

## REVIEWS

**The Parasitic Weaverbirds.**—Herbert Friedmann. 1960. Bulletin 223, Smithsonian Institution, United States National Museum, Washington, D.C. 196 pp., 16 plates (4 colored), 2 text figs. \$1.00.—This book is part of a general survey of the biology of avian brood parasitism, a subject that the author has been investigating for more than 30 years. Previous monographs on the subject by Friedmann include studies of the cowbirds (1929), the African cuckoos (1946), and the honey-guides (1955). The present monograph on the weaverbirds is of special interest in that this family best illustrates the probable mode of origin of the parasitic habit in birds.

The first 39 pages consider the general problem of the evolution of brood parasitism in weaverbirds, in relation to phylogeny, behavior, and adaptive features. The rest of the book describes the classification and biology of the parasitic weaverbirds, species by species. There are many excellent illustrations, an extensive bibliography, and a detailed and useful index.

Throughout the book all available evidence is critically evaluated before conclusions are put forth.

In his discussion of phylogeny of the Ploceidae the author points out the uncertainties in the taxonomic status of the peculiar Cuckoo Finch (*Anomalospiza imberbis*), which is parasitic largely on grass warblers, and is perhaps related to the euplectine weavers. The book largely deals with the Viduinae, and Friedmann agrees with Chapin and Sushkin in considering this subfamily to be most closely related to the estrildine finches. He does not agree with the conclusion of Steiner and certain others that the estrildines should be raised to family rank, and points out that the behavioral differences between the estrildines and other weaverbirds cited by Steiner are by no means so definite and trenchant as the latter author implied. After evaluating the various lines of evidence on this and related problems, Friedmann states: "Certainly passerine bird families are slightly marked at best, and to increase their number does not help to solve the elucidation of their relationships."

The viduines differ from the estrildines in that in so far as we know the former are all brood parasites. Many estrildines (10 species listed) often use old, abandoned nests of other kinds of birds, although these species sometimes make their own nests, and estrildines that normally incubate their own eggs may sometimes lay in nests of other weaverbirds. The combassous (*Hypochera*, here considered a subgenus of *Vidua*) are the most primitive viduines; in a wild state are habitual parasites, but in captivity have been known to pick up and manipulate nest materials and even to raise a brood of young, suggesting a relative ease of regression into a forsaken ancestral pattern.

Evidence is assembled suggesting that the specificity of brood parasitism in weaverbirds was exaggerated by R. Neunzig, who, on the basis of limited information, thought that each parasitic species very largely restricted its attentions to a single kind of host. The best known viduine, the Pin-tailed Widow Bird (*Vidua macroura*), is now known to parasitize at least 18 species of hosts, not all of them estrildines. The viewpoint is developed that the close similarity often seen between parasite and host in buccal markings and plumage could more appropriately be explained by community of descent rather than convergent evolution. Parental behavior seems quite uniform in the various estrildines, and this uniformity in parent-young relations may have facilitated origin of the parasitic habit.

Unlike most other brood parasites, such as cowbirds, cuckoos, and honey-guides, the young viduines exhibit no hostile or aggressive behavior toward their nest mates and grow up together with nestlings of the host species.

The author concludes that the loss of nest building combined with use of old,

deserted, or usurped nests was probably the underlying cause to the origin of brood parasitism in weaverbirds. Dependency on a host species was a crucial step, perhaps accompanied by decrease or total loss of broodiness with a shift in balance of endocrines and other physiological factors.

This book is based on much personal field experience and an intensive search of the literature, aided by an extensive correspondence with scientific colleagues. It is a model of scientific research in ornithology, and its small size belies the amount of information that it contains. Many biologists, besides those specifically interested in the general problem of avian brood parasitism, will look forward to the comprehensive comparative and interpretive summary of his many years of work on this problem that the author hopes eventually to publish.—NICHOLAS E. COLLIAS.

**Ecology of the Peregrine and Gyrfalcon Populations in Alaska.**—Tom J. Cade. 1960. University of California Publications in Zoology, 63 (3): 151–290.—This work exceeds in fulfilling the author's original purpose: extending and supplementing the North American peregrine (*Falco peregrinus*) studies of Hickey (*Auk*, 1942) and Bond (*Condor*, 1946). It is concerned primarily with the distribution, population structure, predatory habits, breeding biology, and behavior of both the peregrine and gyrfalcon (*F. rusticolus*) in Alaska.

