

## REVIEWS

**A Synopsis of the Birds of India and Pakistan.**—S. Dillon Ripley. 1961. Bombay Natural History Society. Peabody Museum, New Haven 11, Conn. 703 pp. \$6.50.—Anyone who has worked on Indian birds in recent decades has suffered acutely from the absence of a reliable list of the birds. Not only was the last standard work, Stuart Baker's *Fauna*, already out of date when published 1922–1930, but the last 30 years have seen enormous activity in the Indian region, which has resulted in a great increase in our knowledge of the distribution and geographic variation of Indian birds. Finally, there has been a perceptible change of taxonomic theory in the last 30 years, resulting in a broadening of concepts both on the generic and species level. This painful gap in the ornithological literature has now been excellently filled by Ripley's volume. The size of his task is indicated by the fact that 2,067 species and subspecies are listed. The style followed by Ripley is very much that of the A.O.U. *Check-list*, except that the synonymies are far more extensive and that habitat preferences and altitudinal distribution are given with most of the subspecies. This greatly adds to the usefulness of the volume. The taxonomic treatment is thoroughly competent, although Ripley tends to adopt rather large genera, for instance, in the case of *Muscicapa* and *Erithacus*. Nor would I combine *Pseudopodoces* with *Podoces* or *Sylviparus* with *Parus*. He lumps *Monarcha* (1827) and *Hypothymis* (1826), but employs the junior synonym. Other genera, that seem less distinct, like *Chalcites* from *Chrysococcyx*, are recognized. There are also a few controversial decisions on the species level. I thought that the noninterbreeding of *Corvus corax* and *ruficollis* was sufficiently well established to justify full species status for the latter. The placing of the many subspecies described by Koelz is particularly valuable. One may take exception to one or two of Ripley's nomenclatural decisions. Like other recent authors, Ripley overlooked that *Capella* is a *nomen nudum* and only used as a kitchen-Latin vernacular, not to mention the preservation of *Gallinago* in Opinion 67 (1916) long before the rediscovery of *Capella*. The generic name of the Jack Snipe is *Gallinago*, whether one ascribes this name to Brisson or to Koch. His needless revival of *Microura*, forgotten for more than 100 years, in violation of the stabilizing decisions of Copenhagen and London, would likewise seem an error of judgment.

It seems impossible to keep errors out of a volume as large as this one. There are some misspellings, conflicts between the ending of the specific and the gender of the generic names, deviations from the chronological sequence in the synonymies, and other minor slips. *Kitta* (p. 306) is the name of a bowerbird, and not of a jay; the subfamily name for *Salpornis* should be spelled Salpornithinae (p. 562); *cauda* is a noun and cannot be changed to *caudus* (p. 209), although this mistake is made frequently.

A most valuable part of the *Synopsis* is an informative introduction that contains historical information, references to the literature, and two excellent maps, one showing the geographical, the other the vegetational and climatic, subdivisions of India. There is a stimulating discussion of the biotic districts or vegetation zones, and of the zoogeographic aspects. A special list summarizes the endemic Indian species.

All in all, this is an excellent and most useful volume, which will be the indispensable companion of all future workers on Indian birds.—ERNST MAYR.

**The Murres.**—Leslie M. Tuck. 1961. Canadian Wildlife Series: 1, Department of Northern Affairs and National Resources, Ottawa. 260 pp., 34 figs., 28 tables, 20 black and white photographs, 1 in color. \$2.50.—This important monograph covers both living species of auks of the genus *Uria*, their distribution, populations, and biology. The author made an intensive study of these birds in the field over a period of 10 years and at all seasons. During this time he visited all known colonies in Newfoundland and Labrador, as well as some in Ungava Bay, Hudson Bay, and Lancaster Sound.

Part I deals with evolution, variations, and environmental relationships; Part II, the breeding distribution, winter range, and migration on a world-wide basis; Part III, the breeding biology, in all its principal aspects; Part IV, the effects of food, disease, weather, man predation, and environmental changes on populations; Part V, the economic and ecological importance of murres and their management as a food resource. The bibliography includes 10 pages.

