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Cephalopodologie

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Traité de Zoologie. Anatomic, Systématique, Biologie. PIERRE P. GRASSE, Ed. Tome 5, fascicule 4, Cephalopodes. KATHARINA MANGOLD, Ed. Masson, Paris, 1989. 804 pp. F1100.

Comprehensive reference works frequently require a number of years to compile, are eagerly awaited by specialists, and once published gradually come into general use by researchers, educators, and students. The volumes of *The Invertebrates* inaugurated by Libbie Hyman in 1940 provide an excellent example of such a history, as does the classic *Traité de Zoologie* directed by Pierre P. Grassé.

Among works of such lengthy gestation the present installment of the *Traité* surely holds the world record. In the 1930s the eminent Swiss zoologist Adolf Naef was selected to write the volume on the Cephalopoda, on the strength of his classic monographs on the phylogeny, evolution, morphology, and embryology of these advanced invertebrates published in the preceding decade. Naef began the project in 1939, but the events of history, teaching and family responsibilities, and ill health conspired to limit the results to an accumulation of notes, which he submitted before his death in 1949 to Grassé. Grassé asked Adolf Portmann of the Institute of Zoology in Basel, who was not a cephalopod specialist, to complete the work using Naef's notes. Believing Naef's

work to be outdated, Portmann abandoned the notes and wrote a 200-page manuscript, which he submitted in 1954. Because the recently submitted gastropod and bivalve manuscripts ran to 4600 pages, Grassé required that the cephalopod section be increased to 400, a task the displeased Portmann was unwilling to undertake until the early 1960s. The resurgence of research on cephalopods then prompted Portmann to enlist Katharina Mangold, a former student and established cephalopod specialist at Laboratoire Arago, Banyuls-sur-Mer, France, to incorporate the new literature into the manuscript. By the time one section was updated, preceding ones had become obsolete, and, as the objective of the *Traité* was to be "comprehensive," the project became locked in a cycle of updates. Around 1970 Portmann asked Mangold to be a full co-author, and in 1974 when Portmann became ill Anna Bidder from Cambridge agreed to join the effort. During the next few years the aid of other specialists was engaged. Finally, the now huge manuscript was submitted in February 1981, nearly an order of magnitude larger than was demanded by Grassé 27 years earlier. Additional material was added in proof in 1985, and the latest literature was added in 1987. The long gestation terminated successfully in late 1989.

One can justifiably ask if a work 50 years in the making can be worth the wait. In the case of *Cephalopodes* the response is a resounding "Oui!" Nothing comparable to it

exists in the cephalopod literature. The cephalopod volume scheduled for *The Invertebrates* has not been completed and perhaps never will be published, and the quantity and diversity of knowledge being accumulated on cephalopods make it unlikely that such a detailed and comprehensive one-volume work can ever again be assembled. The long developmental period moreover enabled the book to evolve, in keeping with the evolution of the field, from concentration on systematics and morphology to include material on biology and behavior, and the expansion of authorship enhances and enriches the results.

The French is straightforward, easily understood; sentences are not convoluted, and much of the terminology will be familiar to those acquainted with the literature in English. Somewhat disconcerting to the first-time user of the volume will be the location of the table of contents in the French manner on the very last pages of the book and the inclusion of page numbers there only in parentheses in the listings of the subsections of the chapters.

A short introductory chapter by Mangold, Bidder, and Portmann is followed by a detailed, well-illustrated chapter on the general organization of the Cephalopoda by the same authors. Next follows a series of chapters on the anatomy, physiology, and function of cephalopod organ systems: locomotion and buoyancy, the skin, the nervous system, sense organs, neurosecretion and endocrine organs, the digestive system, de-

velopment of blood and coelomic systems, respiration and circulation, the coelom and coelomic cavities, the excretory system, genital organs, reproduction, and life history. The book concludes with chapters on embryology, predators, parasites, geographical distribution, fisheries, migration and vertical distribution, systematics, and, finally, evolution. Several of these last chapters are translations and revisions of previously published works brought up to date by their authors. These include the chapters on parasites, condensed from Hochberg's 1983 review, and on evolution, expanded from Teichert's presentation in *The Mollusca* (vol. 12, 1988).

Even though some chapters were completed nearly 20 years ago, they are saved from being obsolete by updated summaries and bibliographies. I recommend that users of this work begin each chapter with the summary at the end, examine the illustrations, scan the bibliography, then read the body of the chapter. The inconvenience of this procedure will soon be overshadowed by recognition of the comprehensiveness of the text and the value of the illustrations.

There comes a realization that this wonderful treatise will be a starting place, the first work to be consulted by generalists and specialists alike, for the current generation and far into the next century.

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