ORNITHOLOGICAL LITERATURE

BREEDING BIOLOGY OF BIRDS. PROCEEDINGS OF A SYMPOSIUM ON BREEDING BEHAVIOR AND REPRODUCTIVE PHYSIOLOGY IN BIRDS. Edited by D. S. Farner. National Academy of Sciences, Washington, D.C., 1973: 515 pp., illustrated with drawings, charts, maps, photos; paperbound. $15.50.—This gem reviews broadly many of the most active areas of research in birds. The symposium presentations and discussions are the result of an attempt at ecumenicism in bringing together wildlife biologists, ornithologists, and comparative endocrinologists, to discuss the state of their sciences in early 1972.

D. S. Farner's introduction provides a concise outline of his scheme of the environmental and physiological control of reproduction in birds. Two later chapters detail the recent advances in the field of neuroendocrinology and the hypothalamo-hypophyseal physiological control system of birds. I. Assenmacher traces the physiology of gonadotropin and prolactin. He discusses the current evidence of the existence of two distinct gonadotropins in birds, and he reviews the evidence "that an antigonadal effect of prolactin in birds, whether migratory or not, can no longer be accepted as a general concept," in contrast to mammals. B. K. Follett's chapter on the neuroendocrine regulation of gonadotropin secretion in avian reproduction is neuroanatomical in emphasis and includes a review of histochemical work on catecholamines and the neurosecretory tracts involved in hypophyseal control. He also discusses the perception of light and daylength. A. Oksche contributes to the discussion of neuroanatomy, and Farner points out the progress being made in linking the neuroanatomical and physiological studies of birds. I found the informal discussions following these chapters to be full of previously unpublished, uncompleted results of research contributed by activists in these fields.

In two chapters on more gut-oriented physiology, M. D. Scott discusses the importance of nutrition in reproduction and shows the results of studies on captive birds in determining dietary requirements for maintenance and reproduction in domestic and game birds. The discussants particularly R. K. Murton and A. Watson, point out how little is known of nutritional problems of birds in the wild. J. R. King summarizes the available data on the caloric cost of reproduction in his chapter, and he suggests the idea that incubation may not "cost" a bird anything because it may simply use its normal metabolic heat to warm the eggs (calorie-wise, the normal heat loss is more than adequate to account for the heat needed for embryonic development). In a following discussion S. C. Kendeigh expresses disbelief in the "no-cost" hypothesis, but his argument assumes that a bird cannot adjust its proportions of heat loss through the skin, brood patch, and respiration as conditions may indicate. King notes that energy costs of breeding appear to be more intensive for females than for males, at least in terms of gonadal development, but nothing is known about the energetic cost of male breeding behavior. The data that King uses for discussion of "cost" are strictly physiological or nearly so, and it would be of interest to determine "cost" also in terms of the long-term effect of breeding on survival and future reproduction of the adult birds.

The chapters on ecology and behavior vary considerably in their comprehensiveness. F. McKinney discusses the "ethological aspects of reproduction" in species that he has studied, and he relates the displays of two eiders and two ducks to a difference in their feeding behavior, assuming that the sociality and conspicuousness of displays and the permanence of the pair bond in birds are ultimately caused by the different feeding behavior of the species. McKinney's descriptions suggest that species differences in behavior may be selected more directly by predators than food in the eiders. G. Orians

relates his models of selection for mating systems in birds to R. Levins' fitness-set models by suggesting that the patchiness or grain of different habitats is a major selective component for the evolution of social systems. In discussing the natural history of incubation, R. Drent reviews the problems of heating and cooling of the egg, the physical and gas-exchange problems of incubation, the synchronizing of hatching, and how the parent continually readjusts its behavior to the condition of the eggs. He also discusses the anti-predator behavior of birds at the nest. Drent suggests several field and lab problems for further study. C. G. Beer gives an intriguing discussion of the limits of usefulness of a reductionist physiological approach to the study of behavior, while at the same time he emphasizes the important contributions to an understanding of the whole of behavior by picking apart its parts—the Canary work at Cambridge and the Ring Dove work at Rutgers, with all the complex interplay between environmental factors, hormonal feedback systems, and the previous experience of the bird. Beer also discusses his studies of individual recognition by voice in breeding gulls. D. A. Jenni's brief discussion of mating systems in birds unfortunately pre-dates the spirit of his more successful recent (Am. Zool., 1974) paper where natural selection producing "strategies" of social behavior, not physiological means, are given as explanations for evolution. The informal discussion following this behavior section gives a revealing look at reductionism as a philosophical means to provide explanations to biological questions in comments of Farner and Beer.

R. E. Ricklefs's long chapter (71 pages) on "fecundity, mortality, and avian demography" is at once a lucid review of principles of population ecology and a discussion of the reproductive "strategies" of birds. I noted some errors here. Morel's work with *Lagonosticta senegala* is said to have reported that yearly survivorship increases with age—her data in fact do not show this nor did she she say this happened. Ricklefs shows us how to derive a life table, and he uses available life table data for birds to compare the ecology and evolution of breeding effort in the same straightforward style that characterizes the similar discussion in his recent text *Ecology* (Chiron Press, 1973). One can see that Lack, the guiding light of the last three decades in interpreting life history phenomena in terms of natural selection, is gone, for on p. 428 Ricklefs leaves us with the query, "But if adult mortality was [sic] to decrease and a population became stabilized at a higher density, would not intraspecific competition reduce food availability and, hence, clutch size?" This last appears to this reviewer to suggest confusion between the idea of a selected adaptability of an individual to adjust its reproductive effort to local conditions, and the idea (that Lack questioned) of selection for lowered reproductive effort in individuals regardless of the high effort of their neighbors. Ricklefs does not attempt to explain how it might happen that an individual that leaves fewer offspring than his neighbor would be favored by natural selection within the population.

K. Immelmann discusses the role of the environment in reproduction in a review like his more extensive review in *Avian Biology*, vol. 1. He emphasizes, as does Farner, the high degree of predictability of photoperiodic changes as the reason why most birds cue in on daylength to time their breeding. He overlooks my experimental evidence (Univ. Calif. Publ. Zool. 90, 1969) that rainfall and local insect abundance is sufficient in some birds of arid habitats to bring about gonadal development and breeding. H. J. Frith adds to the field evidence that the breeding times of some waterfowl are direct responses to rains.

L. von Haartman's "changes in the breeding bird fauna of north Europe" summarizes the well-documented shifts in range and numbers of *Vanellus vanellus*, *Turdus merula*,

Erithacus luscinia, *Carpodacus erythrinus*, and several other species. The increases were often synchronized among several species. It is not certain whether long-term weather changes, forest succession, or land use are mainly responsible for these changes. J. W. Aldrich considers the problem of sex ratios of adult waterfowl and possible implications for management. T. S. Baskett presents a comprehensive view of how the more academic interests and results of most of the symposium people are related to the practical interests in the management of wildlife.

The book has several highly worthwhile chapters and is an exciting addition to the field. It should be read by avian biologists, and some of its chapters may be good supplementary reading for a course in ornithology as a biological science. Sure it's expensive for a paperback, but it's a lot cheaper than *Avian Biology*.—ROBERT B. PAYNE.

