

REVIEWS

Edited by G. W. JOHNSTONE.

BOOKS

Avian Biology edited by D. S. Farner and J. R. King, taxonomic editor K. C. Parkes. London: Academic Press. Vol. 1, 1971. Pp xix + 586. \$A34.00. Vol. 2, 1972. Pp xxiii + 612. \$A32.00. Vol. 3, 1973. Pp xx + 573. B. & w. pll, figs. 235 x 150 mm. \$A38.00.

The fact that birds are, in relation to their numerical significance in the animal kingdom, disproportionately useful vehicles for pursuing research into most basic biological problems makes ornithology one of the more exemplary fields of modern biology. This is evidenced not only by its multidisciplinary approach, but also by its overwhelming output of information whose relevance extends beyond the confines of the taxon. The problem of keeping abreast of developments in avian biology was first relieved in 1960 by the useful two-volume work, *Biology and Comparative Physiology of Birds* edited by the late A. J. Marshall, and now by these, the first three parts of a direct and worthy five-volume descendant, edited by Farner and King and dedicated to Marshall, Foundation Professor of Zoology and Comparative Physiology at Monash University.

This work contains twenty-eight up-to-date reviews by experts in their fields. Although they cover many of the same topics as did Marshall's volumes (notable deletions being chapters on avian development, zoogeography, nervous systems, skeletons, muscles and flight), most contributors have not simply updated the reviews but have summarized established facts and principles so that they provide excellent starting points for the nonspecialist.

Broadly speaking, Volumes 2 and 3 could be regarded as physiological in nature and conform closely in format to Marshall's work, whereas Volume 1 is almost entirely ecological in approach and has fewer counterparts in its predecessor. Because Volume I is more within my field of competence and probably of more interest to most readers of EMU, I shall consider it in greater detail.

Storer's two chapters, one on classification and the other on adaptive radiation, are almost unchanged from his two chapters in Marshall's volumes. These enduring essays are valuable but indicate a stagnation of research in these areas. Brodkorb's review on avian origins and evolution has extended the old chapter in Marshall's book with some useful tables and new data on speciation in the Quaternary Period, but again reveals a field that has made few significant discoveries in this last decade. This could be ascribed, no doubt, to the bare handful of active palaeornithologists in existence today.

Selander's stimulating chapter on avian systematics and speciation is a milestone in the field. He reviews critically the exciting revolution in modern systematics in the last decade, where new statistical procedures find pattern in the variation of old (morphological) and new (biochemical and behavioural) characters; these are explained in terms of recent ecological and genetic concepts. Except for Selander and his students, ornithologists have not been prominent in this movement; however, the author sets out the goals and operating

principles for future ornithological research in this area.

The seven remaining chapters of Volume I are strictly ecological, yet they reveal two contrasting approaches. Essays by MacArthur (bird communities), Cody (ecology of reproduction) and Orians (ecology of behaviour) are not so much summaries or critical reviews of the literature: instead, each selects fundamental problems in ecology and attempts to develop explanatory principles using *a priori* reasoning and optimizing techniques. They argue that such approaches have greater predictive and explanatory power than extrapolations from more descriptive studies (that are characteristic of the other four essays). Of interest to Australasian workers will be Cody's call for more studies on introduced species. Such 'natural experiments' would be test-cases for ecological theories that relate clutch-size and other breeding strategies to contrasts in environmental stability. These three essays are more theoretical and mathematical than the others and consequently more difficult to comprehend; nevertheless, they will be of considerable interest to ecologists and geneticists as well as ornithologists. Their significance, however, will be transitory as other developments in this rapidly advancing field will soon make them obsolete.

Ashmole's comprehensive review of marine environments and the ecology of seabirds should be of considerable use to workers in this field. Ecological aspects of reproduction are covered by three contributors: Immelmann considers the physiological and ecological significance of breeding periodicity in birds; von Haartman summarizes an enormous amount of literature on population dynamics, much of which is of northern European origin and probably unknown to most English-speaking workers. Cody covers the same central topic (clutch-size) as does von Haartman, but there is almost no overlap of references as he cites few case-histories but considers the problem from his theoretical viewpoint.