In addition to discussing the murres in great detail, the author makes numerous interesting comparisons between these birds and other species of associated cliff nesters, pointing out the particular food and nest niches of each and the small extent to which there is direct competition.

In considering the pyriform shape of the murre's egg, the author states that "in actual fact, the greatest mortality in a murre colony is due to eggs falling off the ledges or rolling away from their proper places into crevices where they are irretrievable. The majority of the eggs fall in the first few days after they are laid." Later he states that stability of the egg on the ledge increases toward the end of incubation due to evaporation; the resulting increase in size of the air space at the large end shifts the center of gravity toward the small end, causing the egg when moved to roll in a smaller arc; consequently, the chance of falling is diminished.

Data on 400 pairs of murres showed that 56 per cent retained the original egg laid, 30 per cent laid one replacement, 11 per cent laid two replacements, and 3 per cent deserted. Young birds laying for the first time seldom, if ever, hatch an egg.

Among the many mortality factors operating in murre colonies, rock falls in one study caused destruction of 19 per cent of the eggs. At the time of sea-going the young birds leave the nesting cliffs and plunge into the sea where they are surrounded by highly agitated adults; eventually each young bird swims out to sea with one adult murre, which apparently is rarely the actual parent.

Shifts in murre populations are due to many factors, among which climatic change is evident in some of the trends noted in the past century. For example, decreases in murre colonies along the coast of Newfoundland and Labrador may be the result of unfavorable climatic changes rather than due entirely to excessive eggng.

The section dealing with diseases is very brief, and, according to the author, there is one recorded instance of a possible epizootic in murres; however, he refers to two—one on the coast of Washington and one at Novaya Zemlya.

In perusing this attractive volume one gets the impression that the author is thoroughly familiar with all of the pertinent literature on murres, and his discussions appear to include everything of consequence that is known up to the present time in regard to the life history, distribution, and populations of these interesting birds.

—GEORGE E. HUDSON.

**Bird-Song. The Biology of Vocal Communication and Expression in Birds.**

—W. H. Thorpe. 1961. Cambridge Monographs in Experimental Biology, No. 12. Cambridge University Press, New York. 143 pp., 65 figs. \$3.75.—This volume, by one of the recognized leaders in bio-acoustical research, is not meant to be a general treatise on bird vocal communication but rather a consideration of some of the recently developed aspects of the experimental work in this field. In view of this, one might well suspect that the initial chapter dealing with the esthetic attributes of bird song was as much a concession to the editors of this monograph series as was perhaps the substitution of the present title for “the more accurate and more objective” title of *Bird Vocalizations*. Consideration is given to the possibilities that these vocalizations are evidences of artistic creativeness or of convenient outlets for emotional expression. But happily the author concludes that they are primarily communicatory in function and devotes the remaining chapters to a survey of their biological significance.

There is a sobering discussion of the admittedly arbitrary but popular distinction between “call-notes” and “song,” culminating with the admission that the distinction is a useful one, and followed by a chapter on Call-notes and another on Song. Call-notes are classified and discussed according to their communicatory function, such as distress, territorial defense, feeding, and alarm. Evidence from 12 different studies is marshalled to suggest that each passerine bird has an average of 15 basically distinct call-notes, each conveying a different item of information. This estimate seems high to me, but such differences of opinion are no doubt due to uncertainties as to the meaning of “basically distinct.”

The main functions of song are considered to be territorial defense (often a substitute for fighting) and advertisement to potential mates. Song can be both individually and specifically recognizable. The seasonal periodicity of song and perhaps the development within the individual are under primary control of testicular hormone. A concise account of the development of song in experimental and wild Chaffinches is presented, indicating an integration of “inborn” and learned components. The author’s contention that the songs of Corn Buntings and Reed Buntings reared in auditory isolation “were indistinguishable from those of wild birds” would have been more credible had he included the spectrographic evidence. We still lack published spectrographic evidence that any oscine species is capable of developing a completely characteristic primary song without the exposure to experienced individuals of its own species during the developmental period.

