

**A MANUAL OF
MARINE ZOOLOGY
FOR THE BRITISH ISLES**

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A manual of marine zoology for the British Isles by Philip Henry Gosse

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BY
PHILIP HENRY GOSSE, F.R.S.

"This great and wide sea, wherein are things creeping innumerable, both small and great beasts. . . . There is that Leviathan, whom THOU hast made to play therein."—*Ps. civ. 23, 26.*

PART II.

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PREFACE

TO PART II.

THE publication of the First Volume of this Work has elicited so many testimonies to its usefulness, as to satisfy me that I had not erred in supposing that such a book was needed. I now introduce the Second (and final) Volume, hoping that it may be received with as much favour as its predecessor.

By a most singular coincidence, the number of figures in this volume is exactly the same as in the former, viz. three hundred and thirty-nine; and as each genus is illustrated, we see that so far as our present knowledge goes, those genera of our Marine Fauna, which belong to the Radiate and Annulose forms, exactly equal in number those of the Mollusca and Vertebrata.

Of these three hundred and thirty-nine figures, two hundred and thirty-two are original, one hundred being drawn from living (or, in the case of Fishes, from fresh) specimens, and one hundred and thirty-two from such as are preserved, either dry or in spirits. The list at the end of the volume will show the authorities from which I have copied the remaining one hundred and seven.

I have added a Supplement to the first volume, supplying some omissions, and bringing it up to the present state of our knowledge.

P. H. G.

LONDON, *August*, 1856.

MARINE ZOOLOGY.

SUB-KINGDOM IV. MOLLUSCA.

CLASS I. POLYZOA.

It has been usual, in our systematic books on Zoology, to include the POLYZOA (or BRYOZOA, as they are sometimes termed) in the Class ZOOPHYTA. And truly, if we considered only their general external appearance, this would seem their most natural alliance. Universally of microscopic minuteness, growing parasitically on submerged foreign bodies, as shells, rocks, and sea-weeds, springing (most of them at least) from a creeping root-thread, in the form of a tiny shrub, composed of successive series of pellucid cells, from which protrude animals, each surmounted by a coronet of radiating tentacles, all connected organically in a compound life,—these creatures do present, it must be confessed, very many characters in common with the *Sertulariade* and other Hydroid Polypes.

Yet when we examine the animals themselves, we find them organized on a much higher type than the Polypes, viz., on that which exists in the Mussel and the Oyster, though in its most simple condition of development. If we take one of the calcareous-celled species, *Scoparia chelata*, for

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example,* which is a fair type of the Class, we find an animal living freely in its cell, with whose walls† it is connected only by means of muscle-bands and threads, at certain points, and by the covering of the mouth of the cell. This covering is membranous, and is capable of great protrusion; the animal, in the process of expansion, pushing out a doubling of the membrane, like the turning inside-out of a stocking. The animal has a receiving orifice or mouth, surrounded by a crown of tentacles, and leading into a sensitive and contractile gullet, into which the food is gorged; thence it passes into a capacious crop, and afterwards into a muscular gizzard; to this succeeds a duct leading into a digesting stomach, whence a long intestine passes upward, emerging by a discharging orifice close to the receiving one.

This highly developed digestive system is characteristic of the Class, as well as this course which it follows—a line bent upon itself; the only deviation of importance being that, in some genera, the muscular gizzard is either wanting or indistinctly developed.

The tentacles differ importantly from those of the Polypes. Instead of being soft, fleshy, highly contractile, and studded with knots of nettling-capsules, they are straight, somewhat stiff, slender threads, incapable of contraction, and set, on their two opposing sides, (viz., on those sides which face the next tentacles,) with long cilia, the action of which is to produce a strong current up one side

* Figured and described in detail in my "Devonshire Coast," p. 182, by the name of *Eucratea echinata*.

† Perhaps it would be more correct to say, with a vascular coat which lines the walls of the cell.

and down the other of each tentacle. The united effect of these currents as a whole is a powerful vortex, the centre of which is the mouth at the bottom of the belt of tentacles; and thus floating particles of food, or living animalcules, are drawn into the whirlpool, and presently engulfed in the yawning gullet below.

When alarmed, the animal contracts its muscular threads and retires within its cell, the protrusile membrane being drawn inwards, and the tentacles closing into a compact bundle as they descend.

Though there is little diversity in the form or structure of the animals themselves in this Class, there is much difference in the form, arrangement, and composition of the cells. In general the form is ovate or oblong; but this general shape is variously modified, being tubular, club-shaped, horn-shaped, cradle-shaped, square, three-sided, rhomboidal, &c., &c. The arrangement is often shrub-like; but when so, the branches may be formed by a single series of cells, or of two or more set side by side, or back to back, or both. At other times the branches are creeping and adherent, as well as the root-thread; or the cells may be arranged in close series without branch or root-thread, either adhering in irregular patches, as the *Lepraliæ*, or rising into broad flexible leaves, as the *Flustræ*, or in solid stony walls as the *Escharæ*. The cells may be horny or membranous, with the calcareous element not deposited, as the *Vesiculariadae*; or they may be sunk in a common fleshy or cartilaginous mass, as the *Alcyonidiadae*. Finally, the cell may be wanting, or, at least, inseparable from the skin, as in the genus *Pedicellina*.