THE NATURAL HISTORY OF FRENCH FRIGATE SHOALS, NORTHWESTERN HAWAIIAN ISLANDS. By A. Binion Amerson, Jr. Atoll Research Bull. 150. Smithsonian Institution, Washington, D.C., 1971: xv + 383 pp., 74 figures, 149 tables. No price given.—French Frigate Shoals (FFS) is a crescent-shaped coral reef enclosing 12 low sandy islands and two pinnacles, the latter being the last projecting remnants of the volcanic mountain upon which the reef system rests. Amerson gives primary emphasis to the vertebrates and vascular plants, but they are introduced with a thorough discussion (62 pages) of the geology, climate, and history of the shoals, including accounts of all known visits by ships. Detailed descriptions of the past and present appearance of each island are included. The transformations of East and Tern Islands by the military before, during, and after World War II are clearly described and photographically documented. When we read that Tern Island's dimensions (450 × 1800 ft) were augmented by 660,000 yds^3 of dredged coral in 1942, we watch its subsequent changes by comparing early maps and a series of photographs showing the new island (350 × 3100 ft) gradually clothed in exotic (30 species) and native (7 species) plants. These accounts provide an excellent background for understanding the variations in species composition between the islands.

The main body of the monograph is based upon 10 survey trips (203 days) to the atoll by members of the Smithsonian's Pacific Ocean Biological Survey Program (POBSP) from June 1963 to June 1969, supplemented by a wealth of other published and unpublished data. One feels from the sheer mass of information that no data exist anywhere about FFS that haven't been found and included.

Forty-four species of vascular plants are known from the atoll; 30 are introduced, primarily to the two most disturbed islands (Tern and East). The flora of each island is treated separately, with comments on past and present distribution, including introduction attempts, for all species known to have occurred. There are many points of interest: for example, between 1965 and 1969 the southeastern sandy crest of Trig Island was invaded by *Tournefortia* bushes, which developed a stand 5 feet tall; as a result, the breeding population of Red-footed Boobies increased eightfold! What does this tell us about factors regulating the population of some breeding sea birds?

All vertebrates (except fish) known from the atoll (2 reptiles, 44 birds, 7 mammals) are discussed in detail. Reptiles are represented by the largest population of green sea turtles in the Hawaiian Islands, and an introduced gecko (on Tern and East Islands). Amazingly, no rodents have become established. Pigs were released and died out in the 19th century. Dogs and cats accompanied military occupation, but only dogs remain, pets of the U.S. Coast Guard on Tern Island. The last cat died on Tern Island

in June 1966, and Bulwer's Petrels began nesting later that year, increasing to 10 birds by 1969. Large numbers of Hawaiian monk seals were discovered in 1859, and their exploitation began that year. They were observed in 1886, but went unreported thereafter until 1950, when one was seen. The population is growing, with 171 animals estimated for the atoll in 1967. Man continues to influence the area: inhabited Tern Island has only half the number of breeding sea bird species as comparable Whale-Skate Island, which was never occupied. East Island, abandoned by man in 1952, supports an intermediate but growing number. It is heartening to note that populations of many species are increasing with the rigid protection being given to this and surrounding islands in the Leeward chain.

The avifauna consists of 18 resident seabirds, 5 migrant shorebirds, and 21 species of infrequent or accidental occurrence. These are introduced in a broad section discussing the breeding cycles and population fluctuations of the residents and migrants, and the status of the others. All species then receive treatment from two perspectives; detailed accounts of the avifauna of each island are followed by equally detailed accounts of each species, including lists of all records for each island upon which they occur. This procedure is both useful and repetitive, for most information is presented or discussed three times. There is far more of interest in this mine of information than can be discussed here; a few samples will suffice to show the diversity of available information. Interisland movement of resident species occurs regularly. Of 8,238 banded birds recaptured on FFS, 269 (3.3%) originated on other atolls, and of 67,027 birds banded at FFS, 246 (0.37%) were recaptured elsewhere, primarily on other islands in the Hawaiian Leewards, or on Johnston Atoll (half the records). Eight Ruddy Turnstones banded on St. George Island, Alaska, were recaptured on FFS, one having made the 2,272 mile flight (Amerson incorrectly gives distance as 1,800 miles—see Thompson, Living Bird 12:5–24, 1974) in less than 4 days, one of the fastest migratory flights ever documented (649 miles/day minimum). The colony of 150 pairs of blue-faced boobies disappeared from East Island during military occupation, although birds occasionally roosted there. Following the island's abandonment, the number of roosting birds increased, but breeding did not begin again until 1966, 14 years after men had left. The nesting population has thereafter steadily increased. Throughout the accounts is a *basso continuo* of human-bird interactions, and one wishes this could have been brought together in one section, a task now facing the readers.

This work is a foundation piece that has cemented together an enormous mass of information from incredibly diverse sources. Some readers will certainly dispute the necessity of including all the data, but everything is available for those who want it, from La Perouse's nearly fatal discovery of the shoals in 1786 to the last POBSB sight record in 1969. Anyone interested in the Hawaiian Leewards, FFS, or sea bird distribution owes Amerson a debt of gratitude for the effort involved in pulling this information together. It will be indispensible for future work in the area. However, most readers will regret that almost no attempt has been made to broaden the perspective to include information from other atolls, especially those nearby. This work is simply unconnected to other regional works. Are sea bird populations different elsewhere in the Leewards? Is anything unique to FFS? Are the breeding cycles representative of those on Kure and Midway, in cooler waters to the north? Published information and POBSP data was available when this monograph was in preparation. It should also be noted that this is primarily a distributional work, as would be expected from the original research effort (infrequent trips to the atoll over a 7-year period). Little is presented about the breeding biology of the resident populations, and almost none

of the major papers on the ecology or behavior of the resident sea bird species are cited. In this sense it is a foundation, strong and substantial in its own right, yet awaiting a more detailed and elaborate structure to be built upon it.—CAMERON B. KEPLER.

THE BEHAVIORAL PATTERNS OF THE EASTERN BLUEBIRD (*SIALIA SIALIS*). By David C. Krieg. Bulletin Number 415. New York State Museum and Science Service. Albany, New York. 1971: v + 139 pp.—In this small book the author describes the species-typical behavior of the Eastern Bluebird. Because of the appeal of this species to laymen and to ornithologists alike, it is surprising that a description of behavior is so long in coming. The book seems to be intended primarily for the ethologist, but it can be read with interest by others as well.

The author observed wild bluebirds in western New York through five breeding seasons, and several captive pairs for two years. He also observed the birds on their wintering ground in Florida.

He has described their behavior in five main sections: Maintenance Activities, Agonistic Behavior, Territory, Pair Formation, and Courtship. In each of these Krieg describes the behavior of the Eastern Bluebird and compares it to that of other passerines, and especially of other thrushes. Maintenance and agonistic behavior are quite similar to that of other species studied, but differ in small details. Pair formation and courtship behavior likewise in many respects resemble the behavior of other passerines. Krieg here makes little reference to the admittedly rather limited literature on courtship and reproductive behavior of other thrushes.

An interesting conclusion that should be taken into account by the many boy scout and other groups that build and set up bluebird houses in hopes of increasing the local bluebird population is that increasing the number of boxes does not necessarily increase the population of bluebirds. It is not so much the number of boxes as the selective placement of boxes throughout suitable habitat that brings about an increase in the number of breeding pairs in an area. Each pair defends a territory ranging in size from 5.1 to 28.7 acres (average for two years 13.6 acres), and may include several nest boxes within the territory. It is in fact desirable that several boxes be available within each territory in case of failure of one nest. A pair will seldom renest in the same box if the nest has failed for any reason. If no other nest site is available within the territory the birds will usually leave.

One of the book's strong points is its extensive coverage of the behavior of this popular North American bird. The very good to excellent outline drawings by Anthony Moriello are a definite bonus in conveying an understanding of the various postures involved. The comparison of the bluebird's behavior to that of other thrushes is a laudable attempt, but falls short of what it might have been because of the use of so few references. Almost all the references to other thrushes are to Dilger's work on *Catharus* and *Hylocichla* (Auk 73:313–353, 1956).

