REVIEWS

EDITED BY JOHN WILLIAM HARDY

Eagles, hawks and falcons of the world.—Leslie Brown and Dean Amadon. 1968. New York, McGraw-Hill Book Co. 2 vols. 945 pp., 180 pls., 94 maps, 33 text figs., 3 tables. Cloth, boxed. $59.50.—Nearly 3 years have elapsed since this ambitious work became available, and it has already undergone extensive review by several prominent ornithologists in England and America (e.g. Lack, Ibis, 112: 271, 1970; Parkes, Wilson Bull., 82: 230, 1970; Ratcliffe, Birds, 2: 310, 1970; Spofford, Science, 169: 572, 1970; Thomson, Nature, 222: 701, 1969). While yet another review might seem superfluous, there is some value in having had time to evaluate the book's impact on raptor biologists and ornithologists in general, and to further assess comparative strengths and weaknesses on the basis (in my own case) of almost daily use.

The book appeared at an opportune time, coinciding with an upsurge of interest in raptors that stemmed, at least in part, from the pesticide controversy. Despite some rather strident criticism of the book's price (cf. Parkes), I have found it among the proud possessions of a rather broad spectrum of falconiform-oriented types, ranging from wealthy dilettantes to impecunious graduate students. To the raptor subculture, "Brown and Amadon" are already household words and the two-volume set is established as a standard work.

The authors present impressive credentials, and there can be no question regarding their competence to undertake a project of this magnitude. Leslie Brown has had extensive field experience in Africa, where he was for many years a resource administrator for the government of Kenya, and in Scotland. He has conducted significant research on African raptors and Scottish Golden Eagles. Dean Amadon, Lamont Curator of Birds and Chairman of the Department of Ornithology at the American Museum of Natural History, brought to the project a wealth of experience in systematics and evolution of birds as well as additional field experience in America and Australia.

Brown and Amadon tell us that their intent was to "bring together in one work all the available knowledge on the diurnal birds of prey of the world"; considering the inherent difficulties in achieving this goal, they have done very well indeed. Some of the other reviewers have complained that the authors seem not to have had a clear perception of their prospective audience, i.e. whether it would mainly consist of general readers enamored of lavish bird books, or serious raptor students. I think we may safely conclude that the authors have produced a significant professional treatise and at the same time provided a great deal for the interested amateur.

Turning now to content and format, the first 150 pages of the first volume comprise 18 chapters devoted to general biology, systematics, and (briefly) conservation of diurnal raptors. This section constitutes a valuable summary of general knowledge regarding birds of prey, although there are some important omissions and some theoretical conclusions that have elicited much debate among raptor students. Their treatment of raptor phylogeny, for instance, has been criticized by Spofford and others. The authors are at their best when they consider a given phenomenon (e.g. sexual size dimorphism) in the light of many possible explanations or hypotheses. I agree with the other reviewers that the skimpy treatment of raptor conservation is most lamentable; here, however, was an example of the

text material having been completed several years before problems involving pesticides and habitat destruction had reached their current magnitudes.

The balance of the two volumes is then devoted to systematics, keys, and the individual species accounts. Each genus is given a brief diagnostic note, and the treatment of separate species embodies data on range, description, field characters, voice, and ecology. Obviously those species that were well-known to the authors or for which an extensive literature exists are given more exhaustive treatment than poorly-known species. Evidently a paucity of information was available to the authors even on some widespread American species. To cite an example close to home, it is surprising how much additional information is added to Brown and Amadon's account of the Ferruginous Hawk, *Buteo regalis*, by Weston's recent study of the nesting ecology of this species (*in* Murphy et al., Brigham Young Univ. Sci. Bull., 10: 25–34, 1969).

The illustrations are manifestly of pivotal importance in a work that incorporates figures of every species of diurnal raptor. The majority of the plates (125 out of 165) are in color, and represent the efforts of eight British and American artists. Parkes has commented in detail on the poor quality of reproduction of many of the plates; although this is certainly not the fault of either the artists or the authors, I second his expressed hope that future printings of the book will fare much better in this respect. I am also not the first to remark that the mixing of the styles and techniques of the different artists is distracting. Uneven quality is apparent; this is rather dramatically exemplified by a comparison of the adjacent plates of two of the largest eagles, *Harpia harpyja* (Pl. 110) and *Pithecophaga jefferyi* (Pl. 111). I can find other "picky" complaints; for example, Plate 98 depicts *Buteo swainsoni* and *B. regalis* in what is obviously montane coniferous forest habitat, certainly not typical for the majority of populations of these species. Yet, taken in total, the plates represent what is undoubtedly the finest collection of raptor portraits between one set of covers, and as such are an important contribution in themselves.

Additional illustrative materials include a set of 15 plates depicting underwing patterns *a la* Peterson, and 94 sets of range maps. These are both valuable addenda, although their positioning (one set at the end of each volume) makes cross-referencing to the text rather awkward.

Despite the use of high quality paper, eminently readable type and a generally handsome appearance, there are some rather serious technical and editorial problems involving the book's format. I would not wish to minimize the difficulties the authors must have experienced in working on separate continents, with the original publisher on yet a third. Most of the problems in format seem to be clearly the fault of the publisher and his editors, rather than of the authors. Perhaps the least satisfactory aspect is the method of literature citation and bibliographic style. Many significant statements in the text are unsubstantiated by appropriate references to the literature, and when such citations do occur, they are often so cryptic as to be almost useless. Lists of references at the end of each chapter in the introductory section are also unsatisfactory; the style of citation is inconsistent and selection of materials to be included highly arbitrary (for example, the chapter on territory has *no* terminal references). Another complaint: there are separate indices for each volume but both are placed together at the end of Volume Two, an arrangement I have found cumbersome. Finally, it is to be hoped that the rather frequent spelling errors will be corrected in future printings.

To summarize my own impressions, I view the book as an outstanding and indispensable work. It should not be characterized as "definitive," for there is

still a great deal to be learned about diurnal raptors, especially pertaining to their ecology and behavior. The book itself will serve as a stimulant to further research, in that it points up those areas of general knowledge and those individual species in need of additional research effort. This catalytic effect is already apparent; in recent months I have read several raptor manuscripts in preparation or review, and in each case some indebtedness to "Brown and Amadon" was acknowledged. The authors can be assured that despite some of the aforementioned shortcomings, they have produced a work that will meet important professional needs and elicit admiration for many years to come.—JOSEPH R. MURPHY.

Species taxa of North American birds.—Ernst Mayr and Lester L. Short. 1970. Publ. Nuttall Ornithol. Club, No. 9. Pp. 1-127, 8 tables. Cloth. $4.00.—This work is designed to present an updated, taxonomic classification of breeding North American birds (north of Mexico), based on the biological species concept and on expression of relationship nomenclaturally through use of the superspecies. Systematic arrangements concentrate on the genus category and lower; families are listed but do not differ from the treatment in the 5th edition of the A.O.U. Check-list (1957), while higher categories are not mentioned at all. While it is clear that no two taxonomists will agree on the species limits of as many as the 607 biological species recognized herein (indeed, even the coauthors admittedly disagree on at least one case), the need for such an in-depth study of North American birds is unquestioned. Modern concepts of the genus and species, as well as general knowledge, have changed considerably since the appearance of the 1957 Check-list, producing many differences. The trend of broadening the genus in ornithology is continued: 56 genera recognized in the Check-list are sunk in other genera therein, while 8 more are combined with extralimital ones.