Although Cade has surveyed the pertinent literature with meticulous care and gathered considerable unpublished material, most of this study is based on his own field observations. It would be worthy of accolade for one merely to gather such a mass of data on such "difficult" species and even more so since the study locality is one of the most inaccessible regions on our continent. In addition, Cade has presented his findings and analysis in a very readable, well-organized form.

Peregrines are found, where suitable nesting cliffs exist, throughout Alaska below 800 meters' altitude except for the Bering Sea region north of the Aleutians. The gyrfalcon range in Alaska lies mostly in the foothill tundra and Arctic alpine areas of northern Alaska, although some occur on the coast and islands of the Bering Sea. The principal regions of interspecific range overlap are in the foothills of the Arctic slope and portions of the Arctic coast. Cade argues convincingly for interspecific competition for nesting sites, with the gyrfalcon dominant over the peregrine. He believes that gyrfalcon breeding is largely a function of high ptarmigan (*Lagopus* sp.) populations and that peregrines, with less restricted feeding habits, move into gyrfalcon areas in years when gyrfalcons are unable to breed only to be displaced again in good gyrfalcon years.

Cade estimates the Alaskan peregrine population to be at least 600 breeding pairs, perhaps as many as 1,200 pairs and probably about 1,000 pairs, and the gyrfalcon population to be about 200 or 300 breeding pairs. He believes that the total peregrine population of the northern hemisphere could number about 30,000 individuals and that the total gyrfalcon population could not be much more than 5,000 individuals.

The discussion of breeding biology and predatory behavior is largely supplementary to existing literature.

He seriously questions the validity of Hickey's (1942) concept of the peregrine breeding cliff as an "ecological magnet" and believes that tradition and a strong pair bond offer a better explanation for nesting sites with a long history of occupancy.

Some of Cade's interpretations and conclusions are based on little information, e.g., he questions earlier depictions of the hunting technique of gyrfalcons, basing his argument on his observation of one (unsuccessful) gyrfalcon hunt, supplemented with information from correspondence with falconers. However, he presents his arguments

and supporting data in a straightforward manner, and even the casual reader will not be misled. His occasional reliance on the statements of falconers is perhaps open to question. Most of the falconers I have known are too enthusiastic over the sport in general and their falcons in particular to be a reliable source of scientific information. I trust that Cade selected his falconers well.

The rather free usage of the terminology of falconry in portions of the text may be offensive to some readers. I find these terms to be useful additions to the scientific vocabulary. This paper should be profitable and enjoyable reading for all students of the Arctic, predation, population dynamics, or the ecology and behavior of raptors.  
—HELMUT C. MUELLER.

**Atlas of Avian Hematology.**—Alfred M. Lucas and Casimir Jamroz. 1961. U.S. Department of Agriculture Monograph 25. U.S. Government Printing Office, Washington 25, D.C. 271 pp., 413 figs. (mostly colored), 24 tbls. \$4.00.—“An atlas of hematology is a picture book that functions as a dictionary.” This atlas is far more than a dictionary, however, and it is not often that a book of such scholarly attainment is published, particularly on birds.

The seven chapters are: 1. “General Remarks and Definitions” (includes an excellent discussion on methods of study and terminology of cell types); 2. “Circulating Blood of the Hatched Chicken”; 3. “Circulating Blood of the Embryo”; 4. “Blood Cells from Hematopoietic Organs of the Embryo”; 5. “Blood Cells from Bone Marrow of the Hatched Chicken”; 6. “Blood Cells of other Avian Species”; 7. “Technics for Avian Blood” (includes detailed discussions on microscopic technics, on procuring blood from embryos of various ages, on staining technics, and on making cell counts). Special attention is called to the fidelity in reproduction of the several hundred colored illustrations of blood cells, which is a high tribute to Mr. Jamroz’s original drawings and to Dr. Lucas’ painstaking care in seeing the plates through reproduction.

The authors point out that “in the avian field, we are just beginning a study of normal blood morphology and thus are now at the stage attained in the human field 50 to 75 years ago. When investigations on histology and anatomy in the mammalian and human fields were being vigorously pursued at about the turn of the century, the counterpart of such studies in the avian field was neglected, perhaps because it was not realized that the same kind of prerequisite information was needed to form the foundation for later exact investigations in poultry diseases, pathology, physiology, embryology, and nutrition.”