Serventy's essay on desert birds has special relevance for Australians. After describing arid habitats he warms up to give a most readable and fascinating account of arid-adapted birds and their physiological and ecological strategies. He discusses the anomalous presence of black coloration in some desert birds and considers how it might save metabolic energy at low temperatures. He also reveals that the opportunistic breeding strategies of desert birds is a condition peculiar to Australia and, in particular, to the arid regions of the central and western parts where rainfall is at its most unpredictable. He also urges more studies on breeding and moulting of species of eastern Australia to discover to what extent they also breed opportunistically. In reviewing the peculiarities of desert birds he reveals the anomalous fact that the Zebra Finch, not considered a desert specialist as such, seems to have the greatest behavioural and physiological tolerance to arid conditions of birds tested so far. Zebra Finches breed at the earliest age known (males started nesting in captivity at forty-five days, can develop spermatozoa at sixty days and have successfully raised broods at eighty days); they are the

fastest starters when given the *Zeitgeber* and have bred continuously in the laboratory for forty months, raising twenty-five successive broods of young. Of all the passerines tested, Zebra Finches show some of the highest tolerances to dehydration and salt concentrations and have the greatest capacity for cooling by panting.

Volume 2 has nine chapters, five of which cover topics in Marshall's volumes but review almost entirely new information that has been produced in the last decade. These chapters are on the avian integument (Stettenheim), the circulatory (Jones and Johansen), respiratory (Lasiewski), digestive (Ziswiler and Farner) and excretory (Shoemaker) systems. The new chapters are on the pattern (Palmer) and control (Payne) of moult, nutrition (Fisher) and intermediary metabolism (Hazelwood).

Volume 3 is concerned with the structure and function of the gonads (Lofts and Murton), the neurohormonal integrative systems and the sense organs. The adeno-hypophysis (Tixier-Vidal and Follett) and its complement, the neurohypophysis, (Kobayashi and Wada) are dealt with in separate chapters, whereas all the peripheral endocrine glands (Assemacher) are covered in one chapter. The chapters on avian vision (Sillman), chemoreception (Wenzel) and mechanoreception (Schwartzkopff) are all considerably larger than their equivalents in Marshall's volumes. The last chapter is a concise up-to-date treatment of behaviour by Hinde.

Although the editors have produced a timely and massive work free from errors, I feel that a much heavier editorial hand was required. The quality of chapters is uneven (especially in Volume 1) and they include considerable overlap in subject matter. As in Marshall's volumes the chapters are left to speak for themselves, but in the present work the sequence of topics fails to develop logically and lacks cohesion. The chapter on behaviour in Volume 3, for example, is not a logical consequence of the chapters that precede it, and its proper context would have been in Volume 1. Furthermore, there is almost no cross-reference between chapters although they frequently complement each other. The prefaces that introduce each volume are identical, but the subject matter each covers is very different. The chapters should have been arranged into sectional topics with the editors introducing each topic and showing how it has developed in the last decade, so placing subsequent chapters in proper perspective. As the books stand now, it is a task beyond the competence of most ornithologists to read all the chapters through from start to finish and fully understand their significance. Consequently, this work will not attract those readers who wish simply to be brought up to date in avian biology; but it will attract biologists specialized in the topics covered and should be a valuable reference for them.

Considering the almost prohibitive cost of each volume, one would expect a production of the highest quality and this is indeed the case with Volumes 2 and 3. Volume 1, in contrast, is of poorer quality: line-drawings and photographs are inferior to originals in Marshall's book. Unfortunately their cost must restrict the series to the larger libraries and institutions; nevertheless, every serious ornithologist should ensure that he has access to these essential works.

R.Z.

Animals of Europe: the ecology of the wildlife by Maurice Burton, 1973. Peter Lowe. Pp 172, many col. pll, figs. 216 x 280 mm. \$A8.00.

Those who indulge in the dangerous pastime of believing

blurbs on dust-jackets might imagine that 'this book surveys the continent of Europe as a product of the progression from primeval forest to intensive agricultural development and industrialization; and the way the animals, particularly the birds and mammals, have fitted into their new environments'. In fact, it falls sadly short of these admirable objectives.

The book is organized on the basis of habitats, described as they were at the end of the last glaciation, before man modified them. Mostly, however, the opportunity of discussing successive stages of subsequent modification has not been taken. Much of the text reads like a catalogue of the vertebrates occurring in each habitat; without some discussion of their ecology, this is dull. The chapter on the steppes is typically frustrating: there is an interesting description of the steppes in their primeval state, the changing pattern of land-use and then a boring inventory of their present complement of mammals, birds, reptiles and amphibians; only for the Bobak (steppe marmot) and the Souslik (spotted ground squirrel) are we given any insight into their place in the ecology of today's steppes.

