

ORNITHOLOGICAL LITERATURE

THE AUDUBON SOCIETY MASTER GUIDE TO BIRDING. Edited by John Farrand, Jr. Alfred A. Knopf Publ., New York, 1983, 3 Vols. In total, 1245 pp., 1438 full-color illustrations, 422 black-and-white drawings, 650 range maps. \$13.95 per volume.—The Audubon Master Guide to Birding is described by its publishers as being “An advanced field handbook to the Birds of North America in Three Volumes.” Its text is the work of 61 authors, all experts on certain taxa, habitats, or regions; together they have produced hundreds of species accounts in addition to summary descriptions of higher taxonomic categories and a number of special essays. The authors also advised on the selection of pictures used to illustrate each species, the majority of which are photographic. To represent infrequently photographed species, nine artists were commissioned to paint portraits of birds in their appropriate habitat. A total of 1245 photographs and 193 paintings are used to illustrate the 835 species which occur regularly in the United States and Canada, and for which full accounts are provided in the text; with all of this material, as well as a considerable amount of supplemental information, it is not surprising that three volumes are required.

In the front of each of the three volumes a brief description of the orders of birds covered in that particular volume is provided, as are drawings illustrating the parts of a bird and brief essays on “How to Use This Guide,” “How to Identify Birds,” and “How to Find Birds.” (These later features are the same in each volume.) At the back of each volume, following the descriptions of species regularly occurring in North America, are brief accounts (unillustrated) of those species (belonging to the orders appearing in that volume) that have been recorded as accidentals in North America. A glossary containing terms used in each individual volume follows this list of accidentals, and is followed in turn by notes on the authors and artists (as well as a list of photo credits) who contributed to that volume.

In addition, a number of special essays are included. In Volume I, Kenneth Parkes has written a section on “Classification and Nomenclature,” while in Volume II there are chapters on “Birding Equipment,” “Reporting a Rarity,” and “Rare Bird Alerts”; these last two provide information on what to do when and after you sight a rare bird, as well as how to learn if any unusual birds have been discovered recently in a specific area. Volume III includes an essay entitled, “Beyond Bird Identification,” which provides a brief insight into scientific ornithological research. This last volume also includes a comprehensive index to all three books. (An index pertaining to its contents alone concludes each of the other volumes).

The arrangement and nomenclature of taxa throughout the set follows the new, 6th Edition of the A.O.U. check-list (A.O.U. 1983) which is, as the publishers note, “the sequence followed by professional ornithologists.” Why this was done is not at all clear, since it is doubtful whether the majority of bird watchers—and therefore field guide users—own, use, or even refer to the official A.O.U. publication. As much as is possible, the ordering of genera and species in the check-list reflects what its authors feel to be the phylogenetic history of a given taxon, more generalized forms being described before the specialized types. In many cases of course, what are in reality branching patterns are arranged in some contrived, linear order. In addition, as the check-list committee admits, “in many cases, we lack sufficient evidence to make sound inferences” about the history of a taxon. In such cases they “followed the most widely used, conventional geographic sequence of species, with the roughly northernmost form listed first and the southernmost last, or from west to east if the division of ranges is more oriented to that axis.” In other words, the ordering of taxa in the check-list is often arbitrary and can in no way be inferred to represent the final, let alone present, “truth” about the evolution of North American birds.

Regardless of its inherent taxonomic value, the official A.O.U. sequence seems particularly inappropriate for use in a field guide. How many bird-watchers, we wonder, really care about the supposed phylogeny of the individuals they are observing? More importantly, the use of this quasi-taxonomic order in the Master Guide leads to situations in which the pictures of very similar looking species are pages apart—a circumstance which does nothing to help “provide the vital information required during the few seconds a bird may be visible,” as the Audubon authors assert (in the preface to each volume) that they wish to do. The photographs of Bald (*Haliaeetus leucocephalus*) and Golden (*Aquila chrysaetos*) eagles for example, are separated by 30 pages, while those of the Eastern Phoebe (*Sayornis phoebe*) and the Eastern Wood-Pewee (*Contopus virens*) are placed 18 pages apart; Townsend’s Solitaire (*Myadestes townsendii*) and the Northern Mockingbird (*Mimus polyglottos*) are separated by 12 pages. The species in these pairs (as well as others) are cited by the Audubon authors as being similar in appearance and thus potentially confusing in the field; placing them on the same page, as is done in most of the other currently available guides; seems to better facilitate easy and rapid comparison in the field. This is a problem we find associated with both this and the earlier Audubon guide in contrast to most other field reference books; in this one, in fact, even pictures of the same species are often on different pages. Although this will not perhaps pose much of a problem for expert bird watchers who no longer find similar species confusing, tyros, and those of intermediate experience, may find themselves madly flipping pages while the bird under observation moves on.

Volume I of the set contains the Gaviiformes, Podicipediformes, Procellariiformes, Pelecaniformes, Ciconiiformes, Phoenicopteriformes, Anseriformes, Falconiformes, Galliformes, Gruiformes and the shorebirds of the order Charadriiformes. Volume II concludes the Charadriiformes (with the gulls and terns and their allies) and continues on through the remaining avian orders with the exception of the Passeriformes, which is covered exclusively in Volume III.

In its turn, each family of birds is allotted a separate section, beginning with a general description of the family, and ending with a list of the members of that family found in North America. The text entry for each species then begins with the bird’s scientific and English names, followed by a synopsis of the features most useful in identification of that species. Although the individual species accounts vary substantially in length, each typically contains a general description of the bird, including information on its appearance (including size, shape, etc.), habitat preferences, behavioral characteristics, and sometimes a brief description of its taxonomic history. The voice of all species for which the authors consider voice useful in identification is then described under a separate subheading, as are similar species, if any. Finally, the range of the species is discussed, including a description of its breeding and wintering ranges and a brief indication of its activities outside of North America. A map illustrating this information is provided adjacent to the relevant text for each species.

Full-color pictures of those species which occur regularly in North America (north of Mexico) appear opposite the text relating to them. Although in some cases a single picture was considered sufficient to allow identification, in others the extent of plumage variation with age, between the sexes or within the geographic range of the species, warranted the use of up to six illustrations. Adjacent to the picture is a small “plate key,” or black-and-white reproduction of the plate, on which are superimposed red arrows corresponding to numbered field marks which are listed just below the key. Beneath the numbered characters, additional features, potentially useful for identification are sometimes given; these include size, shape, voice, or habitat preference. In some cases black-and-white drawings of flight postures or different plumages supplement the color plates. Many of the photographs used are excellent and often serve to illustrate, better than could a stylized portrait, the features that one would

really see and should look for while watching a particular species. Unfortunately, the use of photographs also incurs several disadvantages. Firstly, good pictures of a particular taxa or age class are sometimes unavailable; a number of the photographs used are thus poor and a few are inadequate by virtue of the lighting, lack of focus or positioning of the bird they display. Secondly, by their very nature, photographs lack standardization. Even within the portfolio of a single photographer, differences in type of film, lighting or the development process can alter the appearance of the same bird in a variety of ways, and when 203 different photographers are involved (the number that have contributed to the Master Guide), these problems are multiplied manifold. The difficulties this can cause are particularly apparent when different plumages of the same species or very similar species are compared. On page 295 of Volume III for example, a distinctly orange Eastern Meadowlark (*Sturnella magna*) is pictured immediately above a more appropriately yellow-colored Western Meadowlark (*S. neglecta*). Although an expert birder will realize that this difference in hue is merely an artifact of the photographic process, novices may be led, in this and other cases, to misidentify individuals they see in the field.

Where photographs were unavailable, paintings have been substituted. As with the photographs, many of these are excellent. Others, however, are less so; some of the works of J. E. Coe, for example, have an unusual yellowish tint which tends to misrepresent the color of certain species (e.g., Crissal Thrasher [*Toxostoma dorsale*] and Field Sparrow [*Spizella pusilla*]). Regardless of the quality, many of us found the interspersing of paintings (in nine different styles) and photographs (some overly dark and others badly blurred) esthetically irritating and would have preferred a more consistent system of representing species. The birds themselves are variable enough; introducing additional sources of variability does not aid the identification process.

The authors of this guide are to be congratulated for at least attempting to provide more details about seasonal, age-related and geographic plumage variation than have been presented in earlier guides. Unfortunately, for some taxa the choice of which details to present has perhaps not always been the wisest, while for others the discussion of variation is no more adequate than that found in previous guides. On page 181 of Volume III for example, the male and female Wilson's Warblers (*Wilsonia citrina*) are shown in separate photographs. The only difference between the sexes listed among the field marks is that the female rarely possesses the black cap which is characteristic of the male. Despite this comment, however, the individuals pictured are essentially identical, both showing a distinctly dark cap. In illustration of the second point, the very wide range of plumage variation shown by both first-year male and female Northern (Baltimore) Orioles (*Icterus galbula galbula*) for example, is not mentioned and the pictures shown are supposed to represent *the* type of these two age/sex classes. In fact, the appearance of females and young males overlaps extensively and it is impossible to determine with certainty the sex of a dull colored bird unless it is in the hand. In other cases, the races pictured to illustrate geographic variability within species seem in some cases ill-chosen or inadequate in number. There are the same number of pictures of the invariant Golden-crowned Kinglet (*Regulus satrapa*) for example, as there are for the Song Sparrow (*Melospiza melodia*), one of the most variable species in North America. And, of the two *melodia* forms represented, one is the Aleutian Island race which (a) is sympatric with very few species with which it might be confused, and (b) is likely to be seen by only a fraction of the field guide users in Canada and the continental United States. If only two races can be shown, why not one of the more common, and distinctly darker-colored, forms found in the continental West (e.g., *morphna* or *inexpectata*) plus one of the eastern or interior races (e.g., *melodia* or *juddi*).