The chapter on specific and subspecific differences in vocalizations may kindle the reader’s interest in a most promising area of avian systematics but is disappointing in its failure to follow through with a much-needed analysis of recent attempts to use vocalizations as taxonomic characters. The author concludes that voice is of little value at the family or generic level, and it is difficult to imagine what, if any, evolutionary advantage would be achieved by similarity in voice among congeners or related genera. At the specific level, however, it is difficult “to find closely related sympatric species-pairs among the song birds which are not obviously differentiated” by their voice, and there is a discussion of the possible exceptions to this dictum. The circumstantial evidence that song differences have played a role in initiating as well as maintaining evolutionary divergence is reviewed.

A final chapter compares mechanisms of avian sound production and hearing with those of man. Spectrographic analysis has demonstrated that some birds apparently have two or more sound-producing vibrators, enabling them to render multiple but

independent notes simultaneously. The author cites some of the evidence against Helmholtz' classical theory of hearing, which allows for frequency analysis in the inner ear only, but concludes that "many of the most important questions raised by the comparative study of vertebrate hearing organs remain as yet unanswered."

A survey work that reviews an area of interdisciplinary interest rarely pleases all of its critical readers. It is no problem for specialists (perfectionists in their own fields) to uncover omissions, misinterpretations, or potentially misleading statements. Thorpe's restriction of the term "sub-oscines" (p. 14) to the Australian lyre-birds and scrub-birds (following Gadow) will perplex many of his readers who are more familiar with its application to all of the non-oscine passerines. The assertion that the human ear is capable of frequency discrimination with an error of only four cycles "over a considerable part of the range" (p. 62) is misleading with regard to that portion of the frequency spectrum involved in most bird song (one to nine kilocycles). Some of the author's interpretations in the text seem not to be in accord with the evidence furnished by the accompanying sound spectrograms (e.g., Figures 51 and 55), although such inconsistencies scarcely detract from the overwhelming merit of the book. A reviewer is possibly ultrasensitive when his own work is misinterpreted (p. 100). But the author's repeated reference in this book and elsewhere to the two races of meadowlarks is only slightly less puzzling than his listing both forms under "Manakin" in the species' index.

Students of bio-acoustics and both amateur and professional ornithologists will find much of interest in this review of a popular subject. The book should stimulate and aid further research on the biological significance of avian vocalizations.—WESLEY E. LANYON.

**Animal Ecology.**—S. Charles Kendeigh. 1961. Prentice-Hall. x + 468 pp. \$11.00.—This large, excellently edited, and well-illustrated textbook seems to be a very important publication. In fact, it contains so much information that it is difficult to evaluate it in a nutshell. The relations of animals and plants to each other, and to their environment, the scope of ecology as Kendeigh gives it at the beginning of the book, include so many aspects of knowledge drawn from all branches of the natural sciences that a critical reviewer himself ought to feel as confident in every one of them as the author who dared to accomplish a synthesis of our 1960 knowledge with respect to environmental relations of the animals.

A first glance at the contents of this book reveals that less emphasis is given to the principles derived from studying the reactions of animals toward the impact of the environment, and more to the result of these reactions, *i.e.*, on the analysis of the types of habitats animals occupy, and on geographic ecology, on the distribution of these animal habitats, first in North America, then all over the globe. In the opinion of Kendeigh the beginning student of ecology, and to those this book is aimed, should not become lost in the forest while studying the trees. He leaves "physiological ecology" for a higher grade of study, after the habitat (to which the animals adapted), the communities (which the inhabitants of habitats form), and finally the distribution of these have been understood. With a semantics different from Kendeigh's, we could say that he feels it is proper to raise the interest of the beginning student in the elementary understanding of animal reactions and adaptations versus the environment. He wants to emphasize the biotic community concept: that animals and plants form mutually interacting associations which have a regular distribution owing to history, climate, and physiography of the earth's surface, and

to their own evolutionary history. This approach is synbiological, and descriptive: causal and historical argumentations and points of view occur only to a small extent. On the other hand, such modern branches of zoology that grew out, or have been reborn on the basis, of ecological approaches are included in this treatise. Ethology, population dynamics, the study of evolution and speciation, paleoecology, and zoogeography are thus parts of Kendeigh's approach to elementary (syn-) ecology.