Introductory portions of the text include a discussion of the biological species concept and its applicability here. While use of this concept is not widely accepted in some areas of zoology, it is at present generally followed by ornithological taxonomists and its discussion here seems superfluous, especially in view of the many publications on the subject by both Mayr and Short. Most important in this section is the explanation of the use of the "zoogeographical species" as a basis for analysis, with the two or more species comprising a superspecies being considered quantitatively as one zoogeographical species. Thus the treatment of 607 biological species recognized for North America boils down to 517 zoogeographical species.

The analytical table following the introduction contains the systematic list of North American birds, along with considerable information on relationships. All breeding species are listed with scientific name, which incorporates the superspecies name (if any) in square brackets. The table presents the following information: whether the species is monotypic, polytypic ("uncomplicated"), or polytypic ("with strongly differentiated subspecies"); whether it belongs to a superspecies or to a species group and its status in each of these two categories on both North American and worldwide bases; a notation if it is endemic to North America; an indication if there is doubt as to relationships because of insufficient information; and a "Remarks" column listing, where applicable, strongly differentiated subspecies, other species in the superspecies, other species in the species group, and sibling species. Marine species are treated separately in an appended table following the main list.

The third section, on "Taxonomic Concepts," is perhaps the most revelant as it contains reasons for the authors' actions on all controversial treatments. Specific citations to pertinent systematic works of others are also given. All cases are treated

herein except those that have remained stable and unchanged since the 1957 Check-list.

The final section of the publication is the "Discussion and Conclusions," essentially treating various problems in defining and delimiting species as well as the analysis of North American birds on various bases. Subsections of this chapter include ones on polymorphism, sibling species (both sympatric and those that are members of superspecies), hybridization (intraspecific and interspecific), cases of evolutionary intermediacy (with discussion of endemic species and species groups and tabular analysis of monotypic species, polytypic species, and superspecies), reasons for the better definition of avian species as compared with other groups of animals (phenotypic distinctness, pair formation, chromosomal speciation, and ecological speciation are each allotted a paragraph), and recent trends in avian classification (including discussion of changes in the species and generic concepts, a list of all generic changes adopted in variance with the 4th edition of the A.O.U. Check-list (1931), and a table of the number of genera of North American birds).

I think the most difficult problem of interpretation concerns the analytical species table of the second section. Its complexity of presentation, with its "X" and "O" symbology, requires careful reading and considerable concentration to comprehend. However I have to admit that offhand I cannot think of a better way to present the same data in as small a space. The eight admittedly artificial groups of families (which exclude the marine species) leave much to be desired; I especially object to groups consisting of hawks and gallinaceous birds as one and owls through woodpeckers as another. Similarities evolutionarily or ecologically are so slight as to be of little use as comparative categories. Perhaps comparisons at the ordinal level, although requiring many additional groups, would have been more satisfactory.

At the lowest level treated (subspecific), no mention is made of specific names, except in the case of well-marked subspecies causing taxonomic difficulties. The degree of monotypy recognized herein shows clearly that the authors prefer not to recognize slightly differentiated subspecies based on primary intergradation of a clinal nature, a policy to be highly commended.

At the species level, the authors are quite consistent in their treatment of the sympatric forms while somewhat inconsistent in their handling of allopatric cases, admittedly a situation requiring subjective decisions. One problem stems from the recommended treatment of "semispecies"; Short (Auk, 85: 90, 1969) suggested that semispecies should be classified as species while herein Mayr and Short (p. 96) favor a ranking as subspecies. I think the main difficulty lies in the concept of the semispecies, which differs between the two papers. Short in the earlier paper treated as semispecies only those cases where secondary contact had been reestablished and where interbreeding was nonrandom; indeed, these cases are consistently handled taxonomically as separate species in the current work. Broadening the semispecies to include well-differentiated allopatric populations has been the apparent cause of differing viewpoints. Most of the distinct but controversial allopatric forms are handled as subspecies, but there are some notable exceptions (e.g. *Pica pica-P. nuttalli*; inclusion of *Dendroica "chrysoparia"* as a subspecies of *D. virens*, but not *Vermivora crissalis* as one of *V. virginiae*). In some other superspecies groups the component populations are recognized as subspecies by other authors but maintained (and correctly, in my estimation) as species by Mayr and Short (e.g. *Rallus longirostris/R. elegans*, *Contopus virens/C. sordidulus*, *Acanthis flammea/A. hornemanni*). A list of all forms Mayr and Short recognize as semispecies would have been helpful here.

I am somewhat confused and a little disappointed by the authors' discussion of

sibling species. They point out the general scarcity of sibling species among birds, but this fact is exaggerated by the concept of what constitutes a sibling species group. Their definition on page 89 ("morphologically indistinguishable, or at least so similar that they are at first overlooked") leaves much to be desired. They do not, for example, call *Empidonax virescens/E. traillii/E. minimus* a sibling species group, presumably because of ease of identification through vocalizations, yet they do treat *Sturnella magna/S. neglecta* as siblings. They discuss at length why *Sterna hirundo/S. paradisaea* are not siblings, yet treat several other easily identifiable pairs as siblings, most notably *Aythya maria/A. affinis*. The concept of sibling species should pertain only to difficult morphological recognition, regardless of whether they are easily identifiable by sound, by chemical means, by genitalia or microstructure, or by such visual means as light flash patterns in fireflies. If such is not the case, then our traditional sibling groups in other animals will have to be revised (e.g. the crickets mentioned by Mayr and Short).

Inconsistencies exist between the lists of sibling species on pages 91–92 and those indicated in the Analytical List, with many omissions in the "Remarks" column of the latter. Of the three parallel cases mentioned on pages 90–91 (*Catharus ustulatus/C. minimus, Carpodacus purpureus/C. cassinii, Spizella pallida/S. breweri*), only *Carpodacus* is mentioned as a sibling pair in the Analytical List.

The statement (p. 93) that the *Pipilo erythrophthalmus/P. ocai* case is "the only instance among North American birds where hybridization causes difficulties for the biological (or for that matter, any other) species concept" is not entirely true. Every one of the cases on page 94 listed under the category of "Interspecific hybridization between largely allopatric members of the same superspecies," and most notably the first five where there are large zones of overlap and extensive hybridization, causes considerable trouble taxonomically by any species concept, as evidenced by varying treatment of different authors, even those purporting to use the same concept. And certainly the *Vermivora chrysoptera/V. pinus* case is unsettled. What Mayr and Short probably mean by their statement is that the *Pipilo* case is the only documented one in North America where populations of the same two forms behave in one area as two biological species and in another as but one. As evidence accumulates, the possibility arises of similar biological situations in *Otus asio, Troglodytes aedon*, and *Agelaius phoeniceus*.

Superspecies are treated in the sense of Mayr as modified by Amadon (Syst. Zool., 15: 246, 1966) as monophyletic groups of essentially allopatric species termed allospecies. Some inconsistencies in handling were mentioned previously under the discussion of semispecies. Thus in the current work a superspecies may consist of forms that are semispecies bordering on a single species (e.g. *Vermivora pinus/V. chrysoptera*) or, at the other end of the spectrum, of unquestionably well-defined species (e.g. *Campephilus principalis/C. imperialis* and many cases with allospecies in the Old World). It is not clear at what point in evolution species are no longer considered part of a superspecies complex but are transferred to a species group; wide sympatric overlap occurs in several cases (e.g. the *Vermivora* and *Sturnella* groups mentioned earlier).