Finally, one wonders if it was the number of photographs available that determined the length of the text or vice versa. Whichever, the end result is that one or the other categories

of description is sometimes inadequate. The Olive (*Peucedramus taenaitus*) and Prairie (*Dendroica discolor*) warblers for example each merit a full page of description, opposite three photographs. For the widely distributed Yellow-breasted Chat (*Icteria virens*), however, one picture is apparently sufficient, which limits the written text to a too-brief, 1/3 of a page. The system of allotment seems somewhat arbitrary.

As might have been expected when so many authors are involved, the quality of the text is uneven, with respect to both style and content. In places, the work is excellent. For the shorebirds in particular, the species accounts are full of useful information without excess verbiage. Frequently, however, a small increase in information over that contained in conventional field guides is obtained at the cost of adding many confusing modifiers and unnecessary sentences. What do the phrases, Ospreys (*Pandion haliaetus*) "hunt at moderate altitude," and are, "quite vocal," mean, for example (Volume 1:216)? What is "impressive size" (Volume III:224), and is it particularly helpful to learn that the vocalizations of the Black-legged Kittiwake (*Rissa tridactyla*) include "other gull-like calls" (Volume 2:78)? Particularly in the general family descriptions, the text becomes so vague as to be contradictory. Under the heading "Icterinae," we are told that, "the Meadowlarks—especially the Western—are rather good singers, unlike the rest of the members of this subfamily." Three sentences later, however, we learn that many orioles, also members of this subfamily are, "loud singers, capable of complex vocalizations." One wonders what qualifies meadowlarks then, and not orioles, as "good singers."

In addition, a fairly quick reading has revealed several errors in content. The range of the Olive Warbler is given as central and southeastern Arizona and southwestern Mexico (Volume 3:186), which should instead read, Arizona and southwestern New Mexico. The princeps race of the Savannah Sparrow (*Passerculus sandwichensis*) is described in two places as being found on "Cape Sable Island." It is actually resident on Sable Island, which is located 177 miles (283 km) off the coast of Nova Scotia. Cape Sable is a much smaller island, situated almost touching the southeast coast of the same province, or a place in Florida. In another place, the spicules on the bottom surface of an Osprey's feet are described as being "shiny," when probably "spiny," is meant (Volume 2:216). Just as serious are simplifications that sometimes serve to misrepresent the extent of knowledge about a particular taxon. We question, for example, the assertion that Northern Harriers (*Circus cyaneus*) detect prey "solely by hearing." One wonders how many other such typographical and contextual errors a more careful reading would turn up.

Elsewhere, details that could aid substantially in the identification of certain taxa are missing. Although a key diagnostic feature for the Lesser Nighthawk (*Chordeiles acutepennis*) (that the outermost primary is shorter than its nearest neighbor) is evident in one of the photographs provided, it is not mentioned in the text. Similarly, there is no description of the characteristic flight pattern of the Barn Owl (*Tyto alba*) (legs droop, labored flight, awkward manner), which is a useful feature for identifying the species.

The authors of the Master Guide have undertaken an ambitious project: to amalgamate in one publication what have in the past have been the separate responsibilities of (1) field guides and (2) more text-oriented handbooks dealing with the natural history of specific avian taxa or faunal regions. To this end they have tried to include more descriptive information on the appearance and life history of species and higher categories than have been available in previous field guides, while still attempting to preserve various features that make a book useful for field identification. Unfortunately, in many respects, the attempt has been less than successful.

For the several reasons discussed above, the Audubon guide presents serious problems for the less than expert bird watcher in terms of fulfilling the role of a field guide. Level of experience aside, the sheer size of the package makes the Master Guide less than appealing

as a field companion; each single volume weighs more than most standard field guides and the entire set tips the scales at 1.98 kg (4.4 lbs). In addition, the binding is not particularly field-worthy: the review copy has begun to break apart already after only 2 weeks of strictly desk use.

For an expert bird-watcher, many of the difficulties with the illustrations which have been discussed above will not pose much of a problem. Essentially, such individuals are much less dependent on a guide to make accurate and rapid field identifications. The guide does state that it is designed primarily, "to satisfy the demands of advanced birders." For these presumably, it is the increased amount of descriptive information that is supposed to make this guide of especial value. Yet, as we have described, there are problems with this aspect of the guide as well. The actual increase in information is at times less than substantial, and in places the text is in error; although expert birders are thus unlikely to be frustrated or lead astray by inadequacies in the pictures or range maps, it is a shame that the quality of the text, their major interest, is not uniformly higher.—N. J. FLOOD, G. R. BORTOLOTTI, P. FETTEROLF, E. NOL, C. RISLEY, J. D. RISING.

LES OISEAUX DE CHINE, DE MONGOLIE ET DE CORÉE. PASSEREAUX. By R. D. Étchécopar and F. Hüe, illus. by Patrick Suiro and Gilbert Armani. Société Nouvelle des Éditions N. Boubée, Paris, France, 1983: 705 pp., 21 color plates, 2 black-and-white plates, numerous text figures, 2 general and 350 distributional maps. French francs 450F.—Until the beginning of this century, Chinese zoology, as we understand it today, had been entirely in the hands of European scientists, even amateurs. The Chinese had long had their own way of studying living creatures, birds in particular, but it was entirely different from the modern trends of Natural History. Several British naturalists, particularly Swinhoe, a consul, and later on La Touche, a customs official, played an important part. The major contribution, however, was that of French travelers; we must mention the most important of all, Father Armand David, a missionary whose discoveries were sensational—among them Pere David's Deer (*Elaphurus davidianus*) and the Giant Panda (*Ailuropoda melanoleuca*). He was working in cooperation with Professor E. Oustalet, the Curator of Birds at the Paris Museum. A general work, in two volumes, "Les Oiseaux de la Chine," was the final result, and the first comprehensive study on the subject (1877). One should also remember the work of the French Jesuits at the University of Szi-Kawei, near Shanghai, who had built up considerable collections now, I am assured, preserved in Peking.

In more recent years two French ornithologists, R. D. Étchécopar and F. Hüe, have also become interested in the Chinese avifauna, after having published large books on the birds of Northern Africa (1964) and Western Asia (1970). Their first volume of "Les Oiseaux de Chine, de Mongolie et de Corée" was published in 1978 (609 pp.). The relatively long delay in the appearance of the second volume was due to the difficulties following the accidental death of F. Hüe and that of the illustrator, Paul Barruel. But R. D. Étchécopar has managed to overcome them and to offer us one more big book, with many plates and maps, which makes comparatively easy the identification of the numerous species of that very important part of the Old World known as the Far East, all the richer in species in that there are no considerable stretches of water or desert between temperate eastern Eurasia and the tropics of Indochina and Malaysia.

This second volume has, of course, no general chapters, but a selective bibliography (too restricted in my opinion) follows, with indexes of Latin, French and English names which prove to be very useful. The illustrations, of a practical type, are satisfactory, the great majority of them by Patrick Suiro. All of the essential information one expects to find in such a book is up to date and accurate, but one soon realizes how much remains to be

learned on the subject. A very useful feature is the large number of distributional maps, covering practically all the different species. Inaccuracies and omissions are at a minimum. This heavy volume will prove very useful to all interested in Asian avifaunas and constitutes a sound foundation for further studies. —JEAN DELACOUR.

JOHN CLARE'S BIRDS. Edited by Eric Robinson and Richard Fitter, illus. by Robert Gillmore. Oxford University Press, New York, New York, 1982: 105 pp. \$16.50.—English poets of the Romantic period were frequently nature lovers. Their works abound with skylarks, nightingales, daffodils, and clouds, all of which easily become metaphors for poetic fancies. But John Clare (1793–1864) was more than a nature lover; he was a true naturalist, a close observer of everything that grew, flew, or moved in the area of his native village of Helpston, near Peterborough. Thus it is not surprising that when he writes about a Blue Tit (*Parus caeruleus*), for example, we are going to get facts about this bird:

The blue cap hid in lime kilns out of sight
Lays nine small eggs and spotted red and white

The details may include not just the number of eggs and their color, size, and shape, but where and how the nest is built, what the bird's flight is like, its song or call, whether it migrates, and any other distinguishing characteristics. It is the bird, not the poet, who is the focus of the poem. The bird's world is central, and the poet merely observes, and wonders. Yet because he is such a precise observer, that world is really brought before us; there is always excitement, things are discovered; we are there. Here is the Quail:

"I wandered out one rainy day
And heard a bird with merry joys
Cry wet my foot for half the way
I stood and wondered at the noise

When from my foot a bird did flee
The rain flew bouncing from her breast
I wondered what the bird could be
And almost trampled on her nest

The nest was full of eggs and round
I met a shepherd in the vales
And stood to tell him what I found
He knew and said it was a quails

For he himself the nest had found
Among the wheat and on the green
When going on his daily round
With eggs as many as fifteen

Among the stranger birds they feed
Their summer flight is short and slow
Theres very few know where they breed
And scarcely any where they go"

All precisely and economically noted: nothing could be more factual. Yet there is mystery too ("I wondered"); who can know where these birds come from, or where they go?

Clare's idiom was the vernacular of Northamptonshire, and his spelling was original; these editors have left things as Clare wrote them. (His earliest editors, it seems, felt no such

restraint.) Sometimes the effect is to sharpen the drama, as in this commonplace rural event, nest-robbing by schoolboys. The bird is a Chaffinch, or "pink," from its note:

"The schoolboys in the morning soon as drest
 Went round the fields to play and look for nests
 They found a crows but dare not climb so high
 And looked for nests when any bird was nigh
 At length they got agen a bush to play
 And found a pinks nest round and mossed with grey
 And lined about with feathers and with hair
 They tried to climb but brambles said forbear
 One found a stone and stronger then the rest
 And took another up to reach the nest
 Heres eggs they hollowed with a hearty shout
 Small round and blotched they reached and tore them out
 The old birds sat and hollowed pink pink pink
 And cattle hurried to the pond to drink"

The narrative moves swiftly until the last two lines, when the action shifts from the schoolboys to the birds in their helplessness, and then to the cattle, who, like a Greek chorus, comment on the little tragedy by retreating from it—the one word "hurried" being enough to make us catch our breath.