While most of these new disciplines only get a short treatment, I feel with Kendeigh that they would not have deserved more than merely rounding our outlook on environmental animal sciences. I also find commendable that men's egotistic approaches are excluded from the book. Thus conservation, harvestable crop, management, and other applied problems of our atomic age will not deter the interest of the reader from the main subject—"habitats." Man is discussed though, with his impact upon, and life within, the habitat types. The student also can draw his own conclusion from the many examples of man drastically altering the plant-animal-environment relations.

The above-outlined material is organized into a short introduction of basic ecological concepts and their history, and three largely even-sized sections on habitats and communities, ecological processes especially concerning synbiology, and descriptive geographic ecology. The treatment of the basic concepts is very brief, but as said it only serves as "background" to understanding why similar habitats produce an aggregate of similarly adapted biota, which form the community. In the description of the structure and dynamics of communities—the most important of the background information toward synecological habitat and biome approach—the student is introduced to, and has to accept, the descriptive concept of the biotic community. The reader is, however, not really convinced by Kendeigh that a community is more than the sum total of its members, and that the dynamic processes which later in the book will be detailed make an entity out of the assemblage of plants and animals that might be compared to some sort of superorganism.

The discussion of the local habitats treats in five chapters the streams, lakes, other aquatic surroundings, rocks and soils, and finally the major vegetation types of grassland, forest, and forest edge. All the communities of land and freshwater-covered land consist of these elementary habitats. Each chapter then describes the physical features, the plants, the animals, the community interrelations, production, and the community types that the habitat nurtures, with emphasis shifting, as our present knowledge allows.

The next part of the book discusses dispersal and other population movements that aid in community establishment, the reactions of the settling organisms which may modify the habitat, the social relations (cooperative, disoperative, etc.) of the animal members of the community, its energy relationships, the population dynamics of the constituent animals and their ecological niche relations, and finally the importance of evolutionary processes that alter the ecological character of the animals.

The third and last section gives faunistic zoogeography in a nutshell, adapting mainly the Sclater-Wallace system of faunal realms and provinces; the paleontological and geological history of North America from the Tertiary to date. The remaining major part of this section discusses the biomes and their climate, vegetation, vertebrate fauna, with the outstanding features of the best adapted species or groups, and where known and retracable, the paleoecology. The following biomes occupy a chapter each: temperate deciduous forest, coniferous forest, and woodland, chaparral, tundra, grassland, desert, tropical, and marine biomes. This third part of the book

is a unique approach and will be welcomed by all field ecologists, ecology teachers, and naturalists, *i.e.*, by all who feel the lack of a descriptive treatment of ecological nature of the North American habitats and their history.

Judging the book as a whole, with respect to the set aim, *i.e.*, as a college textbook for students beginning to study ecology, I find that the price that they must pay is extremely high, but what they get for that price is worth the money. Almost one fifth of the book (96 pages) is bibliography and index: both are up to date and very extensive (although I could neither find, as a spot check, the word *edaphon*, nor a meritorious treatment of the soil microfauna and flora so termed). Of the remaining 372 pages about two fifths are illustrations: photos that are excellent and illuminative, diagrams, tables, and maps. Most of the diagrammatic drawings and tables are taken, or redrawn, from detailed publications, and the explanation given is sometimes too brief, or seems to have little to do with the text that it accompanies. For example, the seasonal history of bark beetles (p. 310) would need more explanation for me to understand it properly and that of the breeding niches of forest birds (p. 306) would need a few more lines of explanation for an entomology student. The inclusion of many maps is commendable; I wish there would be even more of them, *e.g.*, we only get a large-scale map of the biomes of the world including North America, when one third of the text discusses the latter; the only detailed biome map is that of the western deserts. Lacking them, the biome map of the world is our only guidance. On this (p. 278) the extensive Palouse prairie as well as the juniper woodlands of interior Oregon and the wet coast forests of the Northwest are covered with the symbol for montane forest and alpine tundra. Since the majority of university students live far from the Pacific Northwest and consequently have the least first-hand knowledge of this area, explanatory maps could greatly facilitate learning about these habitats.

