

of hydrogen-ion concentration (E. W. Simon and G. E. Blackman) and the influence of diet upon toxicity (L. A. Elson). A further series can be grouped as dealing with selective drug action on protozoal blood infections (F. L. Rose; E. M. Lourie), drug resistance (C. N. Hinshelwood) and ecological adaptation (C. E. Lucas).

The volume, indeed, contains a mine of information relating to the growing points of the fascinating subject of chemotherapy and should appeal to all who have an interest in this science.

LIONEL WHITBY

AMERICAN BIRDS OF PREY

Catalogue of Birds of the Americas and the Adjacent Islands

By Charles E. Hellmayr and Boardman Conover. Part 1, No. 4: Cathartidæ—Accipitridæ—Pandionidæ—Falconidæ. (Zoological Series, Vol. 13, Publication 634.) Pp. vi+358. (Chicago: Field Museum of Natural History, 1949.) 4 dollars.

THIS number of the "Catalogue of Birds of the Americas" completes the work which was commenced in 1918 by C. B. Cory. Unfortunately Cory died in 1921 before he had finished the third number; but, thanks to the generosity of a life-long friend, the Field Museum was enabled to secure the services of Dr. C. E. Hellmayr to continue the work. No better choice could have been made, since Hellmayr had already made a special study of neotropical birds and was familiar with the collections in the principal museums of Europe. This last point is important when it is realized that up to the middle of the nineteenth century, or possibly later, most of the work on South American birds was based upon collections in Europe.

After Hellmayr came to Europe, it was considered desirable that there should be someone in Chicago to assist in the preparation of this "Catalogue". Accordingly, Mr. Boardman Conover, a research associate of the Field Museum, who was specially interested in ducks and game birds, was appointed to collaborate with Hellmayr. During the autumn of 1938 Hellmayr was working in London in the British Museum (Natural History), and in the summer of 1939 he went with his wife for a holiday to the south of France, but before leaving London sent a duplicate copy of his manuscript to America. On the outbreak of war he decided to go to Switzerland instead of returning to England, and there he remained until his death in 1944. After the War the original manuscripts were sent to America, and it was found necessary to bring them up to date. Not only were there many bibliographical references to be added, but also during the six years of war there had been numerous accessions to the Museum collection. For all this later work Mr. Conover is responsible.

This concluding section of the "Catalogue" deals with the birds of prey, and, as in previous numbers, the descriptions are reproduced of all the new forms described since the British Museum "Catalogue of Birds" was published and which the authors recognize. In addition, many doubtful points on nomenclature and distribution are fully discussed. Attention has already been directed to Hellmayr's knowledge of the collections in European museums, and time and again there are notes on supposed types or old types which he discovered. For example, he devotes

half a page to convincing doubtful critics that the specimen in the British Museum of *Buteo harlani* is the one described by Audubon and therefore the type. This "Catalogue" will be invaluable to all students of American birds and to those interested in their geographical distribution. Mr. Conover is to be congratulated on his work in completing this valuable "Catalogue".

TEACHING OF INVERTEBRATE ANATOMY

Practical Invertebrate Anatomy

By Dr. W. S. Bullough. Pp. xi+463. (London: Macmillan and Co., Ltd., 1950.) 28s. net.

DR. BULLOUGH has used the drawings which he prepared for the elementary series, already published on cards, as the basis of a book on practical zoology, with text and figures, suitable for those studying for a general degree. By choosing 122 commonly studied examples of invertebrate animals, he hopes that the book will be used both by North American and British students, and that those in other parts of the world will find related genera to which his figures can be adapted.

His plan is to classify the type genus, to tell where it occurs, how it lives and feeds, how to prepare it for study, and how to dissect or mount it in order to investigate its structure. To assist the student in interpreting what he finds, there are 168 very clear line-block illustrations, some based on those in the monographs listed at the end of the sections, but most original. These are excellent, with few errors, and are fully labelled. Those who have had experience of reducing complex animal structure to semi-diagrammatic form will appreciate the immense knowledge and labour involved in preparing these figures. The slightest exaggeration of a line in the final draft may alter the effect, as has, in fact, occurred in Fig. 114, where thickening of the line has resulted in making the shell plates of this *Chiton* appear to overlap from foot to head, instead of, as stated in the text, from head to foot. But this and other minor faults do not detract seriously from a most valuable collection of drawings.

The choice of types is wide, and though some might like to see included an Acinetarian, a nemertine, *Phoronis*, *Carcinus* and a nudibranch, it is comprehensive enough to provide a much-needed and useful contribution to practical classes.

Each phylum has an appendix dealing with the treatment of the material, starting with the living animal, and proceeding with culture methods, killing, fixing and preserving. These directions will be of interest not only to the student but also to his teacher, especially as the information is concise and not too technical. A general appendix of fixatives, preservatives and stains is also useful. But why suggest "adding crystals of magnesium sulphate to the small volume of water in which they are confined" for the narcotization of marine animals? That method has been superseded by the much more effective isotonic solution of magnesium chloride.

There are a few mistakes in technical terms; but these can be easily spotted and corrected. The book can be highly recommended, and both author and publisher are to be congratulated on an excellent production.