After completing the book there lingered a question in my mind about the audience for which the book was actually intended. If scientific, the descriptions of behavior often fall short of the completeness that an ethologist might desire. There is disappointingly little reference to current ethological theory. Likewise, the comparisons with other species are not extensive enough, especially in territorial and courtship behavior, to allow the reader to put bluebird behavior into proper perspective. If the book is intended mainly for general readers, there are too many undefined technical terms for the text to be entirely comprehensible. I suspect, for example, that very few laymen and not

many biologists carry in their heads the definition of the word "gamosematic" which Krieg uses but does not define. I was not able to find a definition of it in any of the books in my personal library. In other places the author depends for his definitions on references that may be difficult for the average reader to obtain. A sentence or two could have clarified the term and made the book much stronger.

Some of the terms used in describing behavior seem unfortunate. One that annoyed me especially was "Prenest Building." I assume that this refers to behavior of the pair subsequent to pair formation, but prior to nest building. A better term would have been "pre-nestbuilding," or something of the sort. This criticism perhaps should be levelled at the editor as well as the author. For a state technical publication the text contains an inordinate number of spelling and grammatical errors, again a criticism to be shared by both the author and the editor.

I found the organization of the book confusing in places. Descriptions of vocalizations are scattered throughout. Several times when references to different vocalizations appeared I had to thumb back through the book to see if I had missed an earler description of them. In a couple of cases I never did find an adequate description.

Although it is disappointing in many respects, Krieg's work does represent the most extensive description of bluebird behavior published to date, and by and large is a competent work. My criticisms result from the book's falling short of its potential. Many readers will, nevertheless, find it very interesting and informative.—WILLIAM L. THOMPSON.

CRANES OF THE WORLD. By Lawrence Walkinshaw. Winchester Press. 1973: 370 pp., 4 col. pls. $25.00—Not since 1897 has a book been published concerning all species of cranes. Walkinshaw presents an extensive literature review and many personal observations in his long awaited volume. There is a chapter for each species, and the length of each chapter reflects the amount of study the species have received.

A short introduction discusses distribution, nesting season relative to latitude, characteristics, classification of extant species, voice, and conservation measures. I found the list of recorded fossils especially useful.

More than 21 pages are devoted to the distribution of the two subspecies of the European Crane. Much information on spring behavior, clutch size, nesting and incubation behavior is also presented. Less is said about diet, feeding behavior, egg laying, and nesting biotopes. The sections on copulation, voice, and molt belong in the introduction because they cover several species other than the European Crane.

The length of the chapter on the Black-necked Crane (7 pages) reflects the dearth of information available on the species. Walkinshaw devotes four pages to distribution and covers everything else in three pages.

The Hooded Crane chapter has no introduction and states that the breeding biology is little known, and breeding range and young are unknown. Most of the chapter concerns distribution.

The chapter on Sandhill Cranes is the longest in the book and considers all six subspecies, but especially life history data for the lesser and greater subspecies. In contrast, the account of the Cuban Sandhill Crane is brief because of lack of study in recent years. The Canadian subspecies is also dealt with briefly. Persons interested in the Lesser and Greater subspecies should be delighted with the chapter. However, portions of the account are confusing. While discussing Lesser Sandhill Cranes (p.

92) the author discusses the distribution of Greater Sandhill Cranes, and under Florida Sandhill Cranes (p. 131) movements of color-marked Greaters are included. On page 91 a list of counties where Sandhill Cranes have been found (other than West Texas) includes Bailey County. This county is the principal wintering area for Lessers and is situated on the border of New Mexico and should not have been listed.

The Japanese Crane chapter is adequate, but the discussion of winter behavior under distribution is confusing and deserves separate treatment. Although the nest, eggs, young, voice, and food are well handled, the sections on territory and dancing ought to be in the introduction because all species are discussed.

Whooping Cranes are discussed adequately in 22 pages, including recent information published since Allen's monograph (Nat. Aud. Soc. Res. Rept. No. 3, 1952).

Because the White-naped Crane nests in Siberia much of the chapter is based on the literature. Walkinshaw personally observed them on wintering grounds and studied the nesting activity of captives.

Both subspecies of the Sarus Crane are discussed. More detail on the nesting cycle is provided than in other chapters reflecting Walkinshaw's personal interest and experience with the species.

The Brolga or Australian Crane chapter is one of the most interesting with Walkinshaw's personal observations enlivening the account. The description of the young is too brief, but other topics are adequately discussed.

The Siberian White Crane nests in Siberia and is discussed largely from the literature. Winter behavior, being well known, is emphasized and little is presented on breeding. The section on distribution, usually following the introductory remarks, is for some reason at the end.

The Wattled Crane is adequately covered as are other African cranes. Considerable detail is presented on breeding, eggs, young, voice, and distribution.

The Demoiselle Crane chapter is short but adequate. Literature accounts provide most of the life history.

All topics are adequately discussed concerning the Stanley Crane and a unique section is devoted to behavior toward other birds and mammals. This section is interesting and would have been welcome in other chapters. The young are discussed in more detail than usual.

Both subspecies of the West African Crowned Crane are discussed, but more information is presented on the West African subspecies than the Sudan form. Considerable information is presented on the South African Crowned Crane, and Walkinshaw's personal observations of both species add immensely to the text. The second paragraph differentiating between *Balearica* and other crane genera in Chapter 15 would have been more appropriately included in Chapter 14.

The bibliography contains numerous references. However, it is confusing and each reference should have been listed alphabetically and not under each species.

Many of the photographs are blurred and indistinct. The photographs of the Brolgas on pages 3 and 227 are nearly identical. Other photos should have been centered (e.g. page 232). The photograph of the Hooded Cranes (page 68) is in the wrong chapter and the photo of the hybrid young (page 73) belongs on page 59 with the discussion. On page 89 the caption reading "Canadian Sandhill Crane with young" must refer to a yearling since both appear in adult plumage. Unfortunately, there is not a color photograph for every species; however, ten are represented.

The 22 tables should have been included in species accounts rather than being lumped together in the back. Several occupy only half a page.

Persons who are not authorities on world geography will have difficulty with species ranges. Range maps would have been an improvement. Apparently this was the publisher's decision, because Walkinshaw (page 44, paragraph 4) refers to a map that does not appear, and he later published range maps for all species and subspecies. These maps may be obtained directly from the author.

A few typographical errors were found, and an index is not provided.

Although there are some minor problems with the book, Walkinshaw has amassed an enormous amount of information. The book should serve professional ornithologist and layman alike. Anyone purchasing books for their colored plates should avoid this one.—CARROLL D. LITTLEFIELD.

A GUIDE TO THE BIRDS OF TRINIDAD AND TOBAGO. By Richard ffrench. Livingston Publishing Co., Wynnewood, Pa., 1973: 512 pp., 28 col. pls. and 41 text figs. by John O'Neill, 8 full-page portraits by Don R. Eckelberry. $12.50.—This is a most welcome addition to the literature on the Neotropics. More of a handbook than a traditional field guide, it provides an up to date summary of the information available on the birds of Trinidad and Tobago. The species accounts include information on habitat and status, range and subspecies, banding status, description, measurements, voice, food, nesting, behavior, and occasional general notes. The accounts are short for rare or poorly known species, but a full summary of the life history and behavior is presented for the several species for which extensive information is available. For the most part this is a result of the recent detailed studies of Trinidad and Tobago birds conducted by R. ffrench, D. Snow, B. Snow, A. Lill and others. Life history information from other parts of the species' range is often presented for contrast or to flesh out accounts of species poorly studied in Trinidad and Tobago. In each case the source of information is clearly indicated. These species accounts are well done and make interesting reading.