The logical sequence of a textbook is to start with the known and expand our knowledge toward the unknown. By the same token the large emphasis on temperate North American biomes, with which the author as well as the majority of the average North American students is most familiar, is excused. For a well-rounded ecologist, however, extensive knowledge of the tropical habitats is a necessity for two reasons: (1) for these are richest in life, have the most complex communities, and possibly are sites of the origin of all other biomes; (2) because we mostly live in and work with temperate environments, there is a strong bias that such a treatise has to counteract. Unfortunately, the scientist of the temperate habitats shows this bias in many different ways, not least in the choice of his study topics. Thereby it can be explained that the role of reptiles in subtropic-tropic habitats does not become evident from the treatment of these regions or environments, for the author evidently has not had enough source material on which to base such an opinion. Even within the temperate habitats such limitations are evident. The beginning student will not notice, but a reviewer does, that while ecology of lakes and ponds, especially in its physical elements, is extremely advanced in temperate North America, the distribution of lake, pond, and marsh types has not been worked up ecologically, and therefore corresponding chapters in the last third of the book are missing! I feel that this is in no way the fault of the author. Where he had a comprehensive treatment at his disposal, *e.g.*, Ekman's *Marine Zoogeography* for the marine biomes, it is incorporated. It is rather a point of view of the ecologist, similar to the unpsychological husband, who, when surprised with an excellent dinner at home, soon starts

to compare it with the best food he ever had in his life, and dreams of a still better fare.

As a final impression after going through this book, we conclude that while the author attempted to summarize all descriptive knowledge on biotic communities (briefly on structure and functions, in greater details concerning community history and distribution), we realize how little is yet known, and how superficial our knowledge is. Kendeigh's *Animal Ecology* gives plenty of work to the beginner in ecology, and collects a wealth of factual material, hitherto scattered in the American literature of the last 30-odd years, that stimulates, helps, and guides the advanced worker who endeavors to reveal more of the environmental relations of animals.

We are quite confident that, above all, the writing of this book was self-stimulating in that the author starts the writing of an advanced ecology right where the principles of autecology, and the function of the communities, will be presented as a logical continuance of this treatise. We congratulate Dr. Kendeigh on this fine book and wish him good luck for the next one.—MIKLOS D. F. UDVARDY.

**The Birds of Guilford, Connecticut.**—Locke Mackenzie. 1961. Peabody Museum of Natural History, Yale University, New Haven. 110 pp.—This is a local list covering in detail an area on the northern edge of the Chestnut/Chestnut Oak/Hickory forests of the central Atlantic states, and the book gives attention to marginal breeding species: Carolina Wrens, White-eyed Vireos, Hooded Warblers, Worm-eating Warblers, and Yellow-breasted Chats.

Mackenzie's report shows the changing status of some birds: Turkey Vulture, Cardinal, and Tufted Titmouse are moving north; Veeries are moving into the edges of the suburbs; Roseate Terns in 1952 left breeding sites on Stone Creek and Goose Island, occupied since 1870; Common Terns, although driven off Goose Island in 1958 by Herring Gulls, have moved to barren bars on Faulkner Island and maintained their numbers there; Red-winged Blackbirds no longer winter in flocks, and have not done so since 1950.

These observations suggest how unfortunate it is that no censuses were taken in the 1930's and 1940's by which we could document other changes related to suburbanization, insect sprays, saltmarsh changes, and so forth.

The book also shows that Semipalmated Sandpipers, birds of mudflats and estuaries, are abundant, while Sanderlings, Dunlins, White-rumped Sandpipers, and Knots, birds of the outer beaches, are rare. Although shore birds cut across New England on migration, these local reports show that they keep going to their favored habitats before stopping.

Only an observer who regularly covers his beat can record these homely details out of which comes a quantitative measure of the changes in bird distribution. A much more accurate picture of changes in bird life over a large geographical area can be built from such local lists than from general treatises. The book is chiefly of interest to New Englanders, but is an important precedent. It suggests how carefully recorded notes can furnish valuable information for biological study, and will perhaps encourage others to publish carefully recorded details of their continued regular observations on a small area.—WILLIAM H. DRURY, JR.

**A Catalogue of British Columbia Seabird Colonies.**—R. H. Drent and C. J. Guiguet. 1961. Occasional Papers of the British Columbia Provincial Museum, No. 12: 1-173, 14 maps, 55 figs. \$0.75.—This "tentative outline" brings together scattered records of breeding localities for the 12 species known to nest in the province.