Some reviewers tend to ignore almost completely an author’s preface and, therefore, the purpose and scope of his work. I wish to comment on the suitability of the title *Atlas of Avian Hematology*. Dr. Lucas states (p. 202):

“Although this study has been concerned primarily with the blood of the chicken, the authors have not been unmindful of the requirement, implicit in the title of this volume, that attention be given to the blood of other species of birds.

“Specimens have been collected from other domestic birds and from wild birds. But cells from such specimens are illustrated and described only if they differ appreciably from cells found in chicken blood. There seemed to be no reason why a cell from another species should be illustrated and described if its counterpart in chicken blood could be readily located in the Atlas.”

The authors examined the blood of other species of birds, ranging from ducks and geese to passerine birds. They also present a thorough review of the literature, although an unfortunately long period of time was required to see this book through publication. Rather than being picayunish about the absence of references to a few

recent publications, the reader and the reviewer should bear in mind that a large portion of this book represents original work and that it undoubtedly will become a classic both in the fields of hematology and ornithology.—ANDREW J. BERGER.

**A Key to Florida Birds.**—Henry M. Stevenson. 1960. Peninsular Publishing Co., Tallahassee, Florida. 158 pp., 6 figs. \$4.00—Designed for the identification of Florida birds in the hand, this booklet includes keys to orders, families, and species; a systematic section, with brief descriptions and generalized statements of occurrence and abundance within the state; illustrated instructions for making bird skins; a glossary; and directions for taking measurements. It covers those species for which there are at least two "satisfactory" records from Florida, whether substantiated by specimens or not. Footnotes in the keys call attention to 25 additional species reported from single occurrences, but extinct and extirpated species are omitted.

An attempt is made to avoid key characters whose examination requires rough handling of specimens. The usually dichotomous keys appear workable, except that there is no way to reach couplet 15 in the key to the passerine families.

With loose-leaf plastic binding, the *Key* is attractively printed and remarkably free of typographical errors. It should serve the purpose for which it is intended, laboratory identification of local birds in certain advanced courses in zoology at Florida State University. Improvements that might be incorporated in future editions include avoidance of intermingling measurements in inches and millimeters; adoption of distinctive headings in the species list; expansion of the coverage to include all forms recorded from the state; and addition of brief summaries of extralimital ranges.—PIERCE BRODKORB.

**Etologi—En Introduktion till Studiet av Djurens Beteendemönster (Ethology—An Introduction to the Study of Animal Behavior Patterns).**—Eric Fabricius. 1961. Bonniers, Stockholm. 189 pp. S kr. 24.00.—The objective study of animal behavior has now become an established branch of the biological sciences, and universities with good standards of zoology teaching include this discipline in their curricula. Eric Fabricius has been teaching ethology for several years and has now placed a textbook in the hands of Scandinavian zoology students. In this, the basic principles of animal behavior are analyzed, together with their importance in the life history of animals. This is a compendium of the results that the Lorenz-Tinbergen school (no less, Fabricius himself) has accomplished in the last 20 years. The book is a textbook in the real sense of the word: *i.e.*, it reads extremely easily; its presentation has a "matter of fact" tone, backed up by copious examples. Moreover, although it refers to original papers on almost every page, the reader does not get a feeling of doubt about the discipline, nor is he lost in the intricacies of semantics that endanger the ethology of our decade (as well as other new branches of study). It is divided into 24 parts, which are organized in four major chapters covering all the important issues and applications of ethology; and avoiding many controversial details where future clarifications are still needed.

The first chapter deals with the fixed action patterns, innate releasing mechanism, the taxes and the maturing of instinctive activities. Next comes a chapter on learning, and then the organization of behavior, including a discussion of thinking and intelligence—a most stimulating and novel treatment—and an explanation of the hormonal and neurosecretory pathways underlying the manifested behavior, since the behavior of an animal is the sum of its adaptive reactions toward environmental factors (food, enemies, climate, social partners, etc.) and results in what we call the items of its

life history that fill its daily life around the clock (feeding, escaping, grooming, flocking, migratory, reproductive, territorial, and other activities). These headings are all covered with respect to the principles that the first three chapters discussed.

Most of the illustrations are reproduced from the now-classic ethological literature of the 20 years between 1938 and 1958, but many, especially photographs, are originals or are taken from the works of the author and his collaborators. The first-mentioned group of illustrations are familiar to readers of Tinbergen's *Study of Instinct*. However, the utilization of this unique book of the ethology school is understandable and hard to avoid, as is the reference to the same basic experimental work.