The trend of the broadened genus is continued, with much-expanded ones such as *Egretta, Anser, Anas, Tringa*, and *Calidris* clearly here to stay, despite the foot-dragging of many generic conservatives. Such treatment is no doubt for the best as these groups were all oversplit and detailed studies have indicated the relationships involved herein. But I think we may now be overdoing the lumping, to the mutual detriment of ornithology and nomenclature.

To illustrate the problem with changing our concepts of generic limits (ignoring

for the moment purely nomenclatural matters such as secondary homonymy), the discussion of Mayr and Short on the genera *Passerella*, *Junco*, *Zonotrichia*, and *Melospiza* (p. 85) will suffice nicely. It begins with combining *Melospiza* in *Passerella*, then merging these with *Zonotrichia*; with this expanded form no justification remains for maintaining *Junco* as separate, especially in view of hybridization between *Junco* and *Zonotrichia*, as Short points out. Now how can one exclude *Emberiza*, as noted by Mayr? And how about the myriad of extralimital genera, many monotypic or with but few species, that belong closely with this group? Where do you draw the line? The genus is rapidly approaching a higher taxonomic category (the tribe or even subfamily), and what are we accomplishing? The genus is not designed to show relationships on this level in a rapidly radiating group. This concept cannot be applied consistently in all cases anyway, or else we would have a myriad of monotypic genera for primitive forms and huge, unwieldy, useless ones for advanced groups. While it is true that some bird groups have been oversplit (and some still are, such as the hummingbirds), I can see no point in forming these large, complex genera in radiating groups. Consistency breaks down completely when one proceeds to lump *Amphispiza* in *Aimophila*, the latter already the most polyphyletic and unsettled genus of American emberizines, while failing to combine *Ammodramus* and *Ammospiza*, but merging *Passerculus* in *Ammodramus* and dividing the two species of *Passerherbulus* among the two recognized genera. At least in cases where Mayr and Short disagree, they seem to be conservative (e.g. Mayr prevails in failure to lump *Passerella* and *Junco* in *Zonotrichia*, pending study of extralimital groups); with this type of action I concur heartily.

Several generic changes caught my eye, two of them in the woodpeckers, a Short specialty. I find the inclusion of *"Asyndesmus" lewis* in *Melanerpes* most unsatisfactory, with the only explanation: "This peculiar species is not generically separable from *Melanerpes* (Bock and Short, MS)." While admittedly I have not seen their unpublished paper on the subject, the use of the word "peculiar" should be sufficient reason to leave the status quo alone in a group that may already be overlumped. The same reasoning goes for the inclusion of *Dendrocopos* in *Picoides*, a treatment suggested by Delacour as long ago as 1951. While the loss of a structure such as a toe is admittedly no great item evolutionarily, I can see little advantage in combining these two genera and sinking the worldwide *Dendrocopos* with numerous species into *Picoides* with but two. This situation is much the same as in the warbler genera *Vermivora*, *Parula*, and *Dendroica*, whose limits are based on the flimsiest of characters but whose retention is most desirable for numerous taxonomic reasons. Mayr and Short retain these genera (with which action I totally agree), which is inconsistent with their policy in other groups.

A few other generic situations seem worthy of mention. Why take the first step in merging *Archilochus* and *Calypte*? The authors correctly state that further action would be premature, despite the very close relationship of *Selasphorus* with the above genera, so wouldn't retention of the status quo have made more sense than a partial action such as this? The reasoning here was apparently the same as in the *Passerella* case. And why lump *Gymnogyps* in *Vultur* despite admittedly large gaps between the two species involved? The retention of monotypic genera here seems highly desirable to show proper relationships, while in a group such as the phalaropes, generic lumping may be desirable (at least for the species *fulicarius* and *lobatus*). Why fail to merge *Setophaga* in *Dendroica* or *Oporornis* in *Geothlypis*, but do so with *Limnothlypis* and *Helmitheros*, where far greater doubt exists as to level of relationship than in the first two cases.

A serious error is the omission of *Cardellina rubrifrons*, a species of doubtful affinities placed in a monotypic genus; nowhere in the publication is this warbler considered, despite its breeding range in the southwestern mountains.

Typographical errors are notably scarce; I detected but two misspelled scientific names (*Botaurus stellaris*, p. 7; *Corvus brachyrhynchos*, p. 63). A few oversights are relatively insignificant (use of wrong gender for *Arremonops rufivirgatus*, pp. 25, 82; *Larus thayeri* treated as a subspecies of *L. glaucoides*, p. 91; apparent substitution of *Piranga leucoptera* for *P. bidentata*, pp. 24, 78).

This publication should be a basic reference for the systematics of the forthcoming 6th edition of the A.O.U. Check-list. Keeping in mind the few inconsistencies, I hope the Committee on Nomenclature will give careful consideration to the taxonomic treatment herein.—Burt L. Monroe, Jr.

Handbook of the birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan and Ceylon.—Sálim Ali and S. Dillon Ripley. 1969–1970. Bombay, London, New York, Oxford Univ. Press. Volume 2, Megapodes to Crab Plover. 1969. Pp. xvi + 345, 13 col. pls., numerous sketches and range maps. $12.50. Volume 3, Stone Curlews to owls. 1969. Pp. xvi + 325, 12 col. pls., etc. $12.95. Volume 4, Frogmouths to pittas. 1970. Pp. xvi + 265, 11 col. pls., etc. $17.00.—I wish to correct the statement in the review of volume 1 (Auk, 87: 816–818, 1970) that the text is written entirely by Dr. Sálim Ali. Actually Dr. Ripley shared in writing the introductory chapters; he and Dr. Ali have divided the species accounts between them about equally. The three volumes under review continue in the same style as volume one. The same incorrect drawing of plumage is at the start of each, also the usual characterizations of families and genera, keys to genera, species, and subspecies, and detailed species accounts two to five pages in length. Every species except some of the European migrants or accidentals appears on at least one color plate, each of which shows 5 to 12 species in whole view with accurate colors.

As before, the emphasis and organization is upon subspecies, which are endowed with vernacular names. The last part of the name is usually the same for all races of the species; the first part is often a geographic adjective designating the subspecies. The bulk of the subspecies vernacular differs—and therefore is incoordinate—among genera. For instance in "Central Indian Collared Scops Owl" the first two words refer to a subspecies, the middle word is the species, the last two are the genus. In "Malay Koel" on the other hand, the first word is subspecific; the second is the species. Captions for the color plates mercifully have the vernaculars hewn down to the species level, but yoked to subspecific scientific names in which the species part is reduced to an initial. Miraculously no two species with the same initial in the same genus are portrayed together on a single plate.

