

Although there is a great deal of literature on the subject of migration, Dr. Carthy only outlines the main features for each animal group mentioned and rightly discusses in some detail the recent experimental work carried out on the mechanism of navigation. This work centres largely on the importance of the Sun's position for direction finding and the increasing evidence of the receptiveness of the arthropod eye to polarized sunlight. Full credit is given to the remarkable work of von Frisch on the honey-bee and to Kramer and Matthews on birds.

In his final chapter Dr. Carthy stresses that there is no evidence that we need look further than the normal five senses for the mechanism of orientation and navigation in animals, but that one or more of these may be developed to a degree of sensitivity far beyond that found in man. The book is well illustrated with diagrams and photographs and the text presented in a lucid style which conveys Dr. Carthy's own enthusiasm for the subject. There is an index but the only reference to literature on the subject is a mention of four major works for further reading. It probably would have been helpful if some reference to the relevant literature had been made at the end of each chapter.

ERIC DUFFEY

THE WORLD OF PLANKTON

The Open Sea—Its Natural History

The World of Plankton. By Prof. Alister C. Hardy. (The New Naturalist: a Survey of British Natural History.) Pp. xv + 335 + 48 plates. (London: William Collins, Sons and Co., Ltd., 1956.) 30s. net.

CONSIDERING the abundance of recent books on the seashore, it is surprising that so little has been written on the marvellous world of drifting life that lies beyond. The gap has now been filled by Prof. A. C. Hardy, Linacre professor of zoology in the University of Oxford, in one of the most attractive of the New Naturalist series.

To the plankton worker, nothing can be more fascinating than to examine a haul of living plankton with its myriad forms each busily moving on its own concerns. This fascination the author has tried to convey to the layman also, and if the reader will follow the simple directions in this book he will open up for himself a new world and will have here a reliable and most readable guide. For the student also it can be thoroughly recommended. Although not a text-book in the conventional sense, it is one of the best kinds of book to put into the hands of any student of marine biology; it gives him a wide view of a great subject yet shows him how much there is still to discover.

Plankton contains representatives of almost every animal phylum, some of them spending the whole of their lives in it, others only a short time as larvæ. Its distribution is world-wide and ranges from the surface to the ocean depths; it thus inhabits a great variety of environments. The study of plankton is bound up with study of water movements, with other sciences such as hydrography and biochemistry, and raises questions of ecology, adaptation and evolution which have not yet been answered. It touches economics too, for on the plankton depend the fisheries—the pelagic fisheries directly, the demersal indirectly. About all this the author has written with an enthusiasm which communicates itself to the reader on every page.

The book opens with an account of the water movements around the British Isles and, after chapters on the phytoplankton and its seasonal variation, describes the different forms of zooplankton. It includes details of the anatomy, habits and life-history of the common or important planktonic animals. In a chapter on pelagic larvæ many forms are described, together with their complicated metamorphoses, and there is a discussion of Garstang's theory of evolution by pædomorphosis, enlivened by some of Garstang's verse.

The account of the vertical migrations of zooplankton, a subject on which the author has himself done much work, summarizes the evidence and puts forward some interesting hypotheses, but still has to leave the cause as the major planktonic puzzle. There are chapters on life in deep water, and on light production by planktonic organisms. The cephalopods have a chapter to themselves, and the book concludes with a chapter on plankton and the fisheries. This may serve as an introduction to the second volume of "The Open Sea" which, we are promised, will appear shortly.

The author has cast his net widely, and when it makes his story more complete does not hesitate to include observations on creatures not usually found in British waters or even strictly planktonic. He has worked on plankton throughout his scientific career and his recollections of life on both the old and the new R.R.S. *Discovery* have enriched many pages of this book. He has also been responsible for, or closely associated with, so many of the recent developments in plankton work—plankton indicators and recorders, the plankton-herring programme, and vertical migration studies, to mention only a few—that his account has a vividness which it could not otherwise have.

The writing is simple and direct, enlivened by happy metaphors (the planktonic larva as a 'perambulator' for the developing adult is one instance) and by reminiscences of his voyages in many oceans. The book is well illustrated, mainly by the author's line drawings and charming watercolours and by Dr. D. P. Wilson's outstanding photographs.

When a reprinting is called for (and the book will certainly be popular), the opportunity should be taken to correct the numerous misprints.

SHEINA M. MARSHALL

MARRIAGE IN PRIMITIVE SOCIETY

Mariage et Équilibre Social dans les Sociétés Primitives

By Pierre Métais. (Université de Paris. Travaux et Mémoires de l'Institut d'Ethnologie, Tome 59.) Pp. xi + 546. (Paris: Institut d'Ethnologie, 1956.) 4,000 francs; 15 dollars.

THIS formidable work is concerned with one of the classic themes of anthropological theory—the notion that marriage constitutes part of a continuing system of prestations between the kin of the husband and the kin of the wife. The argument is worked out primarily in relation to the Kamo of New Caledonia, and comparative generalizations are then applied to the Iroquois and the Arunta. The choice of these two particular societies gives an indication of the somewhat archaic nature of the work as a whole.