It is baffling to try to explain the appearance of a writer like John Clare. He seems almost a sport of nature, someone who, against all the logic of his origins, knew very early the unlikely thing he wanted to do, and proceeded against all the odds to do it. Clare was the son of illiterate agricultural laboring people; from the time he was very young he went out to work with his father, attending school for only three months in the winter each year until he was twelve. After that there were only a few classes with boys in the village, though he read unceasingly, whatever books he could find. When he was thirteen a village weaver showed him the "Spring" section from James Thomson's "The Seasons," and though it was his first encounter with poetry, he knew at once that that was to be his form. By the time he was sixteen he was writing constantly, or rather, lacking both paper and leisure, he shaped the lines by saying them aloud as he worked in the fields—"muttering," as he called it. He tested them on his parents, pretending he had copied it all from books; they listened and he found their responses helpful. If they were mystified he knew he must make things plainer; if they thought it foolish, that was useful too. He had no other critics.

In 1820 he published his first volume: "Poems Descriptive of Rural Life and Scenery." It was an immediate popular success; Clare was dubbed "the peasant poet," taken up by literary circles and made much of. But the celebrity seems to have been due more to the novelty of poetry appearing from such an unlikely source than to any real interest in the work itself; it did not last. He published three more books, none of which attracted much attention, nor did they earn any money, which was sorely needed. Married by now, and with seven children, his life was poor, harsh and mean, with strains and tensions that eventually drove him insane; he spent his last twenty-four years in the Northampton Lunatic Asylum. (The doctor who admitted him ascribed his condition to the "years addicted to poetical prosing.")

Clare is now ranked among the major poets of Britain. Studies about him appear with increasing frequency, and his work is to appear in a collected edition (Oxford English Texts), although it will be some time before this is completed. So far, Clare's work has been available mainly to specialists, and one hopes that this small collection of bird poems will make him more accessible. Eric Robinson and Richard Fitter say that they hope "to extend among

general readers an appreciation of Clare's sensitive response to birds," but for anything addressed to the general reader there are curious omissions indeed. We are not introduced to Clare himself—there is not the briefest of biographical sketches, not even—oh, most culpable editors—the dates of his birth and death. So that the otherwise useful discussion of Clare's work remains curiously suspended; there are no facts to connect it to. It seems probable that this edition was prepared by the English branch of the Oxford Press and carelessly flung at the American market as an afterthought. Do not be deterred, however. Once you have read this much, you will find yourself in the library anyway, for you will want to read more of this neglected and rewarding poet.—EDYTH S. MCKITRICK.

THE LIVING BIRDS OF ERIC ENNION. Introduction and commentary by John Busby, illustrations by Eric Ennion. Victor Gollancz/David & Charles, North Pomfret, Vermont, 1983: 128 pp., numerous sketches, pen-and-ink drawings, and watercolor paintings through text. \$21.00—I must admit that before I received my review copy of this book I had never heard of Eric Ennion, but I now feel honored to have been introduced to his work! Most of the book is devoted to showing Ennion's art, and text is thus kept to a minimum. In his introduction, John Susby states that "Though he painted many hundreds of watercolours—landscapes and animals, as well as birds—the main purpose of this book is to show Eric Ennion's field sketches and small painting studies rather than larger finished works." "Finally there is a section on drawing and painting birds, based on Ennion's notes and teaching, which I hope will encourage all aspiring bird artists." These statements fairly well sum up the intent and content of the book.

Each of the seven chapters deals with a particular group, such as water birds, game birds, or open country and garden birds, and has an introductory statement and appropriate comments by Busby as well as quotes from Ennion's writings to accompany particular works.

Ennion is basically a watercolorist and his painting style is relaxed and loose. He is not a "tight" sketcher, but it is obvious that he is an extremely careful observer and he has that rare ability to put what he sees in the field onto paper with only those lines that count. There is no doubt about what a given bird is doing even if the sketch is of only a few lines and involves foreshortening or other "unusual" angles. I have looked through the book for hours and I still get pleasure and delight from looking at Ennion's birds; they may be loosely painted, but they are alive, with muscle, bone, and feathers. This "living" quality comes from hours of observation and hours of sketching with binoculars in one hand and pencil in the other, showing that one can only properly portray birds by knowing them. This field orientation is also revealed by the amount of bird behavior one sees in Ennion's work, such as among the group of 10 Oystercatchers (*Haematopus ostralegus*) on page 40—they are resting, preening, calling, and scratching! Ennion's notes also often point out the behavior that he was observing when he made particular sketches.

Ennion's more finished works do not, at least to me, come off as well as his sketches. The finished pieces often have inked outlines and are somewhat "hard." A group of Siskins (*Carduelis spinus*) and Lesser Redpolls (*Carduelis flammea cabaret*) on page 97 and a Long-eared Owl (*Asio otus*) on page 57 both suffer from this "concentration."

On the other hand, studies of various warblers on pages 70–71, a dead Corn Crake (*Crex crex*) on page 122, two male Eurasian Robins (*Erithacus rubecula*) settling territorial boundaries on page 83, and Harlequin Duck (*Histrionicus histrionicus*) studies on page 28 are all soft and living.

Ennion has some good advice, gleaned from his years of work, for those who want to paint birds. One bit is especially useful—on page 119 he has a whole page of sketches of

"Detailed studies of feather tracts, alar folds & the surface muscle anatomy in a fledgling thrush found *dead* on the road after a storm. Such opportunities should not be missed if you hope ever to become useful at drawing the *live* bird." I echo his comments 100%—preparing specimens and sketching dead birds has been one of the most important things I have done to become familiar with how a bird is built, and I would urge every aspiring bird artist to at least get ahold of House Sparrows (*Passer domesticus*) or European Starlings (*Sturnus vulgaris*) to see how they go together. He also comments on how he sketches, and provides some ideas on a few useful watercolor techniques. One major criticism I have about what Ennion says is that he casually comments that any old paper will do, including the insides of envelopes or "school cartridge paper." Here I must take exception; why a person should work hard to produce outstanding work only to have it crumble out of existence in 50 years or less, I do not know. I would urge any young artist to work only with high quality materials; it is amazing how much better a good brush or a good piece of paper handles than does a poor one. It is obvious that Ennion often did his work on small pieces of paper and then assembled the pieces, especially when making a plate for a book. A group of warblers on page 70 looks as if they were done on scraps of envelopes and then glued onto a piece of paper bag or wrapping paper. I am glad they are reproduced in the book because I am sure that these lovely little sketches will soon be falling apart!

Since Ennion was British, his birds are those found in his native country, but his work will be of interest to most anyone with an interest in bird art. There are few, if any, "field guide" poses found among Ennion's birds and they are alive. I strongly recommend this book to anyone interested in the depiction of birds, and I also recommend it to anyone who enjoys just looking at a good selection of European birds that are shown "behaving in characteristic ways." I am quite sure that Louis Agassiz Fuertes and George M. Sutton would have both given a smile of approval to the work of Eric Ennion.—JOHN P. O'NEILL.

THE PLOVERS, SANDPIPERS, AND SNIPES OF THE WORLD. By Paul A. Johnsgard, University of Nebraska Press, Lincoln, 1981:493 pp., numerous black-and-white photographs and drawings, 60 color plates, \$45.00.—Almost a century has elapsed since the publication of Seebohm's (1888) monograph on the plovers, sandpipers, snipes and their allies. In the intervening period a wealth of studies of shorebird biology has been published, but until the present book by Paul Johnsgard no one has attempted a modern synthesis. One of the principal reasons for this hiatus, I suspect, is the instability of shorebird taxonomy, which is due largely to uncertain relationships of such enigmatic groups as the jacanas, painted snipes, seedsnipes, pratincoles, coursers, sheathbills, thick-knees, and the Crab-plover.

Johnsgard addresses these problems only superficially in a short introductory chapter on taxonomy and evolutionary relationships, stating in the Preface that he used the recommendations of Bock (1958) and Jehl (1968) as his primary guidelines. Where no consensus existed or where he felt he had insights not shared by the rest of us, Johnsgard has instituted his own taxonomic judgements. Although the writing of a monograph allows the author license to do this, it is a deplorable practice which would not be permitted in the more rigorous peer-reviewed literature. The end result is that Johnsgard often manages to turn confusion into chaos at both higher and lower taxonomic levels, and in the process demonstrates his ignorance of the philosophy and practice of modern systematic methodology. For example, the "simplified phyletic dendrogram" (Fig. 1 in the book), depicting "evolutionary relationships of the tribes and genera of shorebirds," has a final bifurcation leading to the charadriids on one terminus and the scolopacids on the other. From this dichotomy

and a similar one in Fjeldsa (1977), Johnsgard concludes that the plover assemblage is generally more primitive and directly ancestral to the scolopacid assemblage. He clearly does not understand why a two-taxon hypothesis of relationships cannot possibly impute the primitiveness of either, and is unaware of the distinction between ancestor-descendent relationships and relationships by common ancestry (see Cracraft 1974).

In uncritically quoting McFarlane's (1963) contention that the Scolopacidae may be of more recent origin than the Recurvirostridae and Charadriidae because of their different sperm morphology, Johnsgard misinterprets the information provided by a derived character state. Sperm morphology of the Scolopacidae is evidence that they are a monophyletic group, not that they are of recent origin. Johnsgard also contends that the Ibis-bill (*Ibidorhyncha struthersii*) is most closely related to the stilt and avocet "line," but in Fig. 1 he gives it a more recent common ancestry with the oystercatchers than with the stilts or avocets.