Volume one on the lower orders of birds had few subspecies to deal with. These three volumes have more subspecies per species, and this will increase in the passerine families, which will carry on to about ten volumes. Consequently there is progressively more and more repetition of the entire subspecies format, even if each entry is reduced, for well-known birds, to "As in 619 and other races, q. v." Sections such as distribution and breeding are written out in full for each subspecies, and in less well-known species, such as the nocturnal birds, so are the sections on general habits, voice, and calls. What actually takes place is that data on habits, food, voice, etc. are apportioned out among the subspecies accounts according to the geographic location of the original observations. As different

observers have worked in different parts of India during her long history of ornithological investigation, their renditions of calls and characterizations of behavior can be and are quite different. This makes it seem, from reading the subspecies accounts, that subspecies have fundamental differences in voice, behavior, food, etc., that simply do not exist, as the authors well know, but confess so in only a few instances. Consider for example the calls of the races of *Otus scops* within the *sunia* subspecies group (eastern Asia, dichromatic, song of three or more notes): *Otus scops sunia* says "kūrook-took, wūkh-tuk-tah, and wūk-chug-chug" (Osmaston, Whistler); *Otus scops rufipennis* "presumably the same as *sunia's*"; *Otus scops leggei* "tūk, tok torok... (Henry)" and "Wook, took-toorroo" (Phillips)—whereupon the authors add "The call is in fact identical with that of both *sunia* and *rufipennis.*" Here the similarity is quite evident from fortunate choices of syllabifications. But in some other, better-known birds such as cuckoos and nightjars the racial syllabifications cannot be recognized as belonging to the same bird. One of them, the jungle nightjar, has a genuine difference in peninsular India—an additional song of nominate *Caprimulgus indicus* not heard in the subspecies *hazarae.* I mention these practices regarding subspecies only because they may seem strange to readers in the Western Hemisphere where we are accustomed to find the species as the basic unit in both popular and scientific ornithologies, because it is the only taxon capable of being defined objectively and because it is the foundation of classification and evolutionary theory. In ecologic and zoogeographic considerations it is often necessary to invoke a still higher category, the superspecies, as the basic unit.

To return to the owl calls, certain vexing problems relating to the scops owls of the Andaman and Nicobar Islands are aggravated by the difficulty of getting there to study, inasmuch as the islands are off limits to any but citizens of India. There are at least two species: *Otus balli* (which closely resembles *O. stresemanni* of Sumatra and *O. icterorhynchus* of Africa!) and *O. scops modestus,* which has been considered a winter visitor. For the voice of *O. balli* we read in volume three "Described by Butler as exactly like that of the Ceylon Scops (*Otus scops leggei*), resembling the syllables *hoot! hoot-coorroo!*" Then we find in the account of *Otus scops modestus* that it has been collected on the Andamans in May, September, and December; that an *O. nicobaricus* is known by one specimen from the Nicobars and that Mr. Humayun Abdulali collected a breeding male owl with a wing of 162 mm there in 1964. A tentative interpretation of these facts is that (1) the song (ascribed to *balli*) that Butler heard in the Andamans is in fact that of a breeding *Otus scops modestus*; (2) that the song of *O. balli,* like those of its relatives *icterorhynchus* and *stresemanni,* is still unknown; (3) that Mr. Abdulali's specimen from Nicobar is some other species, as it is too big either for *balli* or for any race of the *sunia* subspecies group of *Otus scops.* I do not mention these points to be critical of the authors, for the owls concerned are difficult and poorly known. I emphasize them to show the value of having all these little miscellaneous bits of information available in a compendium such as the "Handbook of the birds of India and Pakistan." Eventually they will be picked up by someone who can fit them where they belong, like pieces of a puzzle.

Renditions of birds vocalizations in syllables is a very personal thing. For instance to my ears the common scops owls of the *sunia* subspecies group are saying "Here comes the bride!" Thus syllabifications are perhaps beyond criticism and a matter of habituation. But Bertram Smythies has an especial facility for rendering calls in fairly universally-appreciated spellings. His night bird sounds, carefully listed in "Birds of Burma" and "Birds of Borneo," have been denied a place in the Hand-

book merely because Smythies didn't write about India as now constituted. Smythies' are the only renditions of owls and nightjars that are completely workable.

If the "Handbook of the birds of India and Pakistan" omits Burma and repeats much of the "Fauna of British India" by Stewart Baker, what advantage does it have, if any, over the original series? I suggest that it presents considerable solid new life history information, definite banding records to document migrations, the color pictures of practically every species (many never previously rendered), and up-to-date taxonomy—by which I mean much larger genera than in Stuart Baker's day. The account of behavior and ecology of each bird is of especial value. Written in vigorous, animated style, compressed into that paragraph is a wealth of observation answering many of the questions raised by persons attempting to trace lines of relationship based on behavior and ecology as well as morphology. Here I speak of the worker who may be attempting to compare species on a world basis, as Cody with the convergence among woodpeckers. In the Handbook he can read an account of the behavior of the Heart-spotted Woodpecker that not only seems to bring the bird into your grasp, but is a literary gem as well.—JOE MARSHALL.

Roberts birds of South Africa.—G. R. McLachlan and R. Liversidge. 1970. Third Ed. Cape Town, The Trustees of the John Voelcker Bird Book Fund. Pp. xxxii + 643, 56 plates, hundreds of distribution maps. R 6.75.—In 1940 Austin Roberts' book "The birds of South Africa" provided the first well-illustrated book for the identification of African birds, and it was used as far afield as Kenya as well as in southern Africa. In 1957 a revision of Roberts' book, by McLachlan and Liversidge, retained the good features and added concise descriptions of the natural history of each species, as well as reduced the number of genera. The 1970 edition of "Roberts" is only slightly revised from the 1957 book. The nice thing about the 1940 book was its size, and though it did not quite fit into the average pocket it was a fine companion for the pack, and less demanding in the field than the many-volume treatises. The 1957 edition was the same size but more informative; the 1970 edition is longer (605 vs. 469 text pages) but no bigger, thanks to a durable thin paper. Sections under each species describe the bird; its distribution; its habits with notes on some displays, migrations, or field impressions; its food; voice; and breeding information with descriptions of nests, eggs, and breeding seasons. In providing useful biological information about each species in a concise manner, "Roberts" has few equals on any continent. Species descriptions also include the distinguishing characteristics of all subspecies occurring in southern Africa south of Angola and the Zambezi River. Nearly all species of southern Africa are illustrated in color, and most of the others are shown in black and white drawings. The increase in page count in the new "Roberts" results from a format in which each descriptive section for a bird begins on a new line and each page has large margins spotted with species distribution maps. Most of the species accounts are identical with those of the previous edition.

Southern Africa has about 875 bird species in an area slightly more than half the size of the United States. The habitats range from snowy winter mountains by the cape to desert in South-west Africa and Botswana and evergreen tropical forest in Rhodesia and southern Mozambique. In their introduction the authors describe briefly the history of ornithological work in southern Africa and the varied habitats of the region. They list several books dealing with South African birds, but not the original references used as sources for the species accounts.

The illustrations are mostly quite good; the plates are the same as those of the earlier editions. One of the less successful is the one of sandpipers and other small

waders. I have asked several graduate students in ornithology to try to pick out the bird supposed to be a Sanderling on plate 18, and of five respondents, one got it. The shapes are wrong, the colors and patterns do not reflect the differences apparent in the live birds, and some figures look as if they were drawn from specimens used as pipe cleaners. A more successful plate is that of eight species of vultures and another one shows the colorful kingfishers and bee-eaters. On the dust jacket is a viduine finch, this one a King-of-Six (or Ordinary Flop) rather then the Long-tailed Flop of the second edition. One of the few text changes is the recognition of three species of indigobirds in South Africa, but the account of *Vidua* [*Hypochera*] *funerea* should read "distinguished from the next species [*purpurascens*] by its whitish feet," not whitish bill; the range map of *funerea* should exclude western Transvaal, western Rhodesia, or Ngamiland; and the map of *purpurascens* should not extend through Ngamiland.