The ornithologist will find in this volume a guide to the understanding of bird behavior. Fabricius is a trained ornithologist and uses bird examples as frequently as those from his fish studies or from work on other groups of animals. I am certain that this handy book will soon be translated into English so that those who do not read a Scandinavian language may enjoy Fabricius' lucid treatment. Moreover, the reviewer feels that it sets an example (together with the other volumes of the series to which it belongs: "Scandinavian University Books") for North American textbook writers. We lack concise, easily read, and cheap university textbooks, which contain only as much as the student can digest in one or two semesters; which do not pretend to be monographs on the subject, but rather are essays covering only the basic knowledge; which are really only red threads to the lecture and practical material that they accompany.—MIKLOS D.F. UDVARDY.

**Nature's Year, the Seasons of Cape Cod.**—John Hay. 1961. Doubleday and Co., Inc., Garden City, New York. 199 pp.—This is a good book. It is a series of short, contemplative, and sincere essays by a sympathetic observer of the daily ordinary events, "the genre" of Cape Cod. Human activity is a remote backdrop, which appears occasionally beyond the oblivious activities of nature.

Cape Cod has been loved by a series of fine writers. Thoreau wrote when the Cape's soil and vegetation was reduced to its minimum by ignorant self-indulgent husbandry. Beston and Richardson wrote when it was in its happy stage of neglect and was slowly recovering temporary forests, but still it boasted expanses of loneliness. Now Hay writes when the Cape is under the sword of rediscovery.

It is strange, but true, in New England, that the descendants of the early settlers by and large see its value in what material benefits they can reap for present profit, with no thought for those who come after. Witness that the majority of Cape Codders opposed "the Park" because it would interfere with their real estate developments—summer colony slums. It has taken the despised "Outsiders" to love the Cape, to express their appreciation, and to urge that others be allowed to share it.

Those who have travelled the same paths in the low sandhills and gnarled woods, combed the high tide line under the same raw winds and clouds, must feel that John Hay is saying a lot of things that they wish they could say. I wonder whether they, like me, stumble when he breaks into his train of thought to explain to the urban and suburban peasants what he is talking about (e.g., a towhee's name, how to identify a Least Sandpiper, how many species of insects there are). Perhaps this is because Hay is a poet who disciplines himself to explain his dialect of natural history so that a "general audience" can follow him. A specialist can find mistakes, but it seems to me that to dwell upon them is to be pretty small.

Hay's sensitivity pours itself out in contrast to the indifference of animals to each other, to the indifference of summer people and local natives to the land as Hay sees it, to the cruel indifference of man to his land, and to the heedless indifference that

kills sea birds for the crassest of excuses—that it's easier and cheaper to pump oily bilges on shore than to clean them in port.

Scientists should read this to reawaken the appreciation that once may have started them on their studies or to awaken an appreciation that should pull them out of the mire of analysis, paring down, and reducing to insensitive parts and probabilities. We work so hard, seeking for the truth, that we need a poet to show why we are studying, to show that Beauty is Truth also.—WILLIAM H. DRURY, JR.

**Ökologische Beziehungen der Vögel und Gehölze (Ecological Relations of Birds and Trees).**—F. J. Turček. 1961. Slovakian Academy Press, Bratislava. 330 pp., 141 illus. Kcs. 28.00.—This book is an inventory of our knowledge about the relationships of temperate forest birds to the trees they inhabit. The author himself has a solid background of published studies and a wealth of field notes, to which he has added the results of other ecologists, mainly from Europe and the USSR. The bulk of the book contains a discussion of the diaspores that birds consume. The data are tabulated according to both the tree species affected and the diaspores that the different bird species eat. Analysis of the quality of this food (caloric value, etc.) and the quantities the birds use, a special discussion of poisonous seeds and fruits, comparison of conifer seeds and those of deciduous trees, and, finally the way digestive juices of birds affect them are also discussed. Leaves, shoots, and galls deserve special attention, as does the consumption of sap that was largely unknown in Europe before the studies of Turček. The second chapter evaluates the role of birds in dispersing the diaspores of trees, altering the constituency of forest stands, speeding succession, and influencing the edge woodland and brushland communities. Besides these aspects of ecological dispersion, the birds also affect the geographical distribution of trees. A short chapter analyzes and tabulates data about the kind of trees birds use for nesting, and a final chapter treats damage done to trees by birds.