The havoc wrought at lower levels of the taxonomic hierarchy is graphically illustrated by Johnsgard's treatment of a family with which I am most familiar, the Haematopodidae or oystercatchers. Taxonomic problems within this monogeneric family stem from the apparent convergence of morphometric form in species with widely separated distributions, the lack of a global view in assessing relationships, and the multiple origins of melanism in various species (Baker 1977). Having spent 16 years gathering data on all forms around the world, I am utterly amazed as to how Johnsgard could decide to recognize only five species. Despite the possession of yellow irides and pale flesh-colored legs by all forms in the Americas, Johnsgard has chosen to follow blindly Mayr and Short (1970) in restricting the American Black (*H. bachmani*) and Pied oystercatchers (*H. palliatus*) as subspecies of the European Oystercatcher (*H. ostralegus*). The latter, and all other species beyond the Americas, have scarlet irides and coral pink legs.

In his inconsistent treatment of the melanic forms, Johnsgard serves only to illuminate the pitfalls of "gut-feeling" taxonomy. He relegates the South African Black Oystercatcher (*H. moquini*) to a subspecies of the pied *H. ostralegus* (despite an average 150 g difference in body weight, and substantial morphometric and behavioral differences), but assigns separate species status to the Blackish Oystercatcher (*H. ater*) of South America, the Sooty Oystercatcher (*H. fuliginosus*) of Australia, and the Variable Oystercatcher (*H. unicolor*) of New Zealand. The recommendations of the New Zealand Checklist Committee (1970) and Baker (1974) to raise the Chatham Island Oystercatcher (*H. chathamensis*) to a full species are ignored as Johnsgard returns it to *H. o. chathamensis* as in Peters (1934). The unjustified lumping of morphologically diverse and geographically widespread species under *H. ostralegus* encompasses the range of variation for all other species as well! All this muddling simply serves to underscore what taxonomists have long maintained: good taxonomy is a fundamental prerequisite for all comparative studies of related taxa.

The taxonomic section is followed by a short but interesting chapter on reproductive biology, with an appropriate emphasis on variations in mating systems. Then follows a key to the Families, Subfamilies and Tribes which Johnsgard chooses to recognize. The rest of the book is composed of treatments of individual species, organized within Family sections. The format follows Johnsgard's (1978) earlier book on "Ducks, Geese, and Swans of the World" by the same publisher. I profess my admiration for the industry of the author in pulling the diverse literature together for each taxon, and for the countless hours that he must have spent in penning all the sketches of species which are scattered through the text. The color plates are sometimes of poor quality and better separations of most species could easily have been obtained.

When a book of this scope is written by a non-specialist we might expect errors of omission and commission to occur, and this is indeed a failing of Johnsgard's text. For example, the breeding distribution of the Masked Lapwing (*Vanellus miles*) in New Zealand is hopelessly

out of date; this species now breeds widely in both major islands as a cursory glance at issues of "Notornis" in the last 5 years readily discloses. The Collared Plover (*Charadrius callaris*) has never been found breeding in Panama, the breeding range of the Piping Plover (*C. melodus*) is more extensive around the Great Lakes, the Killdeer (*C. vociferus*) breeds in Newfoundland (Strauch 1971), and the North American inland breeding range of the Sandplover (*C. alexandrinus*) is mapped inaccurately. Work on the White-fronted Sandplover (*C. marginatus*) by Summers and Hockey (1980) is ignored as is the pertinent paper by Strauch and Abele (1979) on the ecology of three species of plovers in Panama.

Perhaps the biggest disappointment of the book is the absence of summary chapters on population dynamics, foraging ecology, or migration and molt, topics of great moment in contemporary shorebird biology. Johnsgard claims lack of space for these omissions, but lack of time and expertise seem more likely reasons. While it is impossible to write an error-free text for such a diverse group of birds, it is inexcusable for the author not to have sought critical appraisals on various sections from known specialists in the field. In summary Paul Johnsgard's initial perception that the shorebirds were much too large and complex an assemblage for him to challenge is borne out by this book. However, despite its limitations most ornithologists interested in shorebirds will want to own a copy as a starting point for more detailed investigations. Perhaps the greatest value of the book is the stimulation it will undoubtedly provide to shorebird biologists to write a more authoritative text to replace it.—ALLAN J. BAKER.

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SEABIRDS, AN IDENTIFICATION GUIDE. By Peter Harrison, illus. by the author. Houghton Mifflin Company, Boston, Massachusetts, 1983:448 pp., 88 color plates, 312 range maps, 31 numbered text figs. \$29.95.—Because seabird-watching and the study of seabird biology form, respectively, an art and a science different in technique from their terrestrial counterparts, a promising niche has always existed for a good seabird identification guide. Seabird faunas are not adequately embraced by the continental or subcontinental scope of standard field guides. Thus seabirds are uniquely deserving of specialized worldwide treatment. W. B. Alexander's 1928 masterpiece, "Birds of the Ocean" (G. P. Putnam's Sons, New York and London) is today tainted only by its half-century-removed data set (only meagerly improved for many species in the intervening years), its correspondingly obsolete taxonomy, and its lack of that *sine qua non* of the modern field guide—abundant color plates (it had, in fact, none). In 1978 G. S. Tuck and artist H. Heinzel produced the rather quaintly titled "Field Guide to the Seabirds of Britain and the World (Collins, London)." At last virtually all species were illustrated in color, often in two to several plumages, and range maps were provided for all species. But closer inspection (see, for example, reviews in *Auk* 97:908–909, 1980, and in *Ibis* 121:532–533, 1979) revealed substantial flaws in the plumages and shapes of many of the birds pictured, along with numerous inaccuracies in the range maps and range descriptions. Most disappointing to us was Tuck's text, which frequently showed little advance beyond Alexander's. Its reviewers agreed that Tuck and Heinzel's massive effort was a welcome and generally commendable first step toward a modern, worldwide seabird guide. Now the state of the art has taken a quantum leap with the publication of *Seabirds, An Identification Guide*.

Peter Harrison's book, the product of seven years of intensive field research and a crash course in bird illustration, immediately invites comparison with Tuck and Heinzel's. But although Harrison emerges a clear victor, it is only fair to point out that the two projects were carried out under very different publisher's constraints. Tuck and Heinzel produced a very standard field guide with an abbreviated text, a 5" by 7.5" page format, rather small figures crowded onto 48 plates, and a grand total of 292 pages. The very title "field guide" emphasizes the book's handy 'field' accessibility, for which the thoroughness of a handbook is sacrificed. By contrast, Harrison's book is of the "identification guide" genre, along the lines of P. J. Grant's *Gulls, A Guide to Identification* (T. and A. D. Poyser, Calton, England, 1982). Its 448 pages are roughly 6" by 9", and its liberally illustrated subjects are found on 88 color plates. The plates and text treat virtually all known plumages. This results, for example, in a total of 98 individual frigatebirds figured, all labeled as to age and plumage (Tuck and Heinzel illustrate 13). Other comparisons to T & H might include albatrosses (118 vs 40) and stercorariines (37 vs 9). It is axiomatic that the development of field identification skills requires an appreciation of variation, be it by age, sex, season, geographical locality, etc. The "identification guides" (e.g., Harrison's) address this variation to a degree that the standard field guides simply cannot. Add to this Harrison's extensive treatment of identifying characters other than plumage (shape, flight, expression, and a number of other things which add up to what is repeatedly and annoyingly referred to as "jizz"), and you have far more than a field guide.

After the obligatory Roger Peterson forward is a brief introduction that summarizes the types of identifying characters which seabirds show and serves as an introduction to the components of the species accounts. Following this are the color plates with extensive facing-page identification notes. Just over 200 pages of main text follow the plates; species accounts run from ¼ to 2 two-column pages, and there are very useful introductions to orders, families and genera. Finally, after a token and not very helpful treatment of "sea-ducks" (a third of a page of text and three black and white plates), there is a section of range maps, 10 to a page, treating all 312 seabird species. The three major sections of the book are cross-

referenced. End cover maps show major breeding island groups (alas, Christmas Island has been displaced some 3500 km eastward in the Pacific Ocean!).

The plates were all painted by the author, thus avoiding the artist-author "communication gap" which plagues some guides. In general they are quite good, although certainly uneven. Harrison handles some groups very well (e.g., most gulls, terns, cormorants, sulids and petrels) and some rather poorly (loons, most storm-petrels, many alcids and some shearwaters). The plates of the "Pacific storm-petrels" (plates 35–36) are perhaps the poorest. But then storm-petrels typify many seabirds in that their instantaneous shapes ("snapshots") are at once very difficult to portray and of little use in identification. Harrison's text accounts of storm-petrel flight and "jizz" (more important to field identification) are excellent.

The bills of some loons and grebes, e.g., Red-throated Loon (*Gavia stellata*) and Eared Grebe (*Podiceps nigricollis*) have an exaggerated uptilt. The first-winter Red-throated Loon is too contrasty—it should show a gray wash over the sides of the neck to the throat. Five figures of (apparently) adult MacGillivray's Petrels (*Pterodroma macgillivrayi*) are shown, though the bird is known from only one specimen—a juvenile. The Short-tailed Shearwater (*Puffinus tenuirostris*, plate 30) is misshapen and too pale and gray, while the Buller's Shearwater (*P. bulleri*, plate 28) is too brown. The Western Gull (*Larus occidentalis*, plate 57) labeled "3rd-winter" appears to be a second-winter bird. It is odd that no first-winter (=first-basic) Herring Gull (*Larus argentatus*) is figured, even though this is a common plumage of an abundant northern hemisphere gull. Far too few of the alcids are shown in typical on-the-water posture, and the wings of several flying alcids are oddly long and thin. Readers will undoubtedly have found many other errors of omission or commission in the plates, but the overall results are excellent for a book of this scope. Within major groups (families, genera, subgenera) species are often grouped on the plates geographically—thus there are plates of South American gulls, Pacific storm-petrels, Atlantic auks, etc. In some cases the results are strange, e.g., Horned Puffin (*Fratercula corniculata*) being placed with the murrees rather than with the very similar Atlantic Puffin (*F. arctica*) or with the sympatric Tufted Puffin (*Lunda cirrhata*). In most cases the groupings do make sense, and again we should point out that there is liberal cross-referencing.