The inclusion of banding and recovery data and body weights is nearly unique for books of this sort. The weight data will be particularly welcome to those interested in the ecology, physiology, and growth of neotropical birds. Species considered by ffrench to be of dubious occurrence in Trinidad or Tobago, or ones that might be expected to occur but are now represented only by inadequate sight records are included in the text in the regular taxonomic sequence with the accounts set off by brackets. This procedure obviates the need for a separate hypothetical list, and facilitates consideration of all possibilities when one is trying to identify an unusual or unfamiliar species in the field.

In addition to the species accounts, 35 pages are devoted to a rather thorough introduction including discussions of the history of ornithology and conservation in the islands, the climate, environments, and habitats (supplemented by well-chosen photographs) and an over all view of the ecology, distribution, breeding seasons, and migration of the birds. This section is well done, interesting, and should be required reading for any ornithologist or birdwatcher visiting these islands. Maps of Trinidad and Tobago showing major features and locations are included on both flyleafs. Had they been separated, one to each flyleaf, and reproduced much larger their usefulness would have been greatly improved.

No book is without faults, although this one has perhaps fewer than its share. A few comments or suggestions can be made, although at least some are simply personal preferences. Perhaps resulting from an over-reaction to the approach of a previous book (*The Birds of Trinidad and Tobago*, Herklots, G. A. C., 1961, London, Collins), which

gave an overly detailed feather-by-feather description of each species, the section on description in the species accounts seems at times too abbreviated and does not always call attention to characters separating similar species. However, at times this has been done most successfully. Only after this book has been used in the field can this point be fully evaluated.

The plates and text figures by John O'Neill are a decided improvement over those previously available, and the portraits by Don Eckelberry are superb. Even so, some questions arise. Because it was not possible to illustrate every species I fail to see why the male Black-tailed Tityra and Yellow-legged Thrush were illustrated by text figures (38 and 41) when both were portrait subjects and the different-appearing Tobago race of the latter was also shown in Plate XXI. The space might have been better used for figures of species not otherwise illustrated. Similarly, at least 10 species included in the color plates are "rare visitors" or "possible rare resident" and in the case of *Amazilia fimbriata*, one now believed to have been mistakenly included in the avifauna. These could have been either omitted (the Small-billed Elainea) or presented just as effectively as a text figure (the King Vulture, Scaled Ant Pitta, and others). The space saved, amounting to at least one full color plate, could have been used to portray some of the commoner species that were not illustrated. A text figure of the heads alone, showing the distinctive differences in the frontal shield of *Fulica caribaea* and *F. americana* mentioned in the text, would have made more sense than the color plate space given to *caribaea* alone. The addition to the plates of *Butorides virescens* and *Ixobrychus exilis* would have greatly aided field identification of the similar appearing species pairs of which they are both a part. It is the misidentification of these very species in the past that has contributed some of the confusion concerning their present status. The decision not to illustrate birds previously illustrated in field guides for other areas, particularly North America, is expedient, but does a disservice to the non-North American visitors using this book and, more importantly, to the local market on which effective conservation measures depend. Could not at least some of the shorebirds have been illustrated, even if only as a text figure? Also, could not at least a few of the several commonly occurring North American migrant passerines have been squeezed into the plates somewhere?

The plates vary in quality. In several plates space has been used rather extravagantly, possibly at the cost of including additional species. In more than a few cases the margins are wide enough to suggest that the whole plate could have been reproduced substantially larger, using more of the total page area. This would have greatly improved several plates, particularly Plate II, where some of the figures are so small that distinctive differences in the plumage can hardly be seen. My personal familiarity with the birds of these islands leads me to suggest the following changes in the plates: (1) the coloration of *Geotrygon linearis* (Plate VI), *Turdus fumigatus* (Plate XXI) and *Habia rubica* (Plate XXVI); (2) the bill proportions of *Quiscalus lugubris* and *Scaphidura orizivora* (Plate XXII) and *Ramphocaenus melanurus* (Plate XVI); (3) the deletion of the partial collar in the female of *Cypseloides rutilus* (Plate IX) which as indicated in the text is usually lacking.

Text figures 36 and 37, which were clearly designed to aid in the field identification of the Lineated and Crimson-crested Woodpeckers, would have been more effectively presented on the same page. The captions for these figures appear to be reversed in that the streaked throat mentioned in the text for the Lineated Woodpecker appears in the figure labeled Crimson-crested, while the black throat of the Crimson-crested Woodpecker appears in the figure labeled Lineated Woodpecker.

It would have been a great help to have had page numbers of the species accounts included in the plate captions, and if reference had been made in the captions to the figure or portrait illustrating the other sex to that shown in the plate, or additional species in the same group.

The text is delightfully free of all but a few typographical errors. On the other hand the plates and their captions are a disaster area. In addition to the reversal of text figures 36 and 37, color plates 21 through 28 in my copy are in the improper sequence so that the captions which appear on the facing page are located from one to three pages before or after the appropriate plate. Such a mix-up in the positioning of the plates occurred in two of three copies I examined. The captions also include a case of two species receiving the same scientific name (Large-billed and Lesser Seed-finches, Plate XXVII); the omission of a specific epithet (Bellbird, Plate XII); and eleven misspellings of scientific names (9 plates). These sorts of errors are inexcusable. They are, however, easily correctable in future editions.

Despite these lapses, this book will be wanted by any birder visiting Trinidad and Tobago. Even though a handbook, its size (5 by 7½ inches), weight, illustrations, and price make it equally suitable as a field guide, and it will get its greatest use in this capacity. It will also gain a place on the bookshelf of many ornithologists not planning a visit, simply for the information it contains. As pointed out in the forward, it is all the more to Mr. ffrench's credit "that the very professional text of this book is an avocational work," a view I fully endorse. There is no doubt in my mind that this book will prove to be a superior competitor to previous works considering the avifauna of Trinidad and Tobago.—CHARLES T. COLLINS.

AMERICAN BIRD NAMES. By Ernest A. Choate. Gambit, Inc., Boston, 1973:xv + 261 pp. many bl. and wh. sketches. $6.95.—This is the second book within a year which sets out to give the meanings of the names of North American birds, both common and technical, and to give biographical information about the people whose names have become attached to birds. While flawed in a number of ways it is a much better job than the previous work ("Words for Birds" by E. S. Gruson, see Wilson Bull., 85:521–522, 1973, for a review) and it can be recommended to people who want such information.

In order to write such a book a would-be author must have reasonably authoritative knowledge in the Latin and Greek languages, in philology, in the history of the English language, the history of North America, the history of biology, the history of ornithology, and an understanding of the customs and rules of zoological nomenclature. Besides this formidable list, he must also have a broad knowledge of birds, and particularly of birds in the hand, since this is where most of the terms used in naming were discovered. Such authors will be few indeed (only Elliott Coues comes immediately to mind, and he too made many mistakes). Lacking such exhaustive knowledge mistakes are inevitable, and while Choate comes out better than most people who have made the attempt there are still a large number of errors of fact or interpretation. I will not enumerate these since it would serve little purpose. There are undoubtedly many errors that I am not aware of.

The book consists essentially of three alphabetical lists. The first of these discusses the origins of the so-called "Common Names." Dr. Choate, who is a retired teacher of English, has handled this section quite well, and in particular he has been most thorough in examining the origins of the bird nouns such as "thrush" or "sparrow." The origin of many names is unclear, and in many cases different authorities have advanced alternate

explanations. Choate has carefully dealt with these cases and in most cases he cites his sources. A welcome novelty in this section is the inclusion of the true "common" names (as opposed to the "birdbook" names) of some species. Thus we have such things as "High Hole" and "Blue Peter," but these names are usually only identified and often not explained.