The real thread throughout the monograph is the synecological point of view, another strong side of the author as judged from his published activities in the last 20 years. Trees affect birds, as food and nesting habitat, and the birds influence the forest community. It is a very fortunate combination that the author is an experienced forester as well as a competent vertebrate ecologist; hence this unique treatment of both parts of the relationship. The scarcity of North American literature citations is not the fault of the author, for he uses our standard references, and the sources of acorn-eating and sap-sucking habits of our avifauna. It is rather an indicator of the fact, which is well known to ornithologists living in forested North America, that ornithological and synecological interest is very slight among our foresters, and that, vice versa, we lack ornithologists with a good background in forest ecology, who could put the ecological relations, rather than the birds, into the focus of their interest. This excellent book is likely to stimulate much interest in those ornithologists and forester-naturalists who read German.—M. D. F. UDVARDY.

**Birds in Japan. A Field Guide.**—Yoshimaro Yamashina. 1961. Tokyo News Service, Kosoku Doro Bldg., 10 Ginza Nishi 8-chome, Chuo-ku, Tokyo, Japan. 233 pp., 22 figs., 132 colored plates. \$11.50 (USA) or 2,200 yen (Japan).—Dr. Yamashina's *Field Guide* gives a visitor to Japan an excellent introduction to Japanese birds, and this book should accompany anyone venturing to observe birds in these islands. The organization is unique, and the author has done well to make his book appropriate to the distinctive country and fauna that it treats. This volume includes pertinent introductory discussions on the evolution of the archipelago, geographic distribution,

migration, and the more important areas in which distinctive or rare birds occur; and these sections are followed by an illustrated account of species.

On arriving in Japan, the unindoctrinated bird watcher may be surprised to encounter the extent of ecological diversity and discontinuities in geographic distribution of plants and many animals. Dr. Yamashina's brief (illustrated) review of the geologic history of Japan recounts the irregular separation of the large islands from the adjacent Asiatic mainland and from each other, and explains how these events account, in some measure, for the development of several rather distinct avifaunas within this small country. This introduction includes an historical sketch of early and some recent major publications on Japanese ornithology, but the addition of complete citations would have been very helpful to readers who wish to pursue this matter. A list of references should be included in the next edition.

In a small country where transportation is rapid, one may, in a short time, visit many places of special ornithological interest. With this in mind, Dr. Yamashina has outlined many localities, beginning at northern Hokkaido and going systematically to southern Kyushu, where travellers can find some of the uncommon or more interesting Japanese birds. Many of these areas are private or governmental sanctuaries where birds are rigidly protected and consequently tame. Such areas are more important than they are in many western countries, for frequently birds in Japan are illegally killed on sight, and therefore are usually shy and not easily approached. The author expresses tender concern for the welfare and comfort of visiting bird watchers, and includes a guide to travel and accommodations. This is all quite to the point in view of the problems a western visitor might meet in searching for birds in Japan.

The bulk of this book is properly the account of species. The colored plates by the noted Shigezo Kobayashi are very lovely, and most of the distinctive birds are illustrated. For a field guide, the arrangement of the plates could be improved. These water colors show attractively and, for the most part, accurately, many of the birds in Japan. Binomial names are employed, and the author discusses geographic races only when they are distinctive under field conditions. Most of the species common to Japan and North America or Europe are not shown, and this is most unfortunate for many bird watchers in North America may not be familiar with some of the species in Europe, and vice versa. Moreover, the publishers have omitted plates for some species found in neither area. A much more useful arrangement of the illustrations would be to place related or similar species together, in one plate, so as to emphasize the points of difference. For example, some of the many species of *Emberiza* are shown in color, some in black and white (in a different section of the book), and others are not illustrated at all; and from the paintings in Dr. Yamashina's *Guide*, identification of buntings in Japan becomes a bit of a guessing game. Many of the birds that are commonly seen in flight—waterfowl, waders, and raptors—could be so illustrated, pointing out their distinctive flight patterns. The account of species contains far more information than one expects in a field guide; and the comments on ranges, habitats, and habits enrich one's acquaintance with the birds that may be very difficult to observe.

This field guide is somewhat large for the average pocket: it measures 6½ by 8½ inches, and the price in the United States is \$11.50. The prospective visitor to Japan is urged to buy this useful book after his arrival when it will cost approximately \$6.10.—E. W. JAMESON, JR.