The authors have generally retained the generic and specific usages of their previous edition, and most changes in this edition involve minor shifts in the range or in single distributional records. Comparing the ranges of South African birds in the two editions it appears that a few species of the dry Karroo are spreading southward towards the coast of the Cape Province, due to a shift towards desert conditions here as a result of prolonged droughts and widespread overgrazing. Birds involved in this spread include the Scaly-feathered Finches, *Sporopipes squamifrons*, and the White-browed Sparrow Weaver, *Plocepasser mahali*. *Passer domesticus* has increased its range more than a thousand miles, *Sturnus vulgaris* less than 200 miles, and the Indian Mynah *Acridotheres tristis* apparently not at all. Purple Gallinules *Porphyrula martinica* have been reported in recent years in South Africa; it is not known whether these birds were from North or South America. Several records of birds a few hundred miles from their earlier known limits that were published in 1967 are not included in the distributional maps (*Salpornis spilonota* and *Vidua* [*Steganura*] *obtusa* have been reported in Transvaal), the former three times, and *Telophorus zeylonus* occur in the Chimanimani of Rhodesia, as noted in the subspecies accounts. Although southern Africa has a fine coast and borders the Indian and Atlantic Oceans, the sea birds are rather sketchily described and little is said about their biology. Several sea birds are not illustrated. Considerably more attention has been given the land birds, and the results of long-term field studies by many local ornithologists have been summarized here.

Gleaning the leaves of "Roberts" suggests many interesting problems for further field work. What are the kinships among the helmet shrikes where more than two birds rear the young at a single nest? Do the Wattled Starlings, *Creatophora cinerea*, respond by nesting and by nest desertion directly to the local fluctuations of locusts? What ecological differences permit 15 species of canaries and buntings to coexist in the tip of Africa south of the Orange River?

"Roberts" is the best book available, and it is a good one, for birding in southern Africa.—Robert B. Payne.

Birds of west central and western Africa. African handbook of birds, ser. 3, vol. 1.—C. W. Mackworth-Praed and C. H. B. Grant. 1970. London, Longman. Pp. xxvii + 671, 46 col. pls. 120 shillings.—Mackworth-Praed and Grant's series of handbooks of the birds of Africa is nearing completion with this volume, which describes the birds in central and west Africa from the Congo, northern Angola, the western border of Sudan, and the Tibesti Mountains west to the Atlantic Ocean and also the birds of the islands of the Gulf of Guinea. Volume 1

in this series covers the nonpasserines and the pittas and larks, and volume 2 will cover the other passerines. Most species are illustrated in color, many of them from the plates in series 2 of the handbook. Color plates are lacking for the Painted Snipe, sandpipers, plovers, lapwings, and skuas, and only heads are shown for gulls and terns, but most birds are illustrated well enough for identification. The handbook is the most completely illustrated, relatively compact (2½ lbs. for vol. 1) book available for identification of birds for central and western Africa. The introductory section by W. Serle on the recent geological history and ecology of west Africa gives a fine summary (partly from Moreau's work) of the setting for these birds.

Plumages and sizes of the species and subspecies of birds of west tropical Africa are described, and the keys, descriptions, and illustrations will make this book as helpful for identifying birds as other volumes of the handbook have been in eastern and southern Africa. The authors describe 635 species, some of them birds regarded by others as subspecies or as color morphs of other species, such as some of the hawks. Relatively few subspecies are recognized, in part because the book is intended for field use, and the authors note that they might recognize more forms in reviews of single species. I was surprised anyway to find no recognition of the distinctive, barred form *jacksoni* for *Cuculus cafer* (= *C. clamosus*). Descriptions of the sexes and of nonbreeding plumages and the plumages of immature birds are given where these are known. The authors might have noted that male *Indicator minor* have more distinct, black moustache streaks than the females; I was able to sex correctly nearly all of these honeyguides in the field before I collected them after Gordon Ranger pointed out this difference to me. Comparison of each species with similar forms helps in identification, though comparing *Indicator exilis* to the "thick-billed honeyguide" (*I. conirostris*) is not, when the latter is not in the book.

For each species the plumage is described and the range is given, along with a distributional map. Birds living in Africa and other areas are sometimes mapped as they occur through Eurasia as well, and arrows crudely indicate migrations across the continents, though these have been forgotten for a few birds. African ornithologists may be led astray by the omission of North America from the distributional text; some of the widespread birds overlooked here are *Butorides striatus*, *Nycticorax nycticorax*, *Numenius phaeopus*, *Hydroprogne caspia* (= *H. tschegrava*), *Sterna maxima*, and *Tyto alba*; also *Plegadis falcinellus* is locally common, not "occasional," as a breeding species in southeastern North America. With a map of Africa of one square inch for each form it is difficult to show local distributions, but some of the maps (as in *Caprimulgus rufigena*) are a few hundred miles off the range, and the distributions within Africa of wintering Palearctic birds are not attempted. For African birds with more than one subspecies, the range of each subspecies is described and mapped, though the overall range of the species is not mapped by itself. In a few birds the maps and text ranges do not agree; the map shown for *Centropus toulou* omits the (recent?) records from the upper Guinea region and the one for *Glaucidium perlatum* is for the southern African race, not the west African one. *Neophron percnopterus* does not occur in Rhodesia or southern Mozambique. A few species recently found to occur in western Kenya, Zambia, or Rhodesia are not shown or described that far east or south (*Tauraco leucolophus*, *Halcyon malimbicus*, *Indicator meliphilus*).

Natural history information on the habits, nest, eggs, breeding seasons, calls, and food are given where any of these are known. Many species living year round in west Africa have not been reported breeding there, as few people have watched

birds there in recent years, and the authors have included biological data from other parts of the range for these where they are known. Some African hawks (e.g. *Accipiter macroscelides*) are said to be active mainly at night. The hornbill, *Tockus nasutus*, would be a great subject for experimental work on the development of behavior as the nestlings may plaster up the opening in the nest tree after their mother has broken her way out to find food for her young, much as the adults seal the hole and the female inside for laying and incubation (this behavior was shown in a BBC film, "Baobab: portrait of a tree" by Alan Root). An error has crept into the text on pp. 371 and 372, where the sections on habits, eggs, breeding, food, and call of *Clamator jacobinus* have been transposed under *C. levaillantii*, and the corresponding sections for this cuckoo are found under *C. jacobinus*.

The interesting descriptions of natural history are generally accurate, though my main impression of the Hooded Vulture, *Necrosyrtes monachus*, is that of a garbage collector in the courtyard of my hotel in Kano, Nigeria, tidying up the scraps of breakfast offerings, as they do in villages across dry parts of west Africa. For too many species the authors can only say "it has no particularly distinctive habits," or "nothing much has been noted of its habits." Much of the local interest in birds in west Africa is for the pot, and one bird, a swift (p. 597), is notable mainly for its being knocked down in numbers in flight with a stick. As D. F. Owen has noted in his review of the handbook (Ibis, 112: 569, 1970) few Africans have adopted the natural history traditions of the former colonial administrators of their land, and their own traditions differ from those of the authors of this book. The handbook should be most helpful for visiting (and hopefully resident) ornithologists in west and central Africa for identifying the local birds and for pointing out species for which we are lacking any knowledge of natural history, behavior, and ecology.—ROBERT B. PAYNE.

The avifauna of northern Latin America: a symposium held at the Smithsonian Institution 13–15 April 1966.—Helmut K. Buechner and Jimmie H. Buechner, Editors. 1970. Smithsonian Contrib. Zool., No. 26. Pp. viii + 119, 8 × 10½ in. Cloth. $3.25.—On 13 April 1966 a 3-day symposium was convened at the Smithsonian Institution in Washington, D. C., to determine whether or not the drastic changes in northern Latin American habitats have had deleterious effects on wintering populations of North American migrant birds. The conference was conceived by the late William Vogt, organized by the Smithsonian Office of Ecology, and financed by the Conservation Foundation. Included among the 41 participants were leading ornithologists and ecologists from Bermuda, Mexico, Guatemala, Panama, Venezuela, and Colombia and many of the North American biologists specializing in Latin American ornithology.