The second section gives translations of the technical names, arranged by genus. In many cases the entry is limited to a simple translation of the several stems in the name, but usually some explanation is given as to why the name was used. The translations are, for the most part, well done, but Choate cannot resist the temptation, seemingly endemic in authors of this sort of work, to editorialize about how inappropriate some names are and to wax a little sarcastic about them. If the name comes out of classical mythology (e.g. *Progne*) Choate frequently relates the myth, often with some rather heavy-handed humor.

The final section gives brief biographical sketches of the people for whom the birds were named. While they serve to identify the eponyms, they are usually too brief to give much information, but, fortunately, they stick to the facts and omit the fanciful stories that so marred the Gruson book.

Choate attempts to keep the nomenclature up to date including the 32nd Supplement to the AOU Check-list (1973—erroneously given as 1953 in the bibliography) but he has overlooked the publication of a BOU Check-list (although not called by that name) more recent than the one of 1952. Choate has a serious misunderstanding about technical nomenclature and the International Code as illustrated by his remarks that actions of the International Commission are only advisory. In three places he attempts to explain the *Gavia-Colymbus-Podiceps* matter, but his three explanations all differ somewhat, and all can only leave the reader confused about what is after all a rather simple situation, now satisfactorily resolved.

In common with others who have written in a similar vein Choate seems to feel that bird names ought to make sense, ought to be appropriate, and ought to be useful. Isn't it time that we recognize that this is an unrealistic idea? Why should bird names make any more sense than the names of people? How many Smiths still work in metal and how many Millers still grind flour? None of my recent relatives have been servants at the lord's manor. These things don't bother us with these names, and why should we worry about such matters with bird names?

The editing and proofreading on the book have been minimal and there are many typos, misspellings, and slips of the pen e.g. "Bibliographical" = biographical; "Larson" = Lesson; and worst of all, the Black-throated Green Warbler is so called because of the "blue-black of the male's plumage."

The book is illustrated with a few woodcuts from Thomas Bewick's, "History of British Birds"—GEORGE A. HALL.

A SYMPOSIUM ON THE HOUSE SPARROW (*PASSER DOMESTICUS*) AND EUROPEAN TREE SPARROW (*P. MONTANUS*) IN NORTH AMERICA. S. Charles Kendeigh, chairman. Ornithological Monographs No. 14, American Ornithologists' Union, 1973:vi + 121 pp., 25 text figs., paper cover. $3.50 ($2.80 to AOU members. Obtainable from Burt L. Monroe, Jr., Box 23447, Anchorage, Ky. 40223).—The House Sparrow and the Tree Sparrow are, of all free-living birds, the most closely associated with mankind. It is to us that they owe their widespread distribution. Consciously or not, people have taken House Sparrows and, to a lesser extent, Tree Sparrows, with them wherever they went. By transforming

various natural habitats, from the far north to the equator, into an environment affected by human settlements, mankind provided conditions suitable for these sparrows. Within the old range of the House Sparrow in Europe, the spread of development over the land contributes to a prodigious increase in the density of House Sparrow populations. Consequently, in recent years this species has come under the scrutiny of ornithologists and other specialists.

Thanks to the activity of Kendeigh and his disciples in the United States, the House Sparrow has become the model species for many investigations. A Group on Granivorous Birds has been organized in the Section on Terrestrial Productivity of the International Biological Program, for a worldwide study of *Passer domesticus* and *P. montanus*. A symposium for discussion of up-to-date studies on these species in North America was held in 1969 at the 87th meeting of the American Ornithologists' Union at the University of Arkansas. The proceedings of that symposium, comprising 14 reports, have been published as the work here under review.

Chairman Kendeigh opened the symposium with a brief history of the evolution of the genus *Passer* and a discussion of the importance of studies on the House Sparrow. C. S. Robbins then presented a history of the introduction of the House Sparrow into North America, the continental spread of the species, and its present range and abundance.

J. C. Barlow discussed the introduction of the Tree Sparrow into the U.S. from Europe, a very different event from that of the House Sparrow. A few of these birds were brought over from Germany in 1870 and released in St. Louis, Missouri. Within a few years, the species occupied the whole town. As House Sparrows—introduced at the same time as the Tree Sparrows—increased, the latter were forced to withdraw from the central parts of the town, with the result that by the end of the decade, Tree Sparrows inhabited only the suburbs. During the ensuing century, the population of this species increased to 25,000 and occupied an area of 8500 square miles in Missouri and Illinois. This meager increase of the Tree Sparrow was due to competition from the House Sparrow. Barlow also compared color pattern and size between European and American populations of Tree Sparrows.

R. F. Johnston presented his findings on the variability of House Sparrows, focussing on the analysis of sexual dimorphism in the size of bones, particularly those which are associated with the intake of food.

W. Klitz estimated genetic variation in North American House Sparrow populations by electrophoretic detection of allelic differences, and found the birds to be genetically monomorphic.

Four reports dealt with the breeding biology and the movements of House Sparrows; three of these concentrated on the role of the birds in the epidemiology of western encephalitis. The phenology and number of broods, egg losses, and mortality of nestlings were followed, as well as the number of young reared by one pair of parents in a given breeding season.

Four reports continue the classical studies of Kendeigh on various aspects of the bioenergetics of the House Sparrow. C. R. Blem investigated the cold tolerance, insulation, energy balance, and body composition of sparrows collected at eleven different sites from southern Florida to northern Manitoba. He found various forms of acclimatization of the birds to different climatic conditions in the southern and northern parts of their range.

The following reports were published as abstracts: S. C. Kendeigh. "Environmental regulation of food intake by birds," F. H. Blackmore, "Seasonal variation in the energetics of molt in captive outdoor House Sparrows," C. L. Votava, E. W. Martin, and J. W.

Parrish, Jr., "Determination of the low critical partial pressure of oxygen for the House Sparrow," L. B. Barnett, "Seasonal changes in temperature acclimatization of the House Sparrow," and M. H. Clench, "Variability in the body pterylosis of *Passer domesticus* and allies."

This collection of reports includes two original papers published in their entirety—Blem's paper on the geographic variation in the bioenergetics of the House Sparrow, and Klitz's paper on the genetic variability in North American House Sparrows. The abstracts by Kendeigh and by Blackmore present much new and interesting material. The other reports, although not entirely original, supply important data for a current synthesis of the results achieved through the activity of the I.B.P. Working Group on Granivorous Birds.—JAN PINOWSKI.

BIRDS OF BIG BEND NATIONAL PARK AND VICINITY. By Roland H. Wauer. University of Texas Press, Austin and London, 1973:xv + 223 pp., col. paintings by Howard Rollin and Anne Pulich. $4.95.—This is a long-needed and useful volume for the legions visiting Big Bend National Park each year. The Park is the U.S. home of the Colima Warbler, and that species alone brings serious birders from afar for one of the southwest's richer avian experiences. With this book Wauer has helped a wide range of naturalists understand the general ecology of the Park and environs as well as locating the sites where life lists might be expanded. There is a fold-out map of considerable detail included for the pilgrim visitor to Big Bend. Two artists contributed color plates: Anne Pulich did the frontispiece of Lucifer Hummingbirds and Howard Rollin prepared a series of groupings framed against characteristic habitats (e.g. Birds of Pinyon-Juniper-Oak Woodlands). Rollin also produced a painting of a Colima Warbler facing the first page of text. This book is available only with durable soft cover in a size that should fit comfortably in the pockets of most field gear.