Similar in format to *Owls of the World* (edited by J. A. Burton), Stonehouse's *Young Animals* and his *Animals of the Arctic* and *Animals of the Antarctic*, reviewed recently in these columns (74: 109), one of this book's most irritating features is common to all these and appears to be a trend in modern publishing: illustrations (which compose about half of the book) are not numbered and are not referred to in the text. Instead they have lengthy captions which frequently do not describe what is shown in the illustration. For example, many birds are illustrated by excellent portraits, accompanied by captions dealing with identifying features, diet, range and breeding behaviour of the species concerned, all of which may be repeated in the body of the text. Surely it would be better if the caption were restricted to what is shown in the illustration; all other information should be in the text with reference to illustrations where appropriate. No doubt the arrangement used facilitates the job of compositors and proof-readers because it obviates the need for careful cross-referencing between text and illustrations. But it makes for distracting and disjointed reading; one repeatedly breaks from the text to look at an illustration, reads its caption and then tries to find one's place in the text again. This becomes especially tiresome when the illustration relating to a subject in the text is up to twenty pages away. Almost, one has to read the book twice, first the text and then the captions and illustrations.

Another frustrating practice, prevalent here, is that of presenting a piece of information without discussing its significance or explaining it. Two ornithological examples will suffice: 'Pigeons are unusual among birds in not raising the head to swallow' and 'swifts will fly off in a stream at right angles to the path of an oncoming electric storm, returning when the storm has passed'. In both cases one wonders why; but the answers are not here.

For several reasons the book gives the impression that it was compiled, or completed, hastily. The text at times lacks fluency, as if paragraphs or sections were rearranged at the last moment without the necessary readjustments of neighbouring parts. Repetition occurs: the decline of the European Mink and the spread of the introduced American Mink are discussed twice in similar terms, twenty pages apart. There are some errors and inconsistencies: the last wolf in Ireland was killed in 1786, not the 1960s, and I was puzzled by the caption of a photograph showing a snowy scene which reads 'Finland in midwinter . . . under the midnight sun'.

It is misleading to include, in a chapter titled 'Invaders and Aliens' photos of feral pigeons, European Starlings, Swallows and a White Stork. The map of Europe is quite inadequate, lacking many place-names mentioned. The index is incomplete and inaccurate.

On the whole, ornithologists will be disappointed, despite some fine photographs. The chapter on 'The Sea and its Harvest' starts with a spectacular double-page spread depicting a gannetry and includes plates of three other seabirds; but not once is a bird mentioned in the text. Nevertheless, there is good information here. It is certainly of interest that some races of the lizard *Lacerta melisellensis* on islands in the Adriatic live in colonies of gulls, feeding on their lice and mites (an intriguing comparison with the Chatham Island Skink *Lygosoma dendyi* found in the colony of mollymawks *Diomedea cauta eremita* on Pyramid Rock where it apparently drinks stomach oil ejected by the birds (Fleming 1939, *Emu* 38: 380-413)). And how many Australians know that there is a feral population of Bennett's Wallabies in Derbyshire, England?

Despite its many failings (and it could so easily have been so much better), I would recommend this book to anyone looking for a general picture of the natural history of Europe. It is refreshingly non-British in emphasis.

G.W.J.

Owls of the World—their evolution, structure and ecology, edited by John A. Burton, 1973. Peter Lowe. Pp 216, numerous col. pll, figs and maps. 275 x 215 mm. \$A14.50.

Compared with the other five populated continents, Australia possesses by far the poorest representation of the order Strigiformes. However, that imbalance varies greatly within the two families of the order; for, we have four species of the ten known in Tytonidae (40%) and only four of the 123 species in Strigidae (3%). Compared with most countries owls in Australia are inconspicuous, all being predominantly nocturnal. Not one species could be regarded as common and a few, apart from study in captivity, are among our least-known birds. One can detect that most of the information on the eight Australian owls has been obtained from David Fleay's *Nightwatchmen of Bush and Plain* (1968).

Clear outline maps are included to show distribution for all species, with the Barn Owl and Boobook Owl shown as occurring over the whole of Australia (including Tasmania). Although the range of each is certainly throughout the continent, there must be large areas of practically treeless country where neither would normally be found. The Barn Owl, however, often follows food supplies, especially the movements of mice, some distance from the tree-studded areas where it usually lives and nests. The Grass Owl has very rarely been seen by experienced observers; although only eastern Australia is shaded on its distribution map, it has also been recorded in Western Australia. There seems to be no reason why it would not extend through the grasslands of the sparsely populated west, but the only way to map its known range would be to make an assessment of all known records and plot those acceptable as dots. The southern range of the Masked Owl in Western Australia is too extensive on the map and the Kimberley region has been omitted. The distribution shown for the Sooty Owl is the most inaccurate, including almost all Queensland, New South Wales, Victoria and South Australia, whereas it occurs only in the rainforests and contiguous heavily timbered regions of eastern Australia, south to

eastern Victoria and has never been recorded anywhere near South Australia. The maps for the four species of *Ninox* are fairly accurate.