Recent exploratory work by the authors and files of the British Columbia Nest Records Scheme have added considerably to published accounts. Nests, eggs, young, or nest sites are shown for 10 species in the numerous photographs, and life history data are given for some. Besides listing place names, colonies are pinpointed by latitude and longitude. For each colony dates visited and by whom are given, and in many cases estimates of the number of nests, eggs, or young are added. Documentation is made of certain declining colonies due to human disturbance and recommendations for preventing such damage proposed. The account ends with a bibliography of 11 pages.

This paper should prove of great value to future workers engaged in life history or behavior studies of the species involved. Although data on many colonies are fragmentary, especially for those in the uninhabited northern part of the province, the rather complete accounts of many in the south should make it possible to follow population and distributional changes in considerable detail in some cases. These data should be very useful to conservationists in their efforts to preserve colonies in the future.—GEORGE E. HUDSON.

**Die Brutvögel der Schweiz.**—Urs N. Glutz von Blotzheim with Paul G eroudet (French text), Martin Schwarz (section on geography and climatology), Peter Gr nig (section on vegetation), and 55 ornithologists who prepared species accounts or contributed observations. 1962. Schweizerische Vogelwarte Sempach (Verlag Aargauer Tagblatt AG, Aarau). 648 pp., 54 photographs, 26 figs. s Fr. 38.—This magnificent book, the product of a splendid cooperative effort of more than 400 ornithologists, is an inventory of the available information on the 201 species known to occur, or to have occurred, as breeding birds in Switzerland since 1900. For each species there is a r sum  of information, if available, on distribution, biotope, abundance and fluctuations thereof, food and feeding habits, nest site, construction of nest, clutch size, laying period, incubation period, nestling period (when applicable), parental care, migration and other movements, and wintering in Switzerland. There are very useful general sections on methods in field ornithology (Glutz von Blotzheim), geography and climatology of Switzerland (Schwarz), and vegetation of Switzerland (Gr nig). Although primarily a Swiss ornithology, this book contains much of general ornithological interest such as accounts of the disappearance of the White Stork (*Ciconia ciconia*) as a breeding species in Switzerland, the invasion and establishment of the Collared Turtle Dove (*Streptopelia decaocto*), the disappearance of the Osprey (*Pandion haliaetus*) as a breeding species, and the recent increase in the Golden Eagle (*Aquila chrysaetos*) population. The book is excellently edited and remarkably free of typographical errors.—DONALD S. FARNER.

**Bird.**—Lois and Louis Darling. 1962. Houghton Mifflin Co., Boston. xx + 261 pp. \$5.00.—This book was written, as stated on the dust jacket and in the Preface, “. . . especially for the birdwatcher who wishes to go beyond the identification stage.” It was designed “. . . to provide a basic, simplified but scientifically valid account of the evolution, behavior, anatomy, and physiology of birds.” It is a visually attractive book, elegantly illustrated with many decorative drawings and semi-technical figures, and written in a straightforward, lucid style. It is subdivided into three main parts concerning, respectively, evolution (“Time and Birds,” 20 pp.), behavior (49 pp.), including migration, and anatomy and physiology (106 pp.). The authors, in approaching their objectives of “. . . simplified but scientifically valid accounts . . .,” have attained distinctly varied success. The sections on evolution



and behavior present quite adequately the essence of a complex web of biological concepts. Although specialists may carp at a few interpretations, for instance that the species is the unit upon which natural selection acts (p. 30), rather than the individual, the layman who wishes to expand his conceptual horizons will nevertheless benefit from a perusal of this concise presentation.

