This Treatise, which edited by P. P. Grasé was published several years ago, is now a classic organized in fourteen volumes and some forty fascicles, it is still not completely published. The treatise covers all groups from protozoans to mammals. Among other volumes still to be published are those concerning such important groups as crustaceans and amphibians.

Fascicle 4 of the Fifth volume, on the cephalopods, appeared towards the end of 1989. Like all the earlier volumes, this volume was published by Masson and bound in boards, with a 16 × 24 cm format and glossy paper. The text of this monograph is illustrated with 454 drawings and photographs. The majority of the drawings are by Sabine Bousani, and are good and clear, making an excellent complement to the text, which was written under the direction of Katharina Mangold, of the National Centre of Scientific Research (Centre National de la Recherche Scientifique-CNRS).

In the last few years several works have appeared which compile, from different viewpoints, the enormous quantity of disperse knowledge that we now have about the cephalopods. For example, there are two volumes published by Academic Press and edited by P. R. Boyle in 1983 and 1987 with the general title of "Cephalopods Life Cycles". This work reviewed here, however, is the first scientific synthesis of this group of molluscs. They are important as the most highly evolved invertebrates and as a group which has adapted to all marine environments, playing an important, often dominant role in the trophic webs of seas and oceans. They are now increasing in commercial importance, and current production is two and a half million tonnes annual.

This work consists of twenty-two chapters of different lengths and importance. The original layout of the chapters and their division has been maintained, just as A. Portmann planned when initiating the work many years ago. This faithfulness to her mentor honours K. Mangold, and in general, gives the work a classical structure, which is never out of date. But perhaps, it would have been appropriate to modernize it in certain aspects. For example, the chapters dedicated to geographical distribution, migrations and vertical distributions, predators, parasites, and other material which is disseminated throughout various chapters, could have been condensed into one chapter that dealt with ecology. This chapter could also have dealt with, in detail and depth, the demography and dynamics of cephalopod populations, as well as recent contributions which deal with organisms of commercial interest. Their life cycles are different from these of exploited fish, the marine group in which there are the greatest number of works of this nature.

Each chapter was written by one or more authors, with the principal authorship given to K. Mangold, who has entrusted known specialists with specific material. A. M. Bidder collaborated in various chapters; the chapter on embryology was written by S. V. Boletzky and H. J. Marthy; the parasites were dealt with by F. G. Hochberg; economy and fishing, one of the more unfortunate chapter titles, partly obsolete, was done by J. Worms; and C. Teichert about the principal evolutionary characteristics of the cephalopods. Each chapter has a well-selected bibliography, which, as far as on can expect in such a treatise, is relatively comprehensive and up to date, containing references up to approximately two years before publication.

This work has conceived with the idea of examining the different organ systems separately rather than by systematics groups. There is nothing to object to in this methods of organization, above all when in each chapter, as well as dealing with the general character of each Class, the particular of each taxonomic unit are also taken into account.

After a brief general introductory chapter, the second chapter is about general organization, and pays attention to the division between cephalopodium and visceropallium. This helps to connect the members of this group with the rest of the molluses,
from which they differ in numerous and important ways, and also relates existing cephalopods to those of the past.

Very appropriate, in our view, is a special chapter dedicated to the mechanisms of flotation and locomotion, which, in these organisms, are very important in that they show much diversity. It was a difficult task to integrate structures and functions as disperse as the chromatoophores and colour changes, the photophores and light production, and the ink sac with its efficient function of camouflage which these organisms used when faced with their predators. All this is well-covered in the third chapter, dedicated to epidermal structures.

Among the evolutionary characteristics of cephalopods, cephalization stands out, as do the giant neurons and the great development of the sense organs. In this, the cephalopods are more similar to vertebrates, especially fish, than to invertebrates, so it is to be expected that these features receive particular attention. Mangold dedicates three chapters to the structure and function of the nervous system, which is quite well known as for many years the cephalopods have been used in neurophysiologic studies. Although more briefly, these sections elaborate some aspects of behavior in these animals, which have also been the object of numerous interesting investigations, above all concerning memory and learning.

The digestive apparatus and digestion, the circulatory and respiration systems, the excretion structures and excretion, the celomic cavities, are treated separately and clearly on the basis of early and recent work. To continue, somewhat surprisingly, this work discusses the genital organs and reproduction in separate chapters. Surprisingly because until this stage organ and function were considered together, but above all because reproduction is united in the same chapter with growth and duration of life, and also because the treatment of embryology follows that of growth. In our opinion, this part of the book would have been improved had reproduction been separated from growth and longevity, and by amplifying each of these separate sections. Specifically, by amplifying these sections in the following manner: by relating reproduction to gametogenesis; in the section on growth and longevity by discussing methodologies and problems inherent in age determining, validating the different mathematical models to express growth, and the problems of old age and natural mortality which cephalopods experience after spawning, as well as by putting the chapter about embryology immediately after that on reproduction, and before discussing growth and longevity.

The chapter on systematics, although extensive, is really rather succinct. It, contains current information the numerous revisions in progress. Mangold has chosen the widest classification currently recognized, but in this as in other aspects, it contains variations which perhaps are only pertinent to specialists, so the section is sufficiently illustrative.

The volume ends with a chapter dedicated to the principal evolutionary characteristics of cephalopods, which after their appearance in the Cambrian underwent crucial changes. Nine thousand fossil forms and known and 700 living species undeniable indications of perfect adaptations to very different biotopes and to dominant positions in the marine environment.

In summary, this laborious work edited by Dr Mangold represents an excellent modern synthesis of the anatomy, biology, physiology, embryology, and ecology of the cephalopods. It is written with profundity and scientific depth, and will be of great uses to University Departments and Research Centres. It is a “locus classicus” to turn to whenever working with cephalopods.

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