Species accounts cover dimensions (length and wingspan), soft part colors, general characteristics, plumage descriptions, and sections on "flights, habits and jizz," "distribution and migration" and "similar species." There is, not surprisingly, a distinctly British tone to the text, and British names are listed first (perpetuating the deplorable practice of unmodified names such as "Guillemot" and "Shag"). Most British in flavor, and in many cases most valuable, are the sections on "flights, habits and jizz." British identification guide authors have been singularly successful in conveying "gestalt" characters and Harrison is no exception. These characters can be especially important among seabirds, which are often viewed at great distances and under unstable conditions. Thus we read on p. 345 of the Great Black-backed Gull (*Larus marinus*) that the "... fierce expression and barrel chest imparts more menacing jizz than congeners." Quite British, quite subjective, and, to those who have seen the species, quite correct.

The text approaches "handbook" proportions in its thoroughness. Descriptions are presented for all distinct plumages and extensive comparisons between similar species are given. The detail and apparent accuracy of the text is attributable not only to Harrison's talent and field experience but to the pre-review of the text by seabird specialists throughout the world and to the use of a tremendous body of references (some 300 citations are listed). In addition to a gem of an identification guide, Harrison has presented the eager seabird enthusiast with an important introduction to the primary literature. Untested field characters and other gaps in our knowledge of seabird biology are pointed out and offer a challenge to the guide's users.

While the book is not free of typographical errors, e.g., *L. a. vagae* (p. 344), Xantu's (p. 400), Balearic (p. 421), and Dalmation (p. 424), those found were quite minor. Workers in western North America will be disappointed that the Yellow-footed Gull (*Larus livens*) is not figured and is barely described; for a detailed identification treatment see McCaskie (Western Birds 14:85-107, 1983).

The difficulties of mapping bird distributions in general, and seabird distributions in particular, are acknowledged, and Harrison's efforts are a qualified success. The map key (located at the end of the map section) contains three rather confusing categories, corresponding to three degrees of shading on the maps. "Breeding islands/areas" is straightforward, but the distinctions between the other two categories, "Breeding and non-breeding range" and "Migratory range" are vague and nowhere explained (nor are the arrows which appear on many maps). The only alcid for which a "Migratory range" is shown is the "Little Auk" (=Dovekie [*Alle alle*]); don't other alcids "migrate" as well? The "Migratory range" of the "Black-throated Diver" (=Arctic Loon [*Gavia arctica*]) is shown to include not only the west coast of North America south of Alaska, but the western two-thirds of the interior United States as well. Middle and South American ranges of Red (*Phalaropus fulicaria*) and Red-necked (*P. lobatus*) phalaropes are shown as "Migratory ranges," while that of the Wilson's Phalarope (*P. tricolor*) is called "Breeding and non-breeding range." The maps, while not always showing the complex and protracted movements of seabirds to best advantage, are generally accurate and form an excellent quick reference. Slight registration problems force many pelagic species "onshore," sometimes greatly so (see, for example, map of Sooty Tern [*Sterna fuscata*]), but the intended distributions are usually clearly shown. We should point out that the text accounts of distribution are detailed and excellent, with much recent information incorporated.

In summary, *Seabirds, An Identification Guide*, is a thoroughly modern and painstakingly crafted work which goes further than any other single volume in achieving its goal—the accurate identification of seabirds by the reader. It is a model "specialty guide" with a wealth of information. Because of the volume of information presented, "Seabirds" will undoubtedly yield many more minor flaws than we have pointed out, but the overall verdict is still a hearty recommendation.—KIMBALL L. GARRETT AND RALPH W. SCHREIBER.

PROCEEDINGS OF THE SYMPOSIUM ON BIRDS OF THE SEA AND SHORE. By J. Cooper (ed.). African Seabird Group, Cape Town, South Africa, 1981:474 pp. S.Af. Rd. \$25.00.—The African Seabird Group held an international symposium on birds of marine habitats in November 1979; these proceedings were published in 1981. The volume contains papers on such a wide range of subjects that anyone interested in birds in marine environments should find something relevant. Twenty-seven papers are included, with abstracts of 10 more, and summary remarks by Ralph W. Schreiber.

The papers and abstracts are organized into five subjects, Feeding Ecology (10 titles), Patterns of Distribution (8 titles), Distribution Studies (6 titles), Conservation of Species and Habitats (6 titles) and Physiology and Breeding Biology (7 titles). As expected, the quality of the work varies greatly. Less expected, perhaps, is the lack of correlation between quality of the papers and prominence of their authors.

The Feeding Ecology section is the strongest part of the book. Robert Furness leads off with a fine contribution on interactions of seabird and seal populations with fish stocks, correlating major changes in bird populations with changes in commercial fishing practices. Robert Crawford and Peter Shelton try to do the same thing for South African bird and fish populations, but because fewer data are available the results are less clear. In a paper on

albatrosses and petrels as squid predators, M. J. Imber and A. Berruti present important insights on biogeography and behavior of the squids as well as the birds. The birds feed extensively at night and catch mainly those squid with a diurnal migration and with photophores. Imber also contributed a paper on diets of prions (*Pachyptila*) and of the storm-petrels *Pelagodroma* and *Garrodia*. *Garrodia* specializes on the cyprid larvae of the pelagic barnacle *Lepas australis*, while *Pelagodroma* eats a variety of larval fishes and pelagic crustaceans (Euphausiids and Amphipods are most prominent). Among the prions a nice negative correlation exists between bill width and prey size, although the Fulmar Prion (*P. crassirostris*) may specialize on adult *Lepas* barnacles.

The Patterns of Distribution section begins with a review by W. R. P. Bourne of physical factors affecting seabird distribution. The search for general rules and patterns is an important part of science, but the results in this case range from the trite to the improbable. Bourne betrays a surprising lack of understanding of oceanographic and meteorological processes, and the coverage of the relevant seabird literature is inadequate. R. K. Brooke presents a South African perspective on seabird and marine zoogeography. His classification of bird groups according to water temperature zones inhabited is interesting but adds little to Murphy's (1936; *Oceanic Birds of South America*) discussion of the same subject. A. M. Griffiths discusses biases in seabird census techniques and proposes a standardized method. Seabird biology will benefit greatly when its practitioners realize that different research goals (e.g., distribution, density estimation, diurnal activity patterns) are best approached with different census methods tailored to their specific statistical requirements. The rest of the "Patterns" section is devoted to reports of distributional observations in various parts of the southern ocean; these will be valuable to compilers of distributional works.

The Distribution Studies section is highlighted by J. Mendelsohn's observations of *Pachyptila* movements with weather systems at Marion Island. J.-F. Voisin and M. N. Bester report that the giant-petrels breeding at Gough Island are Northern Giant-Petrel (*Macronectes giganteus*) rather than Southern Giant-Petrel (*M. halli*), and point out some problems with the species separation. M. Waltner and J. C. Sinclair provide a nice analysis of distributional, mensural, and molt data obtained while banding Terek Sandpipers (*Xenus cinereus*). I found the descriptions of molt most interesting.

The Conservation of Species and Habitats section begins with a description of the most successful rehabilitation program for oiled birds (Jackass Penguin [*Spheniscus demersus*]) in existence. Then M. Gochfeld provides a narrative of the effects of a pipeline on nesting Common Terns (*Sterna hirundo*). The four remaining papers all are attempts to classify shorebird habitats according to patterns of use by the birds (two are from South Africa, two are from Europe).

A. J. Prater begins the Physiology and Breeding Biology section with a review of primary molt in palearctic waders. He tries to explain differences in molt schedules by differences in migration patterns, sex, size, and other aspects of life history. I wish that he had paid more attention to the systematics of the birds. How closely, for example, is the size-related variation in occurrence of suspended molt and partial molt of sandpipers paralleled in the plovers? Phenology of penguins is featured in two papers (R. M. and B. M. Randall on *Spheniscus demersus*; A. J. Williams on the Gentoo Penguin [*Pygoscelis papua*]). Sheila Mahoney presents a nice laboratory comparison of the thermal physiology of *Anhinga anhinga* and one species of cormorant (*Phalacrocorax*), concluding that physiological constraints are sufficient to explain the restriction of *Anhinga* to tropical and subtropical regions.

All in all, this collection should contain something of value for anyone interested in seabirds or shorebirds, but I suspect many readers will find a minority of the papers relevant to their own interests. I recommend it for all libraries, and for individuals interested particularly in seabird feeding ecology and shorebird habitat selection.—WAYNE HOFFMAN.

WHISTLING DUCKS: ZOOGEOGRAPHY, ECOLOGY, ANATOMY. By Eric G. Bolen and Michael K. Rylander. Special Publications of The Museum, No. 20, Texas Tech Press, Lubbock, Texas, 1983:67 pp., 10 black-and-white figures, paper cover. \$12.00.—The eight species of whistling-ducks, genus *Dendrocygna*, constitute a distinctive group usually classified apart from other anatids as a separate subfamily or tribe. This general review of their biology concentrates on distribution and zoogeography, comparative ecology, and morphology. The latter aspect emphasizes the skeletal and muscular systems in relation to feeding and locomotion. There is also a brief consideration of evolutionary relationships within the group. Persons interested in the whistling-ducks either from the standpoint of general biology or wildlife biology should find this work of great interest.—R.J.R.

THE GROUSE OF THE WORLD. By Paul A. Johnsgard. University of Nebraska Press, Lincoln and London, 1983:413 pp., 51 color plates, 72 black-and-white plates, 15 distribution maps, 31 numbered text figs., 24 tables, 3 appendices. \$42.50.—This is an updated edition of Johnsgard's (1973) *Grouse and Quails of North America*, minus the material on quails but plus information on the Eurasian species of grouse, making the coverage of grouse worldwide. Not surprisingly, the format and organization of the two treatises are very similar. This book is also subdivided into two major sections: "Comparative Biology," containing 10 chapters (one new one on physiological traits), and "Accounts of Individual Species" including the nine North American species considered in the 1973 book plus seven Eurasian species.