The present work contains the texts of the 14 scientific papers presented at the symposium. Also included are a list of participants, a short prefatory statement by S. Dillon Ripley, texts of the closing plenary session and the discussions that followed each paper, a compilation of the suggestions emanating from the conference, and a remarkably complete index. Ten of the talks dealt with specific countries in Central and South America, while the remainder concerned more general aspects of ecology and conservation. Appended to the report given by Antonio Olivares is a partial but useful bibliography of 104 entries on the avifauna of Colombia.

After several papers had been presented, it became apparent that the majority of the participants believed that habitat destruction in Latin America has had little effect on wintering populations of North American birds. The conference there-

fore shifted its emphasis to describing the effects of "humanization" on the natural environment and on resident bird populations.

Everywhere the problem is acute and the picture depressing. To anyone with experience in Latin America, the story is a familiar one—the clearing of forests, the draining of marshes, the erosion of topsoils, the slaughter of wildlife— in short, the subservience of the natural environment to the encroachments of civilization. With the increasing pressures of an expanding human population, Latin America is of necessity economically oriented, and neither the governments nor the peoples have much interest in conservation. While many of the ideas presented are not new, the conference has served to crystallize in the minds of the participants and this reviewer a heretofore vague feeling of uneasiness by documenting the appalling extent of environmental destruction and resultant extirpation of the dependent wildlife.

This symposium sought to go a step further by determining practical solutions to conservation problems. In the final chapter, suggestions are listed in some detail under the following headings: Communication, Education, Natural Areas, Legislation, Management, and Research. Briefly, through all methods of communication, the governments and peoples of Latin America must be educated as to the esthetic and, especially, the economic benefits to be derived from proper conservation practices so that they will set aside a carefully selected variety of natural habitats and will enact and enforce laws for the management and research of these areas and their wildlife. In the words of one of the speakers, Marston Bates, the conceptual environment of the people must be molded so that they will desire to live with nature, rather than destroy it. The United States and other non-Latin American countries can provide financial, ideological, educational, and technical assistance, but the major impetus must come from within Latin America.

In addition to such broad concepts, many specific suggestions were advanced. For example, we in the United States must enact laws prohibiting the importation of cage birds, thus eliminating the primary market for Latin American exports. Lest they do more harm than good, the practices of foreign aid organizations, such as the U. S. Agency for International Development, must be firmly grounded in ecological concepts.

This symposium has provided the basic framework, as well as many of the specifics, for solutions to conservation problems in Latin America. The seed has been planted; whether or not it grows, matures, and bears fruit, depends on us.—LAURENCE C. BINFORD.

Ornithology in laboratory and field, fourth ed.—Olin Sewall Pettingill, Jr. 1970. Minneapolis, Burgess Publ. Co. Pp. xvii + 524. Cloth. $11.95.—Although familiar and time-honored, the new Pettingill well justifies review for it is a considerably changed edition. Little of previous editions has been omitted and much has been added, notably a substantially informative introduction, and new sections on behavior, longevity and numbers, and evolution. Some old sections have been much enhanced such as those on feathers, field methods, and migration (with an up-to-date treatment of navigation). Pleas for conservation add an important new note to the book.

The pleasing decorative illustrations of Walter J. Breckenridge have been retained, changed, or added to (but the top half of the killdeer at the start of the section on eggs has been missing at least since 1945!). R. B. Ewing's scientific illustrations, most of them new, are well done, but making colored plates of the two of pigeon internal organs does not seem economically justified. The only

other colored plate, the new frontispiece by Rudolph Freund of his reconstruction of *Archaeopteryx*, is, however, highly worthy of reproduction.

Typographic errors are nearly absent and factual errors rare. Examples of the latter are the incredible persisting statement (p. 68) that the quadrate in man "becomes a part of the temporal bone and forms the bony tube of the ear opening," the partly incorrect definition (p. 62) of the synsacrum, and (p. 94) referring to the avian cochlea only as the lagena. Some important terms such as pileum and rhamphotheca are missing. The coverage of the book will inevitably be unsatisfactory to some. The section on internal anatomy is probably too detailed (processes of bones, for example) to be appropriate for an introductory course, but the good added section by Andrew Berger on bird musculature will be appreciated by many. The classification of birds could well list all bird families rather than just North American ones. The extensive bibliographies throughout the book might best be limited to the more important books or papers. Too often there is a lack of adequate theoretical discussions, and some discussions, as of subspecies and speciation (under Systematics), are not strong or well-rounded.

The quandary that will face many instructors using Pettingill is whether the book can now adequately serve as both a laboratory or field-work guide *and* a text. I have used it this way in a quarter's course and found that with a few outside reading assignments, as in Welty, it worked quite well. I polled my class on this matter and they rated Pettingill as a better lab guide (B+) than text (B−) with readability of C+. A number of students preferred Welty, perhaps not realizing that it could be overwhelming in its comprehensiveness to many students. Nevertheless, until a good separate ornithology laboratory guide is available, Pettingill seems to be the best (indeed the only) book of its kind, combining many excellent features for study, guidance, and reference both during a course and in later years.—FRANK RICHARDSON.

The hawks of New Jersey.—Donald S. Heintzelman. 1970. New Jersey State Mus. Bull. 13. 103 pp. $2.00.—The author's intent was for this to be a modernized and rewritten account to replace the now outdated classic "The hawks of New Jersey and their relation to agriculture" first published by Leon Augustus Hausman in 1927 and often reprinted since. Although most of the factual material in the bulletin is derived from previously published accounts, the clarity and smoothness of the presentation bespeaks the author's extensive personal experience with raptors. The many photographs contribute greatly to the overall composition and some of them—particularly those by G. Ronald Austing—for sharpness and depth are among the best this writer has seen (see particularly the Peregrine Falcon, p. 37). Rather standard species accounts are presented for 19 diurnal birds of prey including such accidentals as the Mississippi Kite, seen once in 1924. Unaccountably the Swainson's Hawk is omitted although there is a sight record (Fables, Annotated list of New Jersey birds, Newark, 1955) and at least one collected specimen from New Jersey (J. Bull, pers. comm.). The beginning chapters discuss the history of man's interest in birds of prey, their fossil record, role in food chains and the reasons for several species having become rare or endangered. The discussion of the affects of pesticides is accurately and clearly presented. Together these chapters provide an excellent introduction to the diurnal birds of prey and their role in ecological systems, a theme that also permeates the species accounts. The topic of hawk migration in New Jersey is treated at length although only the wind-drift theory is presented to explain the great concentrations of hawks often noted at Cape May and along Delaware Bay, with no mention of the alternative hypothesis

based on the diversion-line phenomenon (Murray, Wilson Bull., 76: 257, 1964). An identification key is included but, as stated, it is only suitable for use when the bird or carcass is in hand. Anyone expecting an up-to-date reference work or supplementary field guide containing detailed information on the molts, plumages, ecology, and distribution of New Jersey hawks will be disappointed. On the other hand it more than satisfactorily fulfills the requirements for an accurate, readable, and inexpensive account to introduce the general public to the diurnal birds of prey, their ecological value, and the great problems civilization is imposing on them. —CHARLES T. COLLINS.