**Alexander Wilson: Naturalist and Pioneer.**—Robert Cantwell. 1961. J. B. Lippincott Co., Philadelphia and New York. 319 pp., 8 colored plates, 16 black and white plates. \$15.00.—This handsome book measures 9 by 12 inches. Its color plates,

reproductions from the first edition of Wilson's *American Ornithology*, are welcome and are as successful as can be expected. They show Wilson's untheatrical technique at its most favorable, for the best of these simply posed figures glow with life. Twelve uncolored plates also copy illustrations from Wilson's great work. Unfortunately, their reproduction is less satisfactory than that of the color plates.

The biography itself, together with several blank pages and decorative drawings by Robert Ball, occupies pages 15 to 262. Poetical and legal documents concerning Wilson's trial for libel, an annotated list of the subscribers to the *American Ornithology*, a list of sources, and an index complete the book.

The book is well written (except for the use of "dove" as the past tense of dive), interesting, and perceptive. There is abundant evidence that Cantwell has studied his background material; he has used that material, both Scottish and American in both its social and geographic aspects, in a way that sounds convincing. That he tells a little more than I want to know about irrelevant politicians (James Thompson Callendar, for example), that he sometimes promises more than the fragmented evidence can prove—these faults I can easily forgive. He does catch the significance of Alexander Wilson as a man who helped put nature into the national consciousness.

There is, then, in Cantwell's book a message that I hope naturalists will not miss. As for ornithologists, skilled or amateur, they will be hard put to follow the author when he is talking about birds. There is not a binomial scientific name in the work, and the common names appear to be Wilson's, not those of today. For all the great Wilsonian influence on common names, one finds it difficult to assimilate such names as pine creeper, pewit, ruby-crowned wren, white stork, partridge, snowbird, red duck, red-winged starling, pine creeping warbler, red-eyed flycatcher, brown thrush, golden ground thrush, purple grosbeak, sea eagle, etc. Even such a good common name as "wild celery," the favorite food of canvasbacks, is avoided: the plant becomes instead "a reed with a root that resembled celery."

Ornithological lapses are not merely nominal. The "dusky brown wood thrush arrived about April 20," but on the following page it becomes an unknown bird, "the size of a jay or a wren. . . ." The snow bunting is "tawny brown in spring and white in winter." Canada jays are larger than blue jays. We hear of "the deep slate and pale light blue of the cedarbird." Ospreys always arrived on the Delaware River on March 21. Canada geese migrate, "led by an old gander." The author writes of Carolina Parakeets as flocks of "bright yellow birds." He fails to remark upon Wilson's unusual record of Chuck-will's-widows singing at Petersburg, Virginia, in January.

The book has neither footnotes nor citations to authority, despite an ample use of quoted matter and a fairly adequate bibliography. George Ord, for instance, is given a most unusual shellacking, and one has no idea upon whose word. Citations cannot have been eliminated to save space; good use has not been made of space available: many eminently legible works, with pages of the same size, have fully one third more words per page. Is this a sop to a "popular" audience? The usefulness of the book to serious readers has been impaired.

It becomes clear that critical evaluation of Wilson's great contributions to bird study can hardly be expected. On the other hand, the author's welding of background materials from many sources into interesting narrative is not only adroit but usually convincing. Cantwell's new interpretations of Wilson's motives in his youthful libel suit, his versions of Wilson's death and of Wilson's connections with George Ord, and his summary dismissal of Audubon from a biography of Alexander Wilson seem plausible and justified. He is more cautious than most authors as to Wilson's love



interests. There are debatable points, of course: to say that Catesby was writing for the men of Queen Anne's day is a little wide of the mark, for that lady died some 15 years before Catesby's first volume was finished. Too, the implication in the caption to Plate 7 is that the "Carolina parrot" shown there was drawn from the charming Poll that Wilson carried overland from the Ohio River to New Orleans in 1810. That bird was lost at sea, as Wilson tells us, although the model was a western bird, perhaps purchased in New Orleans, whose skin, now in the Museum of Comparative Zoology, has been identified as that of a Louisiana Parakeet.

I enjoyed reading this account of Wilson and his time; so, I think, will any other reader. Yet my need for a trustworthy, complete, annotated, critically evaluated collection of Wilson's works has not been met. How can we be content until modern genius does for Wilson what Francis Harper has done for John and William Bartram?  
---DANIEL MCKINLEY.

