after his own heart the work that was dear to him. Hence the publications of the Ray Society are special treatises rather than general ones,

(c) *Abdominalia*. The *Cryptophialus minutus*, solitary in its order, has its first thoracic segment distinctly marked off from the rest, and bearing rudimentary organs that represent the first pair of feet-jaws or maxillipedes of Crustacea, and the first of the three pairs of legs of the insects. The ensuing seven thoracic segments have no appendages. The three segments of the abdomen that are, in our Barnacles and Acorn-shells, reduced to almost nothing are here developed and carry three pairs of cirri. The labrum of the mouth becomes a large lancet-formed organ. The lower end of the œsophagus has discs of teeth and brushes of hairs. Its metamorphoses are not as those of other cirripedes. All the earlier changes are but indicated by shadowy alterations of form in an egg-like larva, and no distinct development of organs occurs. The last pupal stage is also specially distinguished from the like stage in other members of the order by the absence of swimming limbs.

(d) *Apoda*. The *Proteolepas bivineta*, solitary in its order, is an articulated animal, minus any shell, attached by two threads, that represent the carapace of other Cirripedia to the interior of the sack of *Alepas cornuta*. It has no appendages of the body save those around the mouth. That mouth is suctorial. There is no stomach nor distal opening to the alimentary canal. A strangely reduced creature, and yet a cirripede undoubtedly.

3.—*Distribution of Cirripedia.*

(a) In time. Geologically considered, Cirripedia are not encountered ere the Eocene period. The oldest genus is *Balanus*. There is a table in the second volume of the "Monograph," page 174, that will give all requisite information on this point.

(b) In space. Very general. Cirripedia extend from Lat. 74° 18' N. to Cape Horn. Shores that are of sand, or mud, or shingle, are unfavorable to them. They are not seen in the coral-reef lands. Taking the division of Dana into zones of temperature, we find that of 147 species in the order Cirripedia, 37 are met with both in his torrid and temperate zone, 46 in the torrid alone, 57 in the temperate alone. On the whole, therefore, a leaning towards the temperate.

On following Charles Darwin in his study of certain earth

regions, we find that in the North Atlantic region, including Europe and the United States, and extending from the Arctic Ocean to 30° N., there are 31 species, 22 of which are peculiar to that region. In the African, south of 30° N., there are 11 species, 5 of which are peculiar. In the region that reaches from Tierra del Fuego to Behring's Straits, there are 22 species, of which 15 are special. In the Indian Archipelago 37 species, 24 special; and in Australia and New Zealand 30, of which 21 are peculiar to the region.

And thus I have attempted to give some analysis of a book that is a monument of research and of acute reasoning. I have of purpose dealt only with the Cirripedia generally, and the two best known members of the order specially. Even in doing this I am aware that I have gone beyond the range of the non-scientific reader. But this the nature of the subject compelled. It must be remembered that this volume is intended not alone for the non-scientific reader. There is the hope that it may be a help and guide to the scientific student. And hence I have tried, in dealing with this abstruse book on an abstruse subject, to systematize and simplify. It is my desire that herein students may find an intelligible epitome of the history of the great order Cirripedia, such as will be of service to them in examination in both the passive and active sense—in the passive sense, when university authorities are inquisitive; in the active and more important sense when the student is investigating these animals for himself.

I have abstained from dealing in detail with a large part of the Monograph of the Cirripedia, inasmuch as it is exceptionally technical. It is devoted to an exceedingly careful account of the different genera and species of the order. It exhausts the subject. To these pages all students will turn, until Evolution in the future has resulted in the production of species and genera of cirripedes other than those now known. From these pages the student will turn with renewed reverence for the great generalizer, who is also so patient and so completely master of detail.