Bird life in the royal parks 1967-68.—The Committee on Bird Sanctuaries in the Royal Parks. 1970. Ministry of Public Buildings and Works. Pp. viii + 29, 5 black and white photos, 1 table, 6 × 9½ in. Cloth. $1.20.—This is one of several reports since 1947 concerning the status of bird life in the royal parks in and near London. Observations of breeding and transient species are reported from eight parks and smaller open spaces. Recommendations are made for changing habitat to entice specific birds into the city. Perhaps because it is a report to the Minister of Public Buildings and Parks, it has some shortcomings as a scientific document or as a guide to the interested visitor to London. For instance, one wishes that somewhere the criteria for estimating the number of breeding birds and for accepting transient records were mentioned. Although a summary table allows one to determine the breeding and transient species in each park, there is no standard way of reporting the number of breeding pairs. Being familiar with the annual nationwide breeding bird surveys conducted in Great Britain, I presume that the data reported here are part of that effort, but I could find no statement to that effect. If the report was intended as a guide for the general public or interested bird watcher, the person unfamiliar with London could find no information on the location and size of the parks. Despite these minor inadequacies, the tenor of the report provides another example of the fact that amateurs in Great Britain have the desire and tenacity to make valuable contributions to British ornithology.—ROBERT M. STEWART.

Last survivors: natural history of 48 animals in danger of extinction.—Noel Simon and Paul Geroudet. 1970. New York, World Publ. Co. 48 col. pls. (36 mammals, 12 birds), illus. by Helmut Diller (mammals) and Paul Barruel (birds), 32 black and white sketches, 6 maps, 8½ × 10¼ in. Cloth. $19.95.—This large and lavishly illustrated volume is still another in the recent trend toward spectacular treatises on animals. Noel Simon wrote the chapters on mammals and Paul Geroudet those on birds. The latter has been translated from the original French. The book is prefaced by H. R. H. Prince Bernhardt of The Netherlands, President of the World Wildlife Fund.

Much of the information in this book is taken from the International Union for Conservation of Nature and Natural Resources (I.U.C.N.) Red Data Book, volumes I (Mammalia) and II (Aves). It also includes updated information on some of the efforts currently being made to resolve some of the major problems, political as well as ecological, that have placed many animals on the "rare and endangered" lists.

The colored plates appear to be beautifully executed until one begins to compare the descriptions by the writers with the animals depicted. For instance, the colored plate of the Mountain Tapir (p. 47) shows no sign of the curly hair typical of this tapir, as mentioned in the text (p. 45). Also, the Audouin's Gull (plate p. 97)

does not show the yellow bill tip mentioned on p. 94, characteristic of this species, but instead shows the tip red. The text mentions "dark eyes," but the ones in the plate are a light yellowish-orange. This same problem occurs again on the facial colors of the Snub-nosed Monkey (plate, p. 103); the white-throated wallaby (p. 231) lacks the "whitish tip to the tail," and the Monkey-eating Eagle (plate, p. 175) has yellowish eyes instead of "bluish eyes" as indicated on p. 171.

On p. 72, Geroudet notes that the type specimen of *Dendroica kirtlandii* was given to J. P. Kirtland, who named it in honor of his friend. Actually, *D. kirtlandii* was described by Baird, 1852.

Overall this book makes easy reading and I am sure will help the cause of conservation and promote interest in animal preservation. However, I am afraid the book is doomed to be another one of the beautiful "birthday or Christmas present" type books.—JAMES R. NORTHERN.

Peuplements et cycles de reproduction des oiseaux de la côte occidentale d'Afrique.—Rene de Naurois. 1969. Paris, Mem. Mus. Hist. Natl. 312 pp., 31 figs., 5 tables. Paper.—The avian population of a large sector of the African coast has been meticulously documented, from the Cap Barbas through Portuguese Guinea. The coast has been divided into five distinct areas, with the aim of determining geographical limits of the populations primarily of sea and shorebirds, etc., and their limits of seasonal reproduction. The more than 2000 km shoreline shows considerable modifications in that the terrain and geologic structure, climatic conditions and oceanographic currents affect the ecology and composition of avian communities considerably.

The major portion of this treatise deals with the specific location of breeding colonies, be they islands, coastal cliffs or dunes, or other, and the abundance by species in each habitat. Reproductive success is geared to those factors and to the presence of predators, including man. The information covers a 5-year study, with previous literature included in the summaries on each section of the coast.

The author cautions that although geographic factors play a leading role in the successful cycles of the birds studied, there is so wide a fluctuation that the parameters cannot be stated with certainty at this time. For example, some species apparently have their reproductive cycles associated with the rainy seasons; no reason for the cycle is apparent in other species.

Containing a wealth of distributional data, this is a well-written treatise on the "interface" between land and sea in a most interesting part of the avian world.—M. DALE ARVEY.

Two islands/Grand Manan and Sanibel.—Katharine Scherman. 1971. Boston, Little, Brown and Co. 256 pp., 24 photos taken by the author, 2 maps. $7.95.—The publisher undoubtedly sent Auk a review copy of these detailed travelogues of two widely separated islands because of the bird life described in each account. If Little, Brown and Co. hoped it would become required reading for ornithologists, they are doomed to disappointment. Mrs. Scherman writes well, but it is obvious that no competent ornithologist checked her book. She says "An eider does not sit on twenty eggs, though she has the capacity for more than that. The number she lays is in direct correlation to what she can find to eat, usually mussels on these shores; and in less direct but just as strong relation to her predators." Why, oh why, didn't she read an authority such as Delacour or Phillips?

Speaking of the Anhinga, Mrs. Scherman says "Though its chief residence in the United States is the marshland and lake districts of southern Florida it can

also live near secluded bays, having adapted itself to salt as well as brackish and fresh water." My thousands of Anhinga fellow citizens of north central Florida and those that live northward to the Carolinas and southern Illinois and southward into Central and South America take exception to Mrs. Scherman's statement.

How could the author tell the sex of a Red-shouldered Hawk perched high in a tree? How can she say petrels "are the most numerous birds in the world"? Any one who saw the mangroves in Everglades National Park after Hurricane Donna in 1960 knows that mangrove is not "an indestructible jungle" as Mrs. Scherman claims.

Although it has little to do with ornithology, I am disturbed at the omission in this book of a bit of history of what Dr. Alfred Gross always called Kent's Island, explaining (Auk, 55: 387, 1938) that the island was named for John Kent, the original owner who eked out a living farming it. Readers of the book who go to Sanibel expecting to find the island described to them may not be able to see it through the condominiums.—ELIZABETH S. AUSTIN.

A field guide to Australian birds; non-passerines.—Peter Slater and others. 1971. Wynnewood, Pennsylvania, Livingston Publ. Co. Pp. xxxii + 428, 43 col. pls., 21 black and white pls., 47 figs., 5 × 7½ in. Cloth. $10.00.—This field guide is the culmination of many years of work by Peter Slater, Eric Lindgren, and the other scientists who have contributed to it. Written carefully and with painstakingly drawn illustrations, the book is without question the most authoritative, complete, and accurate field guide to the Australian nonpasserine birds. Almost 400 species are described, all of which are depicted in either color or black and white. For each species an account is given of its range, habitat, voice, and appearance in the field, including plumage variation due to sex, age, or color phase. Many birds are shown in plumages or phases that have not previously been illustrated.