**Sex Ratios and Age Ratios in North American Ducks.**—F. C. Bellrose, T. C. Scott, A. S. Hawkins, and J. B. Low. Illinois Natural History Survey Bulletin, Vol. 26, Article 6, pp. 391-474. Urbana, Illinois. \$1.00 (checks payable to University of Illinois).—This bulletin is by far the most elaborate and comprehensive of any of the publications dealing with waterfowl age and sex ratios that have appeared to date, and represents the presentation and analysis of sex and age ratio data accumulated by the Illinois Natural History Survey over the last 24 years. The several people concerned are to be congratulated for bringing this material into publishable form, and it is commendable that the National Science Foundation undertook the printing costs of this extensively tabulated and illustrated bulletin.

The amount of numerical data included in this report is almost overwhelming; a rough tally indicates that, for example, sex ratio data are summarized for about the following numbers of birds from the various data sources: direct observation, 230,000; hunters' bags, 130,000; banding, 120,000; and disease mortality (lead poisoning, fowl cholera, botulism), 40,000. These data are examined from nearly all possible angles, and statistical tests are indicated wherever necessary. Important findings include the confirmation that banding traps do produce biased sex ratio data (which vary with the type of trap used), that hunters' kill records are only slightly biased in favor of drakes, and that sex ratio counts by direct observation are difficult to achieve for large populations except during spring, when habitat preferences of mated vs. non-mated segments of the population make random counts almost impossible. Data on diseased victims were considered inadequate to evaluate relative susceptibility of the sexes to disease. The authors suggest, as have previous writers, that the probable reason for unbalanced sex ratios in the adult populations is the result of increased vulnerability of females during the breeding season. In line with this, they found a correlation between relative productivity and degree of imbalance of sex ratios; species with high productivity have a large juvenile segment and thus a nearly balanced sex ratio. They found that juveniles are more vulnerable to hunting than adults, but that this vulnerability varied with time and between species. Redheads, Canvasbacks, and Baldpates appear to have especially high juvenile vulnerability. In the Mallard and Pintail a remarkably close correlation between estimated summer productivity and percentage juveniles in hunters' bags occurred, indicating that age ratio studies should be intensified as a technique for judging population trends. It seems clear from this fine paper that if we are to preserve such species as the Redhead and Canvasback, which have high juvenile vulnerability and require optimum breeding conditions, we must not only manage our breeding areas more effectively but also look to ways of

modifying hunting regulations in order to protect the potential breeders represented by juvenile females.—PAUL A. JOHNSGARD.

**Birds of the World.**—Oliver L. Austin, Jr., with illustrations by Arthur Singer. 1961. Golden Press, New York.  $10 \times 13\frac{1}{4}$  in., 316 pp., 300 color pictures of birds in text, colored end papers showing eggs and young, many colored range maps. First edition \$14.95; subsequent editions or printings \$17.50; Golden Craft edition \$11.98.—The author of *Birds of the World* informs me that the public's response to the pre-publication advertising "fliers" was so good that a printing of 158,000 copies of the book was decided upon. This publication figure is in a field where a pressrun of 20,000 copies is often thought of as saturating the potential market. Further, the book is being translated into French. The reason for this success is not difficult to find: the book is large; the wonderful colored pictures that decorate nearly every page and are vignettted into the text often show colorful groups of birds in interesting or even exciting design; the text is forthright, interesting and informative, and with flashes of humor.

The basic plan is a family-by-family treatment. Under each family, of which 155 are used, the coverage often includes the number of species, their general appearance, range, habitat, feeding and nesting habits. Often interesting aspects of the relation of birds to man are presented, and of these the freshest are those from Japan, where the author has had field experience. The volume closes with a useful list of selected references and an index.

As a popular, descriptive survey of the bird world, this book is bright enough, but perhaps too heavy and expensive for a gift to young Jimmy who is just beginning to have an interest in natural history. But it is lavish enough for a gift to wealthy great-aunt Matilda who feeds birds. It is also worth a place on the reference shelf of birders who want a background knowledge of birds of the world. The only drawback is that it will not go on any bookshelf, at least not on mine, and its size and weight ( $5\frac{1}{2}$  pounds) make it difficult to use. But of course larger books are becoming fashionable again, and if this one were not large, it would not be the book it is.

Being a successful popular book, *Birds of the World* will inevitably be used by many, in schools and libraries, as a reference book, and by some encyclopedists as a source book. Thus, some critical comment is in order. With over 8,000, perhaps as many as 10,000, species of living birds, and the number of published papers on birds exceeding 2,000 some years, as listed in the *Zoological Record*, it is obvious that only selected material can be used, and no two people would select the same items. Certainly a great volume of pertinent material is included.

