

## BRACHIOPOD EVOLUTION

### Living and Fossil Brachiopods

By M. J. S. Rudwick. (Hutchinson University Library: Biological Sciences.) Pp. 199. (Hutchinson: London, October 1970.) 38s boards; 16s paper.

It is surely a gamble to publish a general account of a phylum within five years of having collaborated with several other specialists in an exhaustive study of the same group. On the one hand the book might turn out to be an indigestible if deferential summary of authoritative fact and opinion written with an eye on omission rather than content. (How many of us judge the soundness of a paper by the number of honourable mentions we receive in the bibliography?) On the other hand it might be a defiant declaration of cherished beliefs embarrassingly free of the constraints of other researchers' observations. Occasionally, however, when an author like Dr Rudwick skilfully redeploys well known facts and assembles new information to illustrate novel aspects of phyletic evolution, the gamble comes off and the rewards are rich.

illustrations, Rudwick shows how feasible living and working models may be derived for the shells of even the most bizarre of extinct species. There are abundant new data here, such as the ontogeny and disposition of setal grilles and the correlation of columnar muscle with the development of accommodating skeletal platforms. Indeed, every chapter contains an instructive phyletic chart based on brachiopod superfamilies indicating the range of features associated with a particular function. The sections on the "classification of brachiopods" and "history of the phylum" are less effective because parts of his classification, like the assignment of the Thecideacea and certain spire-bearing genera to the Strophomenida, are contrived and disputable. Yet they do serve to emphasize the personal flavour of the text and in that respect do not detract from the merits of a book that can be unreservedly recommended for its scholarship, originality and presentation.

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## TENTACLED FLOATERS

### The Medusae of the British Isles

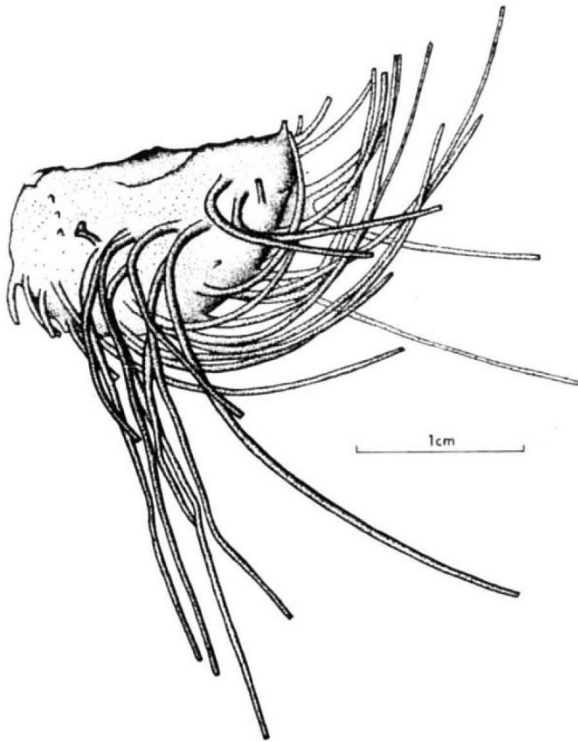
Vol. 2: Pelagic Scyphozoa, with a Supplement to the first volume on Hydromedusae. By F. S. Russell. Pp. xiii + 281 + 15 plates. (Cambridge University: London, October 1970.) 140s.

EVER since the eighteenth century British marine biologists have found the coelenterates most rewarding objects of investigation. John Ellis was the first to demonstrate that zoophytes were ramifying animals, and John Graham Dalyell could have forestalled Michael Sars as the discoverer of alternating generations had not publication of his observations been delayed. The young T. H. Huxley, studying tropical zooplankton during the voyage of the *Rattlesnake*, first revealed the two-layered structure of these members of the "Radiata". Later workers were no less fascinated by the wealth of form and beauty and the range of adaptive radiation exhibited by these simply constituted animals. The beautifully illustrated memoirs of Forbes, Hincks, Gosse, Allman and Alan Stephenson come readily to mind.

F. S. Russell joined this distinguished company in 1953 with the publication of the first volume of his *Medusae of the British Isles* which dealt with the Hydromedusae. His second volume, here reviewed, deals with the pelagic Scyphozoa with a supplement which brings the subject matter of the first up to date, largely by the association of more medusae with the hydroid generation.

This is a model of what a taxonomic memoir should be, gaining undoubtedly by the few species demanding study. Out of about one hundred and sixty known species of these larger jellyfish, only thirteen are British. Six of these occur inshore, the remainder in oceanic waters off the continental shelf and often at considerable depths. All are subject to exact description in words aided by explicit text-figures and by both coloured and black-and-white plates. Apart from taxonomic distinctions, synonymy and full anatomical description including variations, there is a wide survey covering habits, physiology, life history and distribution.

Few animals are better known to the shore naturalist or more certain of comment by all who encounter them than the inshore species, the pale saucer-like *Aurelia aurita* occurring widely in many seas, the brown bell-like *Chrysaora hysoscella*, the two species of *Cyanea*, the brown *C. capillata* and the blue *C. lamareckii* with bunched tentacles and widely spreading, frilled manubria. The first of these, the lion's mane, has a formidable sting and mention is here made of its encounter by Sherlock Holmes although—probably the sole omission in the comprehensive bibliography—not of the more sinister de-



Lateral view of a Permian strophomenide brachiopod (*Marginifera Productacea*) with tubular spines on ventral valve: these spines probably rooted the shell in a soft substrate (Fig. 46, in *Living and Fossil Brachiopods*).

The originality of Rudwick's approach is his exploration of the functional implications of changes in shell morphology that arose during brachiopod evolution. The phylum is modestly represented in modern seas, but it was the dominant marine shellfish of the Palaeozoic era and its fossil record is remarkably complete back to the early Cambrian. This unrivalled range of living and extinct species has been well exploited in this book in chapters devoted to each of the basic functions that can be related to exoskeletal features like "muscles and hinges", "senses and protection", "lophophore and feeding", and so on. In these chapters of clearly written text and well designed