

REVIEWS

Fundamentals of Ornithology, by Jocelyn Van Tyne and Andrew J. Berger. 2nd ed. 1976. Pp. xiii + 1-806. New York: John Wiley and Sons. \$32.00.

A preface by the second author and a foreword by George Mikesh Sutton, the artist, precede the second edition of this *opus magnum* of ornithology. The first edition of the *Fundamentals of Ornithology* was prepared jointly by the late Jocelyn Van Tyne and Andrew J. Berger and published in 1959. The present second edition was brought up to date and prepared by Professor Berger. The work is lavishly illustrated by George Mikesh Sutton. The other illustrations comprise original photographs of great scientific value, diagrams and maps. The following list of the 13 chapters of the book provides an idea of the authors' approach and the general contents of the book: 1. Paleontology (34 pp.), 2. Structure and function (82 pp.), 3. Plumage and Molt (56 pp.), 4. Senses and behaviour (56 pp.), 5. Voice and sound production (64 pp.), 6. Bird distribution (42 pp.), 7. Migration (54 pp.), 8. Flight and flightlessness (48 pp.), 9. Food and feeding habits (18 pp.), 10. Courtship and nest building (28 pp.), 11. Eggs and young (46 pp.), 12. Taxonomy and nomenclature (64 pp.) and 13. Classification of world birds by families (180 pp.).

One may find that the first chapter on paleontology is relatively short. After all our knowledge of the origin of birds has not progressed as much as that of the other branches of ornithology. The next chapter — structure and functions — is admirably condensed, perhaps because one of the authors (A.J.B.) is a well known anatomist. The description of every system is followed up by a detailed outline of their function. Plumage and molt are among the most important characteristics of birds as a group of vertebrates hence this fairly long chapter is devoted to plumage, molt and some allied problems. The latter include descriptions of various kinds of plumages, colours and patterns and their functions.

The chapter devoted to senses and behaviour is, of course, of particular importance to students of bird behaviour. It begins with the description of the anatomy of the six senses found in birds and, before describing briefly some important bird activities, provides an important and interesting discussion on the basis of behaviour. The interpretation by classics like Lorenz, Tinbergen, Thorpe and others is examined in the light of recent literature. A description of various bird activities concludes this stimulating chapter. Logically the next chapter is devoted to voice and sound production by birds. Upon a brief description of the various mechanical sounds found in many birds, various kinds of song are described and problems of the phylogeny, ontogeny of the song, song dialects and song mimicry are outlined. The problem of bird distribution is firstly examined by the "biomes" of the North American continent as first applied by Pitelka

and Kendeigh. This is followed up by a careful consideration of the various factors controlling the distribution of various bird species and the situation on continental and oceanic islands. Problems of bird population studies and a brief mention of introduced and of endangered bird species terminate this interesting chapter.

The world-wide problem of bird migrations is carefully examined by describing the various factors exerting an influence on the various kinds of migrations, such as latitudinal, longitudinal, altitudinal, partial migrations, etc. Finally, a good description of bird navigation and of homing birds is given and discussed in relation to latest findings.

The part on flight and flightlessness begins with a description of the anatomical framework and its mechanics followed up by brief paragraphs on flight speeds and concludes with a description of certain birds such as penguins and some marine birds swimming wing propelled under water. The description of food and feeding of birds begins with a succinct description of the various adaptive specializations of the bill and other parts of the digestive tract. Other aspects, such as the types of food, food finding, including the role of water and salt are, perhaps, too briefly discussed. Courtship and nest building is one of the best documented parts of the book. The description of factors responsible for the initiation of the breeding season is followed by description of other aspects of breeding, such as pair formation, sexual maturity and territory. This chapter concludes with the description of nest building in various groups of birds. The chapter on eggs and young appropriately follows. A brief account is given of the formation of the egg and of its various characteristics, such as colour, size, weight, clutch size, etc. This is followed up by an excellent account of incubation, including a synopsis of incubation patterns. The chapter concludes with a well illustrated description of both altricial and precocial young and a description of 'obligate' and 'nonobligate' breeding parasitism.

The penultimate chapter provides comprehensive information on taxonomy and nomenclature, supported by an extensive bibliography, and the last chapter supplies information on the classification of recent world birds by families. The odd 8,600 species of recent birds are placed in 169 families. Physical characteristics, range, habits, food, a brief description of breeding, technical diagnosis, classification, references and a picture of a representative of each family by George Mikesh Sutton. The style is readable and concise. A comprehensive index is found at the end of the book and each of 13 chapters contains an adequate bibliography brought up to date.

Summing up this brief review of the *Fundamentals of Ornithology*, we can say that the second edition of this major contribution to ornithology maintains the high standard of the first edition and the reviewer has only few critical remarks to make. While one appreciates the ecological approach to bird distribution in North America one would like to see examples from other countries. While the reviewer greatly values the morphological approach to food and feeding habits, the inclusion of ecological principles would enhance this chapter. The lack of a mention of birds economically harmful is to be regretted. Admittedly, the explosion of numbers of these bird species and their noxiousness is in many cases the result of unpre-

meditated, man-made changes of the environment. However, the losses sustained by the farmer, orchardist and others occur on all five continents and they are very serious so that research stations have been established to deal with this problem. The part describing the rare and endangered species is very short, confined to two American species and no references are given. Finally, the use of inches and feet instead of metric measures now used by all biologists will cause a small inconvenience to some of them.

The above critical remarks are not intended to diminish the value of this massive contribution to ornithology, our *scientia amabilis*. It will serve as a fundamental text to students of avian biology on both hemispheres. Moreover, owing to its encyclopaedic character and the excellence of its source material, it will be indispensable to university professors of biology, taxonomists and, in fact, to every practising ornithologist.

K. W.



Birds of Nepal with reference to Kashmir and Sikkim, by Robert L. Fleming Sr & Jr. 350 pp. Published by the authors, P.O. Box 229, Katmandu, Nepal.

This book, the culmination of 25 years study in the Himalayas, contains a tenth of the known birds of the world within its 350 pages. In field guide form it synthesizes the known information, incorporates new data on 38 species previously unknown in Nepal as well as dealing with an additional 16 species recently rediscovered.

Lain S. Bangdal and two Nepalese artists have provided 150 coloured plates and the dust jacket which depicts Crimson Horned and Impeyan Pheasants.

Dealing with birds of a region which has special links with New Zealand since Sir Edmund Hilary's triumph, this book might be welcomed especially by ornithologically-minded New Zealand mountaineers and Sir Edmund's community workers in Nepal.

S. I. A.