Coloured illustrations are given for all 133 species. Photos have been used if available; the rest have been drawn by the artist, John Rignall. To my knowledge this is the first time all the owls of the world have been dealt with and illustrated in colour in one volume, although Grossman and Hamlet included all species as an appendix of their *Birds of Prey of the World* (1964). Therefore it is pleasing to see yet another book covering fully a large world-wide family and so well illustrated. Although Rignall shows artistic ability with all paintings pleasingly done, cause for concern arises with correctness of detail in some little-known species. For example the African Bay Owl *Phodilus prigogonei* is described as differing from the Asian species *P. badius* only in 'being darker . . . with a more compressed beak and smaller feet and claws'; yet the coloured photo of the latter and the artist's illustration of the former depict vast dissimilarities in facial pattern and coloration.

The book's specific evaluations include recent taxonomic work and differ a good deal from those given by Peters in his *Check-list of Birds of the World*, but it is a pity to see birds like the Biak Scops Owl *Otus beccarii*, so long the sole south-eastern isolate of that large genus, relegated to subspecific status. In fact I had some difficulty in ascertaining its fate; for, it is not included in the Index, not mentioned in the text nor is Biak Island in the range given in the text; its sole mention is on the distribution map for *Otus manadensis*. Likewise, I hoped to obtain some information about Neumann's *Tyto nigrobrunnea*, discovered in the Sula Islands in 1939, which both Zimmer and Mayr (1943, *Auk* 60: 249-262) and van Bemmelen (1948, *Truebia* 19: 323-402) considered apparently a good species. However there is no mention of it whatever and it seems to have been completely overlooked.

Chapter 1, by John Sparks, deals with 'Birds and Men', Chapter 2, by C. A. Walker, concerns 'The origins of owls' and Chapter 3, 'What makes an owl', is by Philip Burton. Subsequent chapters by various authors deal with groups of genera, species by species, and there are two final chapters: on 'Conservation' by Ronald Murton and a well-illustrated contribution on 'Owl Pellets' by David Glue. A checklist of species is followed by a section on 'Owl voices', including a useful table of species' vocalizations. Glossary, Bibliography, Biographical Notes on authors and Index conclude the book. One question: 'ear-tufts' are conspicuous and characteristic features of many species of Strigidae; what is their function? The topic is not even discussed in this book.

Owls of the World is splendidly produced, attractive and profusely illustrated, dealing with a much-maligned (more so in earlier years without doubt) group of birds, which ornithologists consider a distinct and clearly defined order.

A.R.McG.

Index Ornithologorum by W. Rydzewski, 1972. The Ring 6 (71-73): Pp iv + 112. \$US3.00. (Obtainable from The Editor of 'The Ring', Sienkiewicza 21, 50-335 Wrocław, Poland; cheques payable to 'Polish Zoological Society'.)

In essence, this Index attempts to do for the world what the RAOU's *Index to Current Australian Ornithological Research* (1971, reviewed in *Emu* 72: 38) did for Australia. Information was canvassed through announcements in various ornithological journals and its content

must very largely reflect the response so initiated.

Most space is occupied by a list of ornithologists, grouped alphabetically by countries, giving name, year of birth, title, occupation, membership of ornithological organizations, editorships, principal interests and address. Global coverage seems to be fairly complete, but an obvious gap is the lack of any entry for the People's Republic of China. The remaining twenty-eight pages are the subject index ranging from '*Acanthis*' to 'Zoogeography and ornithogeography', for each item listing those who have nominated it as a principal interest.

In any future edition it might be more convenient to dispense with the country-by-country arrangement and have one comprehensive alphabetical listing of all workers; national lists could constitute a third section.

This would facilitate use of the Index as an address-list for locating those whose research interests cause them to lead itinerant lives, paying scant regard to national affiliations. Only with frequent revision, however, can it retain its value in this respect.

This Index contains entries for forty-five Australian ornithologists, as compared with about 200 in the RAOU Index. This highlights its only serious shortcoming, that (to quote its author) 'it embraces only a fraction of [the world's ornithologists]'. If that fraction can be substantially increased in an improved edition (perhaps to follow the 1974 International Ornithological Congress?), this publication will become an extremely useful tool for international communication in ornithology.

G.W.J.

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