Big Bend is a land of rugged topography and abrupt altitudinal gradients, and of course these are the features that account for most of the diversity in the plant cover and the attendant avian communities. Wauer accordingly takes the necessary pains to acquaint the reader with the five major plant communities of the Park, including good quality color photographs, with one somewhat blurry exception (pg. 15), of representative habitats.

The importance of this region, and hence the book, can be drawn from the complete historical review of ornithological activity in the Big Bend beginning in 1901 with a summer visit by no less than Harry C. Oberholser, Vernon Bailey, and Louis Agassiz Fuertes. Yet, at Wauer's arrival in 1966, the list for the Park stood at 241 species; some 3500 hours of field work later, the author's list reached 385 species (including 26 hypotheticals)—nearly a 60% increase! Certainly the unique setting of this volume in one of the southwest's more picturesque environments, coupled with an expanded list of this magnitude, warrants treatment in book form. The author makes clear that his work is designed as a "where-to-go-to-find-what" instead of a field guide to bird identity. In this endeavor he has been most successful.

Following three introductory chapters dealing with the area's ornithological history, ecological descriptions of the area, and bird finding (at all seasons) is the main body composed of a 157 page annotated species list. The notes include the usual material on abundance (with definition of terms) and residential status (again, with definitions, pgs. 53–54). The occurrence of the more common species is given by months whereas those more rarely encountered are cited by dates of actual observation. Elevations, and/or

other habitat notes are provided as well as specific and colorful site locations (e.g. "Lost Mine Trail," "Panther Junction") where each species has been observed.

Changing nomenclature, the temporal plague of any author, has taken its toll here. The Thirty-second Supplement to the A.O.U. Check-list has rendered several of the species names obsolete in the short period since this book appeared, but this is no fault of the author's, merely a bane to the beginning student.

It is generally difficult to fault this book, and I can do so only with blunted blade. I find certain paintings by Rollin uniformly of less than good quality, although others are certainly well done. However, the lack of perspective and scale between species appearing on the same plate is the most serious drawback, and this alone detracts somewhat from the book's otherwise clear format. There is a transposition of sentences for the Black Hawk material (pg. 75) but this is the only typographical error I located in my examination of the text. I question the need for listing 93 species Wauer found during one 6-hour stint at the peak of spring migration (pg. 35) or the listing of species seen on various Christmas censuses (e.g. "A total of six species were recorded on thirteen of the Christmas counts . . ."; "Eight kinds of birds were recorded on nine of the Christmas counts . . ."; etc. on pages 51–52).

The index includes only the common names of birds, which may be contrary to the desires of some professional readers. In the bibliography (pg. 212) the species name in the title of Hubbard's (1969) paper is misspelled as "*cornota*" instead of "*coronata.*" Some literature citations use issue numbers whereas most do not; in one citation (Wauer 1969a) the journal is incorrectly listed as "Bull. of Texas Ornithologists Soc." instead of "Bull. of Texas Ornithological Soc."

But again, these are rather trivial detractions, and ornithologists of every ability will want—and enjoy—this fine book.—ERIC G. BOLEN.

TO RIDE THE WIND. By H. Albert Hochbaum. A Richard Bonnycastle Book, published by Harlequin Enterprises Ltd., 101 Duncan Mill Road, Don Mills, Ontario, Canada, 1973: 119 pp., 30 color paintings and many black-and-white drawings. $35.00.—

This outstanding book on North American waterfowl is in all its aspects a "carriage-trade" item, particularly so its retail price. The book fits no book size dimension (13 × 15 inches) but it comes close to *crown folio* (10 × 15 inches). The odd size is doubtless the result of fitting the colored illustrations to best advantage. There are 30 beautiful colored plates rendered in watercolor and egg tempera, and 40 black-and-white pen or scratch-board chapter vignettes. The paper, printing, and color reproduction are of high quality, but the binding appears weak. I saw a copy in a local bookstore that had become shaky on limited handling.

The preface, foreword and opening essay comprise 14 pages. There follows a three-season (winter omitted) grouping of five essays each. An appendix, including an index of the color plates, a glossary, and a bibliography (with historical annotation) conclude the offering.

The preface is given largely to acknowledgments. H. A. Hochbaum has always generously recognized all minor or tangential assistance in his writings. It was surprising therefore that even faint praise was missing for the major professors from 34 universities who guided the field research of the 77 graduate students that worked out of or at the Delta Waterfowl Research Station.

Sir Peter Scott's foreword is both scholarly and warmly complimentary. He and

the author of the book are firm friends and much alike as artists and waterfowl ecologists. They are a mutual admiration society of two where in each case the admiration is justly deserved.

The text is in story form, simple, informative, colorful, and easy to read. The author's prose is not unlike his painting—many brilliant flashes in a matrix of excellence.

His storytelling embodies unobtrusively all aspects of waterfowl biology including behavior, physiology, and ecology. The Canvasback and the Canada Goose are the two key species used to illustrate the dynamic vitality of waterfowl and the habitats they occupy.

The stories span the years and not all conditions unfolded in the stories hold today. For example, the stubbling flights to grain fields at Delta depicted in words and on canvas are today rare or nonexistent. Grain is still swathed, but the ducks are too few to produce a stubbling flight like those of the early 1950's. Like Ernest Thompson Seton, Hochbaum's narrative is often autobiographical, but nonetheless exciting for being so.

The waterfowl hunter will see himself in Hochbaum's word mirror in Chapter XV. Here too the protectionist will get an insight into the esthetics of hunting and learn of the soul-touching pleasure of wildfowling that some of us are affected or endowed with and how small a role killing plays in wildfowling.

Although crammed with scientific data, this is not a technical publication. There is no mention of confidence limits or correlation coefficients but, if challenged, there is no doubt that the author can quote page and verse to support his statistics.

The book ends on a sad note: the decline of the resource. The author deals at length with the role of the hunter and relatively little with the destruction of habitat, particularly those places where the best may be inadequate. He says (p. 104): "Waterfowl are different [from upland game birds]. Where their reproduction is diminished by drought, ducks, unlike grouse, do not spread their numbers thinly over a broad range. They come together. Even though the flock is not bolstered by a healthy increase of young, the old breeders congregate in the best places, where they make a big autumn show. Ducks are gregarious, as long as there are any at all, they join in flocks, conspicuous and vulnerable."

It is in this context that habitat and hunter must be regulated for the good of the resource and the benefits it produces. Hochbaum openly indicts the agencies responsible for waterfowl welfare as not always making the best judgments in spite of good intentions. His final word on international cooperation concerns the rebuilding of the Migratory Bird Treaty of 1916 between the U.S. and Canada to control ". . . the early-season killing of young ducks and their mothers. . . ."

The message is abundantly clear that the waterfowl resource is confronted with exploitation and loss of preferred habitat to a point where governmental agencies, the private sector, and the hunter himself must work together to preserve the waterfowl resource and perpetuate the sport of wildfowling.

Hochbaum, the artist, is not a calendar painter of pretty pictures; each of his paintings tells a story of time and place in duck ecology. In this regard his brush is equal, if not superior to, his pen. He has a kindred feeling for the moods of prairie skies and the way atmospheric colors play on one another and on his subjects. His birds never appear to be "stuck on" the background as afterthoughts. Most of his paintings deal with the somber colors of spring and fall vegetation against the backdrop of an onrushing sunrise or a deepening afterglow.

The third dimension in his paintings is created by a skillful use of distance perspective (p. 95), and like Francis Lee Jaques he has an understanding of how trees and shrubs are put together (p. 109, my favorite!).

No one will dispute the anatomy of a flying or swimming duck painted by Hochbaum any more than they would dare to question Sir Peter Scott on that aspect of artistic draftmanship.