It is in the sections on migration, anatomy, and physiology that the authors' complaint (p. 172) that "Textbook errors abound and are perpetrated by writers who use them for reference without examination of the real thing . . ." regrettably acquires a double edge which cuts both ways. Neurologists, for instance, will be dismayed by the diagram (p. 185) of a reflex circuit, and to learn (pp. 184-188) that ". . . a nerve consists of one or more neurons . . ." over which, in mammals, the nerve impulse travels at a maximum velocity of "130 feet a second" to "enervate" organs. Other biologists will be similarly disappointed by the factual mutilation of their specialties, as exemplified particularly in the chapters on digestion, respiration, circulation, and hormones. Further, it is doubtful that laymen reading this book will be sufficiently sophisticated in biology to detect partisan or unilateral interpretations of controversial subjects. There is no widespread agreement, for instance, that ". . . exciting new experiments by E. G. F. Sauer . . . if verified by further work, will just about complete the explanation of the external means of bird navigation . . ." (p. 105), or that "Although migration is synchronized with the breeding cycle, the basic cause for it is food" (p. 95).

It is specious to argue that these are technicalities of no consequence to the intended beneficiaries of this book. Laymen and amateurs comprise a larger and more important faction in ornithology than in perhaps any other scientific discipline. It is therefore of special importance that textbooks intended for their use be accurate representations of the field in all aspects.—JAMES R. KING.

**Birds of Western Australia** (Third Edition).—D. L. Serventy and H. M. Whittell. 1962. Paterson Brokensha Pty. Otd., Perth, Western Australia. 427 pp., 8 color plates, 54 text figs. £2/10/-.—The third edition of this highly useful book reflects the very substantial increase in the knowledge of the Western Australian avifauna since the publication of the second edition in 1951. The systematic section treats 369 species as compared with 356 in the second edition. As in previous editions, species occurring only in the Kimberley Division (northern Western Australia) and not elsewhere in Western Australia are not included. The general organization is the same as the second edition; the nomenclature is updated. Most of the additional 43 pages is a result of expanded species accounts and the additional species not included in the second edition. The format and the generally good technical quality of the second edition are retained. As an inventory of Western Australian ornithology this will continue to be a most important book.—DONALD S. FARNER.

**Våra Fåglar i Norden.** Vol. III (Revised edition).—Kai Curry-Lindahl, editor. 1960. 1,031-1,534 pp., 316 black and white photographs, 10 figs., 61 color plates.—The third volume of this extensive and important reference on Scandinavian birds includes the remainder of the Charadriiformes (35 species in Volume II, 28 species in this volume), Columbiformes (3 species), Cuculiformes (1 species), Strigiformes (11 species), Caprimulgiformes (1 species), Apodiformes (1 species), Coraciiformes (3 species), Piciformes (9 species), Alaudidae (3 species), and Hirundinidae (3 species). The wealth of information and illustration in this volume, as in the previous volumes, is most impressive.—DONALD S. FARNER.

**Ekologiya i Migratsii Ptits Pribaltiki (Ecology and Migration of Birds of the Eastern Baltic).**—Z. D. Spuris, editor. 1961. Publishing House of the Academy of Sciences of the Latvian SSR, Riga. 367 pp.—This book contains the papers presented at the Fourth Baltic Ornithological Congress, Riga, 28 July–2 August 1960. In attendance were 160 ornithologists from the three Baltic soviet republics. Included in the book are 54 papers. Of substantial interest are the banding operations (L. O. Byelopolsky, pp. 47–52; V. V. Erik, pp. 247–254) and other ornithological investigations now in progress at the biological station at Rybatchyi (formerly Rositten); 33,422 birds were banded in 1959; 79,413 (125 species) have been banded since 1956. That the activity of the Station extends well beyond the banding program is evident from the papers by V. R. Dolnik (pp. 281–288) on the mechanism of energy preparation for migration in *Carduelis flammaea*, by T. I. Blumental (pp. 295–304) on fat deposition and molt in fringillid species during fall migration, and by D. S. Luleyeva (pp. 161–169) on local and migratory populations of *Delichon urbica*.—DONALD S. FARNER.

#### PAPERBACKS

The American Museum of Natural History, in cooperation with Doubleday and Company, Garden City, New York, has made available the following books of interest to ornithologists in paperback editions as a part of the Natural History Library.

*Puffins*, R. M. Lockley. Paperback edition, 1962 (Originally published by J. M. Dent, London, 1953), \$1.25.

*The Voyage of the Beagle* by Charles Darwin, edited by Leonard Engel, 1961 (text from the 1860 edition, the last to be revised by Darwin), \$1.45.