The first section of this book is largely a repeat of the 1973 edition. There has been some reorganization and updating of the material with the inclusion of a new chapter dealing with such topics as digestion, sound production, physiology of moult, and circulatory adaptations, some of which appeared previously in the chapter on physical characteristics. Unfortunately statements such as "... [clutch size] has recently been discussed by Lack (1968)" remain in the text—recent in 1973 but hardly in 1983. Nevertheless this section provides an overview of what is known about the biology of grouse and, as such, it also provides students of this group of birds an effective entry into the literature.

The second section of the book deals with each of the 16 presently-recognized species of grouse, describing their taxonomic status, measurements, identification, field marks, age and sex criteria, distribution and habitat, population density, habitat requirements, food and foraging behavior, mobility and movements, reproductive behavior, and evolutionary relationships. To do this, it is obvious that Johnsgard has had to pull together a voluminous and often scattered literature (about 350 entries repeated from the 1973 book plus another 300 from the European and post-1973 North American sources); its compilation into one publication is a great service to tetraonid specialists as well as ornithologists in general. The photographs, many of which appeared also in the 1973 book, are generally of high quality and add considerably to this publication.

In my opinion, however, this book is disappointing from a number of viewpoints. Johnsgard has provided us with a review of the published (and unpublished) literature on the Tetraoninae but his is a very uncritical review and, at times, a review that perpetuates unsubstantiated conclusions as well as unexplained contradictions. For example, Johnsgard uses the term promiscuous ("complete promiscuity"—p. 47, "highly promiscuous"—pp. 52 and 67) in reference to the mating strategy of those species not obviously monogamous (bigamous or trigamous) or polygynous (lekking forms). Yet, to my knowledge, there is no evidence at all for such a mating strategy in grouse—it is purely an assumption. Likewise, subjects such as population density, clutch-size, food habits, and the like include a plethora of data for which the variability is so great as to render them virtually meaningless. If such

variation actually exists, of what value is it when documented in vacuo? For example, population densities are given for each species, yet they are provided without any reference to habitat heterogeneity (crude vs ecological density) and often without reference to season.

A second disappointment stems from the incomplete use of the post-1973 literature. Much of the recent research on grouse, at least in North America, has attempted to address many of the questions implicit in Johnsgard's first book on this group of birds; unfortunately, the questions remain but many of their recent explanations go unmentioned, at least for the species with which I am most familiar—Spruce (*Dendragapus canadensis*), Blue *D. obscurus*, Ruffed (*Bonasa umbellus*) and Sharp-tailed Grouse (*Tympanuchus phasianellus*).

This publication is also marred by unfortunate lapses on the part of the proofreader and mapmaker. For example, how many species make up the Phasianinae (p. 5), 151 or 155? The table indicates 206 species in the Phasianidae but, depending upon which figures one uses, there are either 209 or 213. The listing of hybrids (p. 50) is made unintelligible through the misalignment of data across the table. The range maps of Blue, Spruce, Black (*Lyrurus tetrix*, and Sharp-tailed Grouse and Willow (*Lagopus lagopus*) and Rock (*L. mutus*) Ptarmigan show subspecies ranges in places that do not agree with the text, lack symbols on the maps that are in the figure titles or vice-versa, and, in the case of Black Grouse, show a map inset without explanation. The phylogenetic tree (p. 4), which reflects Johnsgard's ideas on grouse phylogeny, appears to try to combine time and habitat on the same axis. The result seems to suggest that all six grouse genera evolved in grasslands and sagebrush, which contradicts the text. Furthermore, I question the validity of placing the Spruce and Sharp-tailed Grouse closer to the Blue Grouse than to the ptarmigans, for in my opinion, they are much closer to the latter than the former both morphologically and behaviorally, being essentially woodland ptarmigan.

In sum, this book, although an admirable compilation of the literature on grouse of the world, is by no means the last word on grouse biology.—D. A. BOAG.

OWLS OF EUROPE. By Heimo Mikkola, illus. by Ian Willis. Buteo Books, Vermillion, South Dakota, 1983:397 pp., 8 color plates, 75 photographs, 42 numbered text figs., 69 numbered tables. \$40.00.—This ably written book consists of three parts. "Special characteristics of owls" covers 36 pages and includes the origin of owls, taxonomy, anatomical characters, external features, some unique aspects of the owl physique, and owl pellets. I was surprised to learn that the soft fringe of the flight feathers may be less important to silent flight than is generally supposed. "Removal of this fringe made no difference to the wing noise of the Tawny Owl," but still this feature is presented in Fig. 2 as "an aid to silent flight." Part two covers "species descriptions," accounts of each of 13 regularly breeding species of Europe and four additional species "from countries adjoining the Mediterranean, some of which species may occasionally occur in Europe." Each species account contains the following sections: description, in the field, voice, behavior, food, breeding biology, and distribution. "In the field," usually the shortest section, presents general characteristics; sections on behavior, food, and breeding biology are usually the longest. Part three covers 50 pages and deals with "ecological relationships in European owls" under the headings of sexual dimorphism and differences in diet, prey relationships, ecological isolating mechanisms, and legal status.

The color plates by Ian Willis beautifully and lovingly portray the 17 species and their subspecies, as well as differences related to sex, age and color phase. There are 26 birds in perched pose; in addition, 23 forms are depicted in flight, a feature that shows the upper

body and spread wing plumage—an interesting aspect. Also, underwing plumage is shown for 11 species or subspecies.

There are more than 50 line drawings by Willis scattered throughout the text. Sketches at the beginnings of chapters show owls in typical habitats; it is here that Willis shows his full artistic ability.

The 75 black and white photographs (by 29 photographers, including the author) show features of 17 species of owls; there are flight shots, birds at the nest, photos of concealment posture, eggs and young.

The author has a good grasp of the literature, both European and New World. There is a "selected bibliography" (three pages), and a complete list of references (27 pages). Mikkola's involvement with owls is demonstrated by the 43 titles under his name (1968–72).

Sixty-nine tables, which follow the references, provide details of topics such as early fossils, wing-loading, pellet sizes, nesting sites, clutch size, brood size, wing lengths, mortality factors, population sizes, and, especially, food.

Of the 17 species of "owls of Europe," seven occur in North America; accounts of these birds may be of special interest to North American readers. The species accounts include 34 maps; these show for each species usually the worldwide and European breeding range. The author acknowledges the assistance of 73 ornithologists in the preparation of these maps. This widespread contact with other workers exemplifies the thoroughness with which Mikkola has addressed himself to the owls of Europe. Every owl watcher will want to own a copy of this book.—ROBERT W. NERO.

REDWINGS. By Robert W. Nero. Smithsonian Institution Press, Washington, D.C., 1984: 160 pp., 10 color plates, 30 black-and-white photographs, 10 diagrams, and 20 line drawings by James Carson. \$22.50 cloth, \$10.95 paper.—Robert W. Nero's two papers on the behavior of Red-winged Blackbirds (*Agelaius phoeniceus*), which appeared in 1956, must rank among the most widely cited studies ever published in the *Wilson Bulletin*. Now, after an absence of many years from the field of redwing research, Nero has produced an entire book on redwing behavior. Although based in large part on the same studies that led to the 1956 papers, the book nevertheless contains enough new observations and insights to make a valuable contribution to the scientific literature. At the same time, Nero writes with an engaging and lively style, which should make the book attractive to a popular audience.

On the subject of Red-winged Blackbirds, Nero is a true enthusiast. As early as the first page of the introduction, he reveals his status as a partisan by referring to the song of the male as "melodious." Nero's enthusiasm for his subject is coupled with impressive talent as an observer. Red-winged Blackbirds are one of the most thoroughly-studied of avian species, yet many of Nero's observations, at least to my knowledge, have still not been duplicated. For example, he gives fascinating descriptions of the performance of symbolic nest building by male redwings outside of the period of courtship and pair formation. According to Nero, such behavior occurs in contexts that indicate the male may be seeking to reassure the female, as when the nest has been disturbed and the female is reluctant to return. Another example of novel observations is Nero's descriptions of associations of siblings with each other and with their parents lasting long after fledging. In one instance, Nero observed two color-marked siblings still accompanying one another, and still begging from their male parent, more than three weeks after the young had left the nest, and after all three had left the breeding territory.

If Nero is at his best in describing his own careful observations, he is weakest in discussing

the results of more recent behavioral and ecological studies. Coverage of such studies is far from comprehensive, but then Nero intends his book to be a popular work and "not a technical paper or a complete survey of the Redwing literature." A more serious criticism is that Nero oversimplifies or distorts some of the complex evolutionary issues that he does choose to discuss. For example, at one point Nero suggests that polygyny in redwings is explained by the fact that first year females breed while first year males do not. The possibility that delayed maturity in males is a consequence rather than a cause of polygyny is not considered, nor does Nero discuss more realistic explanations for the evolution of polygyny, such as the polygyny threshold model and its alternatives.

The general plan of the book roughly follows a redwing seasonal cycle. After some introductory material, Nero starts the cycle at the onset of breeding. He describes male and female display behavior, male territoriality, courtship and pair formation, and nesting and parental care. He then more briefly considers the molt, flocking, and roosting. A final chapter discusses redwings as an economic and social pest. Throughout, the book is illustrated with marvellous black-and-white and color photographs and line drawings, which considerably enhance the descriptions of behavior. In sum, Nero has provided a useful and entertaining introduction to the natural history of Red-winged Blackbirds.—WILLIAM A. SEARCY.