The text is remarkably free of spelling, typographical, or other errors, and the plates are exceptionally well-done. Up-to-date range maps for all species are one of the most useful features, and enable the reader to determine at a glance where he is most likely to find a particular bird. In addition to describing all nonpasserine species that have been found in Australia (and the surrounding waters and islands), the authors mention many birds likely to occur in this area, but which so far have not been found there. A selected bibliography adds utility to the guide.

Although the general presentation of material is clear and concise, I feel several items could be improved. When a reference is made in the text to a figure (by figure number), no page number is given. As the figure may be 5 or 6 pages before or after the reference to it, the reader must search forward or backward until he comes to the figure (e.g. on p. 162 under Cook's Petrel one finds "see fig. 7", which turns out to be on p. 156). The index to figures at the beginning of the field guide, moreover, is alphabetical rather than by figure number. I discovered that Cook's Petrel was not in this index, and that the page number for the figure I wanted (fig. 7) was listed under "Petrels, Gadfly."

Figures 14 through 22 (outlines of seabird bills) are found on consecutive pages, between 188 and 199, in the middle of the book. These pages themselves bear no page numbers, yet all references in the text to these particular figures are solely by page number (e.g. on p. 152 under Cape Petrel one reads "see pp. 11, 194"). The only way of finding page 194 is to count forward from page 188 or backward from page 199, which is inconvenient for the reader.

Subspecies, where distinct, are mentioned under a particular species and sometimes are illustrated. On at least four occasions each of two subspecies is presented

in capital boldface letters and described separately, as is usually done only for a species. I do not know why these eight subspecies were singled out for special treatment. In one of these instances, on p. 387 when the authors are talking about *Chrysococcyx m. minutillus* and *C. m. russatus* (which are each listed separately in boldface type), reference is made to "these two species", instead of subspecies.

Common names of species are based on the CSIRO Index of Australian bird names. I was surprised to find Whistle-duck used for the genus *Dendrocygna* instead of the traditional Tree-duck, and to see that *Tringa stagnatilis* is referred to as the Little Greenshank rather than the Marsh Sandpiper.

Because the RAOU checklist of Australian birds is sadly out-of-date, the authors have each followed their own interpretation of specific and subspecific boundaries. The trend in a few groups is toward splitting (e.g. the Sphenisciformes, Procellariiformes, and Stercorariidae), but the overall direction of change is toward lumping. In the Psittacidae the three allopatric forms of *Opopsitta* (fig parrots) have been included in a single species, and the Yellow-tailed Cockatoo of southeast Australia has been lumped with the White-tailed Cockatoo of southwest Australia in *Calyptorhynchus funereus*. Also the very distinct Cloncurry Parrot, which is geographically isolated from the Mallee Ringneck Parrot, is considered conspecific with the latter. On the other hand, the highly variable population known as the Adelaide Rosella, which links the Crimson Rosella to the Yellow Rosella, is considered a separate species as are the latter two forms, while the equally variable Flinders Range population of *Barnardius*, which is intermediate between *B. zonarius* and *B. barnardi*, is ignored. Such inconsistencies point out the need for a taxonomic revision of the Australian avifauna, but they in no way detract from the value of the book as a field guide.

Both the color and black and white plates are excellent. Perhaps some of the "waders," which always tax the ability of an artist, are somewhat too gray and plain in appearance, and the color of the legs of the nonbreeding Cattle Egret on plate 13 is said to be "greenish-yellow", but the illustration shows them as bluish-gray. These discrepancies, however, are of a very minor nature.

A major cause for concern is the book's binding. Although my copy has not yet left my desk, it is already starting to fall apart at the back. This is hardly what one would expect of a book meant for use in the field. I hope that other copies are more rugged—and that I get a chance to use this guide in the field one day!

In summary, no other available book covering the same area is comparable to "A field guide to Australian birds." This is the authoritative up-to-date reference ornithologists in Australia and overseas have long been waiting for. The quality is on a par with that of the best European and American bird guides. I am eagerly looking forward to the second volume dealing with the passerine species.—CHARLES D. FISHER.

Common Australian birds.—Alan Bell and Shirley Bell. 1969 [revised ed.]. Melbourne, Australia, Oxford Univ. Press. 218 pp., 105 color plates, 5 × 7½ in. Approx. $5.00.—This book is not much changed from the earlier (1956) edition; four more species are included, a few illustrations have been redrawn, and the text has been somewhat lengthened. The 113 species described and illustrated, less than 20 percent of the total Australian avifauna, are primarily the common birds of the more populated areas of southeastern Australia, species that might be found in and around Melbourne, Sydney, or Canberra. Many of the most widespread and con-

spicuous birds of the vast arid interior of the continent have been omitted, as have a majority of the commoner species of the northern tropical savannahs, woodlands, and rain forest. Thus the book is obviously not intended for the avid bird watcher.

The book has more serious faults than the small number of species depicted. The illustrations are inept, and the text is unenlightening, anthropomorphic, and far too often both grammatically and scientifically incorrect. This book has little to recommend it, and a reader wishing to acquaint himself with Australian birds would be better advised to spend his money on one of the several good regional works, such as Serventy and Whittell's "Birds of western Australia" or on Peter Slater's "A field guide to Australian birds" (two volumes, see above).—CHARLES D. FISHER.

ALSO RECEIVED

Mosquito safari: a naturalist in southern Africa.—C. Brooke Worth. 1971. New York, Simon and Schuster. 316 pp., 18 black and white photos, 1 map, 5¾ × 8½ in. Cloth. $8.95.—An informal narrative account of the author's field research expedition to Africa, where he went to investigate insect-transmitted viruses and his job was to collect and identify mosquitos. The book has many mostly casual references to birds encountered, as it does to many other types of wildlife.—J.W.H.

A manual of wildlife conservation.—Richard D. Teague (Ed.). 1971. Washington, D. C., The Wildlife Society. Prepared at Colorado State Univ. by The Wildlife Conservation Manual Committee. Pp. x + 206, numerous figs., tables and photos. 8½ × 11 in. Paper.—This manual was developed to accompany a short course in wildlife biology for the layman who in some way has a need or desire to know something of this field of knowledge. It has sections on Policy and Administration, People and Wildlife, Wildlife Management, Fisheries Management, Wildlife Law, Wildlife and Private Land, Wildlife Research, and Techniques for Developing an Effective Short Course, plus two appendices. It strikes me that this manual and the course it would suit might wisely be adopted by a department of biology for the nonbiologists creeping into the "pure" ecology course, only to dilute its impact by their justifiable wants and needs, but interfering with the biology students' goals therein.—J.W.H.

Animals in migration.—Robert T. Orr. 1970. New York, Macmillan Co. Pp. xi + 303, 9½ × 7 in. Cloth. $12.50.—This book covers a wide range of topics related to animal migration. These include a discussion of why movements occur, routes taken, environmental influences, mechanisms of orientation, and methods of study. Most of the information deals with birds, but a variety of examples from other animal groups are included and add greatly to the appeal. There are numerous photos and maps and a relatively short but interesting bibliography. The serious biologist will find it handy to have so many examples of animal migration discussed in one place, although very little synthesis is achieved and the book suffers the curse of over-simplification found in so many semipopular treatments.—M.L.M.

Blowout at platform A. The crisis that awakened a nation.—Lee Dye. 1971. Garden City, New York, Doubleday & Co., Inc. 231 pp., 5¾ × 8½ in. Cloth. $5.95.—A pessimistic (= realistic) account of the 1969 Santa Barbara oil leak disaster and the ensuing political turmoil. The author is a reporter with the "Los Angeles Times" newspaper. Don't look here for data on bird kills.—J.W.H.