In presenting such an array of knowledge of species and groups, the arrangement is important. In general, it follows Wetmore's classification, with innovations by the author. The book begins with kiwis and ostrich and ends with perching birds. In the higher perching birds, where innovations are especially evident, the crows are placed early and the arrangement ends with the seedeaters grouped in two families, Fringillidae and Ploceidae, here labeled new world seedeaters and old world seedeaters. Most of the "tree trunk" birds are put in one ecological family, Sittidae, but strangely the creepers of the genus *Certhia* and the titmice (*Parus* and near relatives) are kept in two separate families. On the other hand, the old world "flower feeders," sun birds, honeyeaters, white eyes, and flowerpeckers are kept separated into four adjacent families, and the new world honeycreepers are divided between the wood warblers and the tanagers. Each of these steps by itself can be defended even if consistency is not maintained, and all this points up the lack of a single, really satisfactory system.

Within the families the arrangement is various, based upon interest, size, relationship, or some other aspect. The sparse use of scientific names makes critical evaluation difficult; for example, it is hard to know what love birds are when they include the eclectus parrots, or what the green broad bill of Africa is when it has been stated that the green broad bills are Oriental. Sometimes when subfamilies are merged for ease of treatment, as in the cuckoos where coucals and couas are grouped and then treated on the basis of coucal characters, the result is not happy. Some little-known groups from out-of-the-way parts of the world (for example, the ground jays (*Podoces*) of the crow family) are left out even though they are rather different from the rest of the family.

Writing of this sort demands diversity of treatment. Also the families vary greatly in size (from a single species to several hundred), in variety, and in information available to the writer. This of necessity gives very uneven treatment. Some medium-sized families have good summaries; in some families the encyclopedia writing trick is used: some generalities are given and then much space devoted to a few better-known species—this is especially noticeable with the Common Tern and the Starling; subgroups are sometimes treated within the family with little synthesis. In most cases the family write-ups are good to adequate, but in one, the Guinea Fowl, it is quite inadequate.

An annoying feature of the text is the considerable number of minor errors of various sorts. There are misprints, some of which may be corrected in later pressruns, and there are slips of the pen, as the Ross' Gull with a forked (instead of pointed) tail. Hasty writing has resulted in contradictions in the text: pigeons are said to be fine eating "without exception," but eight lines later one is said to be "distasteful." A carelessly added word for effect adds error, as the "yellow" in the account of nightjars, which ". . . keep their large yellow eyes closed. . . ." Apparently just a poor choice of words is responsible for the Ruffed Grouse being considered "monogamous." Generalizations are made boldly when a qualified, more cautious statement would have been better: "The common chough nests on ledges along inaccessible sea cliffs" (true in Britain but not in the Himalayas); "Gulls nest on the ground. . . ." (but some nest in trees); "Ptarmigans are unique in having the toes as well as the tarsus completely feathered. . . ." (how about some owls and some sand grouse); all *Sittas* except the Rock Nuthatch nest in natural holes in trees (the Red-breasted Nuthatch usually excavates its own nest cavity). Outright misstatements are less common but need to be watched for. Thus, Barn Owls are said not to reach oceanic islands (they do reach the central Pacific Islands), and the downy young of mesitae are said to be black like young rails (one of them at least is brown and white).

There are items that will justifiably cause raised eyebrows: the vulture, which learns of the existence of food perhaps by some telepathic sense (extremely improbable); the Swallow-tailed Kite, which has disappeared over much of its range in the United States because the "rate of reproduction is not high enough to balance the mortality in the adult population" (true, but hardly an elucidation); young, nestling, oil birds "become helpless masses of fat, which they do not shed until their flight feathers mature" (very odd); the logrunners of Australia rake the ground with the spiny tips of their tails in searching for food (most unusual); and some pigeons' jaws have "elastic sockets" (odd!).

The author and the artist have produced a handsome work that should do much to spread a knowledge of the birds of the world. It is unfortunate that the number of errors make it necessary to warn that as a reference book it must be used with more than ordinary caution.—A. L. RAND.

## PAPERBACKS

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

*John and William Bartram's America*, Helen Gere Cruickshank, Editor (Devin-Adair, 1957), \$1.45.

*The Wandering Albatross*, William Jameson (Revised Edition, originally published by Ruper Hart-Davis, 1958), \$0.95.

*John Burroughs' America*, Farida A. Wiley, Editor (Devin-Adair, 1951), \$1.45.

*Shearwaters*, R. M. Lockley (Dent, 1947), \$1.25.