If I must be critical, then I would have preferred a Greek orthodox church with Byzantine steeples in the prairie town, along with the Quonset architecture of the curling rink depicted in the painting on page 39, and Nan Mulder and I are disappointed that our paper on the history of the Delta Decoy did not rate a bibliographic citation. The black-and-white drawing (page 99) on the shooting of a Canvasback should have been omitted as it does not seem to fit the text or have rapport with the other illustrations.

This is a wonderful book by a superb painter and excellent writer. I said at the outset this was a "carriage-trade" item, and it is. My recommendation: Sell the carriage, and buy the book.—ROBERT A. MCCABE.

FEEDING AND THE FEEDING APPARATUS IN WADERS: A STUDY OF THE ANATOMY AND ADAPTATIONS IN THE CHARADRII. By Philip J. K. Burton. British Museum (Natural History), London, 1974:150 pp., 41 drawings. £3.50 ($8.40).—This is a careful and detailed analysis of the relationships between feeding habits and the anatomy of the feeding apparatus in shorebirds. Five species of varying habits are emphasized: The Golden Plover, *Pluvialis apricaria*; Redshank, *Tringa totanus*; Curlew, *Numenius arquata*; Dunlin, *Calidris alpina*; and Common Snipe, *Gallinago gallinago*. Field observations were made of their feeding behavior, and descriptions are given of their movements during foraging, including locomotion and various types of pecking and probing for food. These are analyzed quantitatively, as are stomach-content analyses of the foods taken. In this way detailed comparisons between the species is made possible, and the functional significance of both obvious and subtle anatomical differences is illuminated. The feeding of other species of Charadrii is described more briefly, much of it gleaned from the literature.

The anatomical portion of the study is unusually complete. The same five representative species were studied in detail, but comparative dissections are also reported on 118 species of Jacanidae, Rostratulidae, Haematopodidae, Charadriidae, Scolopacidae, Recurvirostridae, Phalaropodidae, Dromadidae, Burhinidae, Glareolidae, Thinocoridae, and Chionidae. Aspects studied include the bill form and length, ligaments, jaw musculature, tongue, hyoid skeleton and muscles, oral epidermis, salivary glands, and those cervical muscles which act on the head. Much of the study is devoted to a correlation of structure with function, including considerations of cranial kinesis, bill orientation, and muscle actions. The adaptive significance of the structural specializations of each form is analyzed much more thoroughly than is often the case in functional-anatomical studies, where behavior of the animals is usually not studied in the detail presented here. Forty-one clear line drawings illustrate the major anatomical features and variations discussed. An interesting innovation is the presentation of cross-sections of entire muscles with the internal aponeuroses clearly delineated and labelled, thus giving a new dimension to the usual presentation of the comparative anatomy of muscles.

Numerous taxonomic comments are scattered through the text, but Burton adopts a cautious approach and refrains from revising the whole group or from presenting a phylogeny of the forms studied. The taxonomic conclusions refer mainly to the proper placement of certain difficult taxa. This caution arises from a clear understanding of the problems of confusing adaptive and phylogenetic bases for morphological similarity;

that is, of distinguishing similarities due to common ancestry with those arising by convergence. A brief discussion of this problem concludes the book. Students of avian functional anatomy, and those interested in the relationships and biology of the Charadrii will find this a thoughtful and scholarly study of feeding adaptations in the shorebirds. —ROBERT J. RAIKOW.

THE LIFE OF THE HUMMINGBIRD. By Alexander F. Skutch, with illustrations by Arthur B. Singer. Crown Publishers, Inc., New York, 1973: 95 pp., col. ill. $9.95.—Hummingbirds, as Skutch clearly indicates in this book, have captured the fancy of bird enthusiasts for several centuries. Scientific studies of these birds have lagged a bit behind this popularity. In spite of a recent surge of scientific interest in hummingbird biology, as indicated by the references in the bibliography of this book, Skutch correctly notes that there are still many aspects that are in need of detailed investigation.

The factual material in this book is well-presented and very interesting, although Skutch apparently does not have access to recent work on hummingbird biology that has appeared in non-ornithological publications. Unfortunately, Skutch does not advance hummingbird biology with his uncritical acceptance of behavioral anecdotes. He apparently feels that there is something "special" about hummingbirds that permits flights of fancy in the interpretation of some of their behavior. For example, he tells a story about the interaction of "a" hummingbird and a convalescent man, in which the hummingbird supposedly followed the man on walks, calling his attention to interesting things along the way. Skutch concludes that the bird accompanied "the man because he liked his company." Such statements are not only not very enlightening, but also deflect bird watchers from thinking biologically about their observations. While such a story is "cute" and probably will help sell the book, it certainly is a disservice to readers.

Skutch seems to be sometimes unclear as to the level of sophistication of his anticipated audience. How many readers will know what a manakin is, or how many calories are released when a hummingbird uses one milliliter of oxygen? These criticisms are unpleasant to mention since Skutch has, in fact, provided a fairly modern treatment of much of hummingbird biology.

The artistic talents of Arthur Singer are evident, but some aspects of the figures were hurriedly done. It would have been helpful if plant identifications had been included in the figure legends. In addition, there are specific problems with several figures. The lower hummingbird in the figure on page 45 is not identified in the caption. In the same figure, it is not clear in the line drawing how the bird receives the pollen, since the stamens are not in contact with the bird in the lower picture and there is no indication of the location of the stamens in the upper picture. The caption on page 48 gives an incorrect range for the Long-tailed Hermit, although the range is given correctly on page 76. Careful editing should have removed such slips.

The high cost of the book in relation to the amount of text must represent the cost of reproducing Singer's paintings. In view of the price I cannot recommend this book either for the correct factual material it contains or for its paintings. This is unfortunate because Skutch is one of the few ornithologists actively studying hummingbirds in the tropics, where this extremely interesting group reaches its highest diversity of species, with their accompanying diversity of adaptations. — LARRY L. WOLF.

HISTORY OF THE BIRDS OF KINGSTON, ONTARIO. SECOND EDITION REVISED. By Helen R. Quilliam. Kingston Field Naturalists, 1973:209 pp., 28 photo plates, 2 maps. $4.95 postpaid. Available from The Kingston Field Naturalists, P.O. Box 831, Kingston, Ontario K7L 4X6, Canada.—This monumental little book is an example of the kind of publication to which all regional naturalists' clubs should aspire. Produced inexpensively by photo-offset from typed pages, with a large foldout map that pinpoints all the best bird-watching places, and 16 habitat photographs (including aerial views), this strongly-bound paperback contains a mass of revealing information. We learn that this area at the northeast end of Lake Ontario, 30 miles in radius (the arbitrary limits set to the book), often supports 245 species of birds in the course of a year and that, in historic times, 302 species have been recorded. Though deep in the Great Lakes deciduous forest region, it provides considerable diversity of habitat with extensive woodlands, farms that are reverting to woods, open fields, large numbers of lakes, beaver ponds, and marshes of various kinds. A promontory, Prince Edward Point, protrudes far into Lake Ontario and functions as a funnel through which migratory birds move in great numbers in spring and fall. The Kingston Field Naturalists have made this a special area of study, maintaining teams daily there in some years.

The explorer Samuel de Champlain, the first white man to visit the area, became lost there for several days in the autumn of 1615 while following and trying to identify a bird he had glimpsed. This, author Quilliam notes, is enough to endear him to the heart of all bird-watchers! The scientific study of Kingston birds can be said to have begun when Captain Henry Hadfield, an army officer, worked the area from August 1857 until May 1858. At a time when knowledge of North American birds was still in its infancy, Hadfield produced a number of articles for *The Zoologist*. In the 1890's, two avid naturalists and egg-collectors, the Reverend C. J. Young and Edwin Beaupré, joined forces and kept sets of records. In 1942, a paper on the birds of the area was published in *The Canadian Field Naturalist*.