ILLINOIS BIRDS: WOOD WARBLERS. By Jean W. Graber, Richard R. Graber, and Ethelyn L. Kirk. Illinois Natural History Survey Biological Notes No. 118, Illinois Natural History Survey, Champaign, Illinois, 1983:144 pp., 125 numbered text figs., 46 tables. Price not given. (available from: Chief, Illinois Natural History Survey, Natural Resources Building, Urbana, IL 61801).—This, the ninth and largest, most ambitious, publication in the series by the Grabers and Kirk on the birds of Illinois treats the wood warblers (Emberizidae, Parulinae). It begins with an introduction that describes the sources of published and unpublished data that the authors have used to compile the species accounts, as well as the methods they employed to collect original data. The carefulness of the authors' evaluations of species' records is exemplified by their recommendation (p. 26) that a published sighting of Bachman's Warbler (*Vermivora bachmanii*) in 1958 in southern Illinois be discounted, a sighting that was made by the authors themselves. Following the introduction are accounts of 43 species that have been reported to occur in Illinois, plus records of hybrids of Golden-winged (*Vermivora chrysoptera*) and Blue-winged (*V. pinus*) warblers.

For each species that breeds in Illinois, there is a general range map showing the breeding and winter distributions north of the equator. Each account also includes a figure depicting census results and the span of egg-laying dates in Illinois, a large map with breeding-season records for each county in Illinois, tables summarizing the results of population censuses in Illinois, and photographs or drawings of an individual of the species and, sometimes, its nest. The data presented in the text of each species account are typically subdivided into sections on spring migration, breeding, and fall migration. When additional information, such as clutch-size, is available from Illinois, it is included in the text, as are sections on winter records, specimens, and food habits. One feature of these species accounts that merits further comment is the excellent quality of the maps. The maps depicting breeding records in Illinois are large and the borders and names of counties are clearly identified. Their value is enhanced further by the use of symbols that code the records as having been from before 1900, from between 1900 and 1949, and from 1950 or later. The symbols are also coded into categories representing records of nests or young (i.e., confirmed breeding records) or June records (i.e., adult present, but no nest found).

The Grabers and Kirk have incorporated the unpublished records of A. O. Gross and F.

Smith and his students with those of the extensive published record (there are almost 600 references listed in the Literature Cited section). Particularly valuable in this regard is the inclusion of data from transect censuses conducted by A. O. Gross in 1906–1909 and by the Grabers in 1979–1981. Life-history information collected in adjacent states, such as that for the Prairie Warbler (*Dendroica discolor*) in Indiana by V. Nolan, are cited where appropriate in the species accounts.

My only criticism concerns the inclusion of black-and-white photographs or drawings of the warblers and their nests. The photographs add little to the value of the publication. However, as the range maps and figures are of excellent quality and a wealth of information is presented in the text and tables, the inclusion of photographs did not come about at the expense of having to delete more important information. Also, a Table of Contents would have made the species accounts easier to find.

The Grabers and Kirk are to be commended for this addition to their series on the birds of Illinois. Would-be authors of state or regional avifaunal accounts would do well to use this work as a model of how to summarize and present a great deal of information in a clear, accurate, and well-organized manner.—CHARLES F. THOMPSON.

BIRDS OF SOUTHERN CALIFORNIA'S DEEP CANYON. By Wesley W. Weathers. University of California Press, Berkeley, California, 1983:268 pp., 28 color plates, 33 half-tones, 60 line drawings (including figures), 45 tables. \$35.00.—This book is the fifth of a series reporting on research conducted at or near the Philip L. Boyd Deep Canyon Research Center of the University of California. The 646 km² area which is its subject includes the Deep Canyon region of the Santa Rosa Mountains as well as a portion of the adjacent Coachella Valley (a segment of the Sonoran Desert). The site ranges in elevation from 9 to 2657 m above sea level; a journey from the floor of the Coachella Valley to the top of the Santa Rosa Mountains is thus the ecological equivalent of a latitudinal trip from San Diego to Edmonton, Alberta. Striking habitat changes obviously occur along such an elevational gradient, and the variety of life zones represented sustain a remarkable diversity of bird life: of the 500 bird species known to occur in Southern California, 217 have been recorded in Deep Canyon, and 112 species nest there. Thus, although it is small in area, the Canyon provides a unique opportunity for bird study and a book about its avifauna should be of interest to more than a local readership.

Many of the data on species occurrence and the nesting records presented in the book were collected by the author during 198 days spent censusing (during 684 walks along specific strip transects), photographing or simply observing the birds between March 1977 and December 1980. In addition, many observations recorded by competent birdwatchers since the establishment of the Research Center in 1959 were assembled. As well as adding to the general data base, these provide some insight into the changes in species abundance and/or distribution which have occurred in the area. This and other information on methodology is provided in Chapter 1. Chapter 2 presents a clear and detailed account of the weather and climate of the region. Chapter 3 gives a general overview of the various bird communities found in the area, and includes brief, but useful (particularly for the layman) discussions of the ecological determinants of species diversity, seasonal change, nest density and community structure. In this and the following chapters, energy flow is stressed as being important; the relationship between avian energy requirements and the vegetation characteristic of specific life zones is discussed, including an examination of the effects of birds on the plant life.

Chapters 4 through 12 examine each representative habitat type in more detail. The

vegetation and climate characteristic of the habitats are described, and the results of bird censuses conducted in the zone are presented. The status (migrant, winter or summer visitor, resident) of each species in the habitat is provided as is a general discussion of community structure and, as stated, of energy flow through the habitat. The progression through these chapters is an upward one altitudinally: beginning with the valley floor in Chapter 4, the author takes us on a journey through "Human Habitats," "Alluvial Plain," "Rocky Slopes," "Lower Plateau," "Pinion-Juniper Woodland," "Chaparral," "Coniferous Forest," and finally, the "Streamside" habitat which transects most of this elevational range downwards from the springs and seeps of the upper slopes of surrounding mountains. The chapter on human habitats deals with the types and effects of development that have taken place at the lower elevations of the area. Although some species have probably benefited from increases in the amount of food, water, and nest sites incurred by building homes and golf courses and by planting crops, others have suffered substantially as a result of habitat destruction.

The largest portion of the book (127 out of the total 226 pages) is given over to species accounts. Although all of the 217 species seen in the Canyon are listed in a useful appendix (detailing species occurrences by habitat and month), those which have a significant impact on the ecosystem are emphasized in these accounts. A brief description, including the range, general feeding habits, important behaviors, etc., of each family represented by one or more species breeding in Deep Canyon is provided and each of the 112 nesting species is at least mentioned under the appropriate family heading. In most cases, the descriptions of individual breeding species include average weights for both males and females, taxonomic synonyms for the names used by the author, and the entire geographic range of the species as well as a discussion of its activities in Deep Canyon. I note, as a minor criticism, that the range map for the Gray Vireo (*Vireo vicinior*) (p. 195) is incorrect and in fact, includes only about one-half of the entire breeding and wintering range of the species. A more accurate map is provided by Barlow (p. 86 in *Migrant Birds in the Neotropics: Ecology, Behavior, Distribution and Conservation*, Keast, A. and E. Morton [eds.], Smithsonian Inst. Press, Washington, D.C. 1980.). One wonders how many of the other maps may be similarly incorrect.

The species accounts, like the habitat descriptions, are concise but filled with valuable information. The author shows considerable skill, in fact, in balancing information useful to the professional ornithologist or ecologist with that interesting to the amateur birdwatcher or naturalist. For the former, substantial amounts of hard scientific data on bird species diversity as well as temporal and habitat distributions are provided; numerous issues for future research are raised, and an extensive bibliography is included. At the same time, the book is eminently readable by the layman. Refreshingly concise discussions of basic ecological concepts and principles are provided and complicated jargon is kept to a minimum; those scientific terms employed are usually clearly defined.

Overall, the book is very readable. While the writing is clear and concise, it contains enough "poetry" to project the author's enthusiasm, respect, and appreciation for the Deep Canyon area. The color and half-tone photographs are superb; they show clear evidence of both skillful photography by the author and careful attention to reproduction by the publisher. In short, "Birds of Southern California's Deep Canyon," is a pleasure to own and despite the limited geographical area covered, should be of interest to both professional and amateur ornithologists all over North America.—NANCY J. FLOOD.

FOREST IN THE SAND. By Marjory Bartlett Sanger. Atheneum Publishers, New York, 1983: 145 pp. \$10.95.—This book is a popular account of the natural history of the scrub forest of Ocala National Forest. The daily life of a Scrub Jay (*Aphelocoma coerulescens*) family is discussed during each season of the year. Interspersed among the jay notes are anecdotal accounts of other species in the area. Most interesting is the description of the origin of words commonly used in the Ocala area and in Florida in general.

The book is clearly fiction and does not present any new scientific information. Unfortunately, some of the natural history reported is questionable. For example, yearling Scrub Jays do not help with nest-building, and breeding female jays do not feed their mates. Also, Sanger puts the water moccasin (*Agkistrodon piscivorus*) into the genus *Natrix*, which is in a different family. A few accounts are possible but seem unlikely, such as a Scrub Jay being eaten by a water moccasin. Considering that these two species occur in different habitats the possibility seems remote. Overall I found the book enjoyable reading in spite of the numerous inaccuracies. Clearly, this book is not a reliable reference of the natural history of the area.—G. THOMAS BANCROFT.

BREEDING BIRDS OF LONG POINT, LAKE ERIE: A STUDY IN COMMUNITY SUCCESSION. 1981. J. D. McCracken, M. S. W. Bradstreet, and G. L. Holroyd. Canadian Wildlife Service Report Series 44. 72 pp. illus. maps. \$11.75 in Canada, \$14.10 elsewhere.—This is another in the series published by the Canadian Wildlife Service, mainly about the fauna of various parts of Canada. The first part of this report deals with breeding bird censuses including: a general description of the Long Point Peninsula and the vegetational communities found there; the methods used to survey and compare habitats and the census techniques applied; detailed descriptions of the census plots on both the drier dunes, as well as in the extensive marshes; detailed results of the censuses in early, mid, and late successional dune habitats and of three successional stages of marshes. This part concludes with a discussion of succession in bird communities and the overall breeding bird densities on the point.