The Kingston list contains most of the birds that might be expected in this region. About half the total are breeding species and the rest pass through on migration, winter in the area, or are chance occurrences. Thirteen new species have been added since the first (1965) edition of this work. Records show that there are marked fluctuations in abundance of various bird species from time to time, e.g. most pond and diving ducks increased from the time of Beaupré's surveys in the 1920's through to about 1965. The last seven years have shown a slow but sure increase in Shovelers and Gadwalls, with the first nest of the latter being found in 1972. Helen Quilliam's species accounts include historical notes, spring arrival dates, mention of breeding occurrences, and much general information on abundances and habitats. Any observer fortunate enough to have a work such as this to supplement his field guide is off to a flying start. It is hard to imagine any little work more likely to stimulate interest in birds in a regional community.—ALLEN KEAST.

BLACKBIRDS AND THE SOUTHERN RICE CROP. By Brooke Meanley. Resource Publication 100, U.S. Dept. of the Interior, Bureau of Sport Fisheries and Wildlife, Washington, D.C., 1971:64 pp., photographs and maps. Paper cover. $0.35.—"Blackbirds have been a problem to American rice growers since colonial times because man, by his culture of rice, creates food-rich ricefield marshes that apparently are more attractive to blackbirds than the natural marshes in which they have flourished for centuries." So begins this

report on blackbirds and rice-growing in the coastal prairies of Louisiana and Texas and in neighboring states. The major damage to the rice crop is caused by local populations of Red-winged Blackbirds (*Agelaius phoeniceus*), Brown-headed Cowbirds (*Molothrus ater*), Common Grackles (*Quiscalus quiscula*), and Boat-tailed Grackles (*Cassidix major*).

The report first gives information on migration and movements, seasonal numbers, and life expectancy of these birds. Nesting and feeding activities in the region are then described for each species, particularly in relation to rice growing. Rice is shown to constitute about 41 percent of the annual diet of Boat-tailed Grackles and about 46 percent of the diet for the other species, although the percentage of rice varies during the year. Usually a few fields are severely damaged, while most ripening fields are virtually untouched. "The greatest importance of bird damage to the rice crop is therefore the severe and sometimes financially crippling losses suffered by some farmers rather than the average loss over the area" (p. 43).

On the other hand, Meanley gives data which show that these blackbirds also consume large quantities of weedseeds and insects. From the end of harvest until the advent of spring seeding, the rice they eat is but waste grain. Hence, in spite of their depredations, the blackbirds have certain redeeming qualities. The problem for wildlife biologists has been how to assist rice farmers in reducing crop losses without unduly destroying birds or causing hazards to people and the environment. Biologists with the Bureau of Sport Fisheries and Wildlife have studied the problem since 1919, starting with E. R. Kalmbach in Louisiana. The present report is the latest of several on the subject, and is based primarily on Meanley's own investigations over the past twenty years.

He points out that "reducing bird damage is an integral part of rice culture, just as is insect or weed control" (p. 43) and goes on to describe effective methods of avoiding or reducing rice damage—cultural practices, frightening techniques, and trapping to reduce the numbers of blackbirds.

Meanley understands both the predicament of rice farmers and the desirability of not attempting to eradicate the blackbirds. His findings are clearly presented and carefully edited, but the photographs suffer from muddy reproduction and loss of details in the shadows. The report succeeds in providing information to its intended audience of farmers, agriculturists, and biologists about the rice/blackbird problem in the South. It is also a good case history for anyone who is concerned about conflicts between wildlife and mankind's use of the land.—PETER STETTENHEIM.

BIRDS OF THE WORLD. Revised Edition. By Paul Barruel. Translated by Phyllis Barclay Smith. Oxford University Press, New York, 1973: 222 pp., maps, 310 photographs and drawings, including 94 in color. $25.00.—"In spite of its title, this book is by no means a 'Birds of the World'. . . ." So wrote Josselyn Van Tyne (Wilson Bull. 67:227, 1955) in review of the first edition. Van Tyne suggested that the French edition's title, "The Life and Habits of Birds," should have been given to the English edition. This second English edition bears the subtitle "Their Life and Habits." Combined with the title, however, this only exaggerates the misnomer. Coverage of the world's birds is in no way intended in this edition either. For example, in the list of families of birds—from which "the less important groups have been omitted"—one finds the Fregatidae, Phaethontidae, and Anhingidae omitted from the Pelecaniformes and the sum total of only 17 families listed under the Passeriformes.

What, then, was the intention of the author? Phrases from the Preface narrow down his objectives: "to present a general picture of the biology of birds"; to "make pictures talk"; to "publish a beautiful collection of biological pictures."

There is no doubt as to the book being a collection of pictures. I count (there is no list of pictures in the table of contents) 186 black and white photographs, 86 color photographs, and 8 color plates. A great many of the photographs are indeed beautiful, quite a few would seem to be outstanding. The color plates convey their points vividly.

Five chatty chapters discuss daily activities, reproduction, migration, solitary and gregarious birds, and bird populations. The prose (I have seen only the translated edition) is presumably styled to the audience the book is written for—"as wide a public as possible." Errors in editing are few. The boobies of the color photograph of page 180, despite a bluish tinge which the feet appear to have, cannot be Blue-footed Boobies as captioned. I was unaware of there being "puffins" in Australia (p. 59).

The price of this book may discourage its purchase by the wide public the author professes desire to reach.—OSCAR T. OWRE.

POPULATIONS, MOVEMENTS AND SEASONAL DISTRIBUTION OF MERGANSERS. By A. J. Erskine. Canadian Wildlife Service Report Series Number 17, 1972: 36 pp., photographs, maps, graphs, paper cover. $1.00. (Obtainable from Information Canada, Ottawa, Canada. Catalogue No. CW65-8/17.)—This report is a compilation of data on mergansers (chiefly Common Mergansers) collected between 1957 and 1971. The author summarizes seasonal fluctuations of merganser numbers and movements on northern Cape Breton Island, Nova Scotia and evaluates the impact of systematic year-around shooting on the birds. Although data are presented for a 14 year period, variations in techniques, personnel, and effort limit most of the comparisons to the years 1960 through 1968, excluding 1964. There seems to be a positive correlation between the mean temperature during April and the hatching dates and subsequent fall flocking of young mergansers at bays and river mouths. There is also a significant reduction in the recovery rate of banded mergansers that were marked with nasal discs. The author points out a major weakness; no one set of data is complete for the entire study. To compensate, observational information is presented, but this tends to confuse and complicate the report and the findings. One conclusion is clear; year-around shooting of mergansers to reduce fish mortality within a watershed can significantly reduce the number of mergansers without having much effect on nearby watersheds. More data concerning merganser numbers after termination of shooting would have been desirable. The limited information suggests that repopulation may be slower than predicted. Although the impact of year-around shooting was one of the major objectives of this study, no data are presented concerning the total number of mergansers shot. The small samples and variable design also limit the statistical analyses that can be done. The author suggests that the 6 week span of merganser hatching dates is similar to that of other renesting species. Yet, based on his observations of Buffleheads, he states that mergansers probably do not renest. This conclusion ignores other cavity-nesting waterfowl species that do renest, such as Wood Ducks. More data on mergansers are necessary to resolve this conflict. The illustrations in the report are helpful and well done. The report is a good review of the literature published on mergansers.—HAROLD H. PRINCE.