The second half presents an annotated list of the birds that have or are believed to breed on the Point. Information about abundance, frequency of occurrence, population trends, distribution on the Point, habitat preferences, nesting, and egg dates (where known) is presented.

A few errors are corrected on an accompanying sheet. I would like to have seen a few more photographs organized and labelled according to the various successional stages discussed. Although perhaps of little significance to the report, the bird identified as a Great Blue Heron (*Ardea herodias*) on p. 45 would appear to be a Tricolored Heron (*Egretta tricolor*) not normally found there, and the adjacent photo appears to be upside down. Overall, the work provides a very useful example of a study of successional changes in an avian community as well as a compilation of information about the breeding birds of a relatively discrete land area.—R. D. JAMES.

COSTA RICAN NATURAL HISTORY. By Daniel H. Janzen (ed.), Univ. Chicago Press, Chicago, Illinois, 1983:816 pp., 338 figs., 55 tables. \$30.00 (paper), \$50.00 (cloth).—Janzen has compiled the work of 174 contributors in an ambitious “attempt to write down some of what we already know, in a form that can be quickly digested by the newcomer to Costa Rican field biology.” The volume is composed of 11 chapters: Costa Rican field biology,

1400–1980 (11 pp.); biotic history and palaeogeography (23 pp.); climate (12 pp.); geology (16 pp.); soils (3 pp.); agriculture (52 pp.); plants (233 pp.); reptiles and amphibians (75 pp.); mammals (76 pp.); birds (117 pp.); and insects (162 pp.). Some major taxonomic groups (e.g., non-insect invertebrates, fishes) are not covered. Each of the last six chapters has an introductory section and a selected set of species accounts, each with its own bibliography. Many of the species accounts are illustrated with black and white photos. In addition, the last five chapters include checklists of species. The index (27 pp., 4000+ entries) is usefully selective, does not include species names from the checklists, and attributes species accounts “to one or more standard field sites to which they are most relevant.” This last feature allows for the easy compilation of a set of species accounts appropriate for individual field sites or regions. This volume is not a field identification guide, but the illustrations will facilitate the identification of selected common or distinctive taxa. The volume’s size (paper: 22 × 28 × 3 cm, 1.7 kg) and format exempts it from service as a pocket guide. It is appropriately a reference volume for use at a base. The paper bound edition in my possession is put together well, but is unlikely to survive prolonged field use or careless transportation.

The introduction (29 pp.) and checklist (820+ species) for the chapter on birds were prepared by F. G. Stiles. The introduction focuses on the following topics: avifaunal composition and affinities; zoogeography; avian community structure; seasonal patterns in resources, reproduction, molt, and movement; social systems; and birds in Costa Rican ecosystems. This section, in my view, ranges over an appropriate selection of topics to constitute a balanced and contemporary introduction to avian ecology in Costa Rica. As with introductory sections in the other chapters, the audience that will best be served includes neophytes and experienced students of other taxonomic groups. Experienced readers may find some fault with emphasis or points of omission and detail. A few typographical and editorial errors can be found (e.g., the symbols for humid and dry sites on the Pacific slope are reversed in Fig. 10.3). In the checklist, species are listed by Latin name, without attribution to order or family, and their migratory status is noted. The systematic arrangement and treatment predates that of the 6th edition of the “A.O.U. Check-list.” Species abundance, status, and habitat preferences are summarized for each of eight well-studied, geographically diverse locations: La Selva; Osa Peninsula; Palo Verde; Santa Rosa; Las Cruces; Monteverde; Universidad de Costa Rica; and Villa Mills. The 52 species accounts (74 pp.) were contributed by 35 different authors. They are arranged in alphabetical order by Latin name. Except for the presentation of common names in Spanish and English, no consistent internal format or style is followed and the accounts vary somewhat in quality and usefulness. Most accounts are well-written and convey a breadth of natural history information on conspicuous, widespread, or distinctive species of diverse taxonomic affiliation. Overall, the selection of species, apparently done by Janzen, is eclectic and suffers some from the omission of several conspicuous taxa likely to be encountered by many field workers. Notably underrepresented are accipitrids (only the Roadside Hawk [*Buteo magnirostris*]), cotingids (none, *Procnias* and *Tityra* deserve attention), dendrocolaptids (none, family is distinctive though inconspicuous), and the diverse Emberizid fauna. There are no Thraupinae (*Euphonia* spp., Blue-Gray Tanager [*Thraupis episcopus*], Scarlet-rumped Tanager [*Ramphocelus passerinii*] are conspicuous)! Every reader will find several of her or his favorite species covered, but at least one missing; my candidate for inclusion is Blue-and-white Swallow (*Pygochelidon cyanoleuca*). Yet, the omission of several conspicuous and abundant species points out our current, fragmentary knowledge of their biology.

Field biologists working in the Neotropics will find this book an invaluable resource. For the experienced researcher on a taxonomic group, the greatest value may come from the introduction to other taxa and the compilations of general biogeographic information. For

the prospective or inexperienced student of tropical natural history, nowhere else is such an introduction to the region, its organisms, and the directions of recent investigation so accessible. As an educator, I'll use this work as a required text in tropical field courses for advanced undergraduates.

I am impressed and excited by Janzen's book. Conceived and executed as an organic step in the development of tropical biology, it fills the void between field identification guides and keys, on one hand, and advanced specialty texts and primary research literature, on the other. The book offers the beginner an efficient introduction to the exciting middle ground between the overwhelming biotic variety and the daunting conceptual abstraction of tropical ecology. The contributors to this volume deserve commendation for their many labors of love. Once again Dan Janzen has made a major contribution to the study of tropical biology.—WILLIAM H. BUSKIRK.

AVIAN ENDOCRINOLOGY: ENVIRONMENTAL AND ECOLOGICAL PERSPECTIVES. By Shin-ichi Mikami, Kazutaka Homma, and Masaru Wada (eds.). Japan Scientific Societies Press, Tokyo, Japan; and Springer-Verlag, Berlin, Federal Republic of Germany, 1983:334 pp., numerous black-and-white illustrations, one color plate. \$53.00.—The two dozen chapters in this book focus on avian endocrinology from the level of microscopic anatomy to that of the ecosystem. They are grouped into three sections representing increasing levels of organization. The first section, Anatomical and Hormonal Basis for Avian Endocrine Function, concentrates on the structure and function of endocrine organs, especially at the biochemical level. The second section, Environmental Manipulation of Endocrine Function, examines photoperiodism and the role of circadian mechanisms in inducing gonadal growth. The third section, Ecological Aspects of Avian Endocrinology, looks most closely at the annual cycle of reproductive activity.—R.J.R.

HORMONES AND BEHAVIOUR IN HIGHER VERTEBRATES. By J. Balthazart, E. Pröve, and R. Gilles (eds.). Springer-Verlag, Berlin, Federal Republic of Germany (in the U.S.A. Springer-Verlag New York Inc., New York, New York, 1983:489 pp., 175 black-and-white figures. \$55.00.—This book contains the proceedings of a symposium held in West Germany in 1982 under the auspices of the European Society for Comparative Physiology and Biochemistry. Thirty-five chapters are grouped under the following general topics: Brain Mechanisms, Sexual Differentiation, Testosterone Metabolism, Endocrine Cycles, and Bird Behaviour. Fewer than half of the chapters deal specifically with birds, many being concerned with mammals. Major emphasis is on the endocrine aspects of reproductive behavior, its differentiation and activation, courtship and vocal behavior, and care of the young. This work will be of interest both to physiologists and to students of behavior concerned about the mechanisms underlying the development and expression of social and reproductive behavior in birds.—R.J.R.

CARE OF THE WILD. By W. J. Jordan and John Hughes. Rawson Associates, New York, New York, 1983:223 pp., numerous line drawings. \$13.95 (cloth), \$8.95 (paper).—Subtitled "Family First Aid for All Wild Creatures," this is a guide to providing help for animal victims of accident, poisoning, hunting, or contamination. It is divided into major sections

covering birds, mammals, and other wildlife. The section on birds runs about 80 pages and has chapters on Wildfowl, Other Swimming Birds, Waders, Game Birds, Birds of Prey, Other Birds, and Oil Pollution. Topics covered in each chapter encompass possible handling hazards, approach and capture, transportation, initial care, food, force-feeding, and symptoms, diagnosis, and treatment. Appendices cover Wildlife and the Law, Euthanasia, Composition of Animal Milks, and Wildlife Rehabilitation Centers—United States.—R.J.R.

PHYSIOLOGY AND BIOCHEMISTRY OF THE DOMESTIC FOWL, VOL. 4. By B. M. Freeman (ed.). Academic Press Inc., London, England, 1983:434 pp., numerous black-and-white drawings and photographs. \$55.00.—The first three volumes of this series were published more than 10 years ago. Though they remain basic references in avian physiology they have become out of date in many areas because of the progress of research. The present volume is intended to update the original with articles by many of the original authors. The 20 chapters cover topics dealing with food intake, digestive physiology and microflora, respiration, kidney structure and urine formation, metabolism and trace elements, adrenal glands, integument, muscle, erythrocytes and haemoglobins, plasma proteins and kinins, special senses, thermoregulation, and the oviduct.—R.J.R.

CHANGES IN EDITORS

Dr. Keith A. Bildstein will be serving as the Editor of the Wilson Bulletin beginning with Volume 97. As of 15 May 1984, all manuscripts submitted for publication in the journal should be sent to him at the **Department of Biology, Winthrop College, Rock Hill, SC 29733**. All manuscripts received prior to 15 May 1984 will continue to be processed by Dr. Jon C. Barlow.

Dr. George A. Hall has replaced Dr. Robert J. Raikow as Book Review Editor of the Wilson Bulletin. From 1 June 1984 all books for review should be sent to him at the following address: **Dept. Chemistry, P.O. Box 6045, West Virginia University, Morgantown, WV 26506**.

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