

ORNITHOLOGICAL LITERATURE

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THE GANNET. By Bryan Nelson. Buteo Books, Vermillion, South Dakota, 1978:336 pp., 62 figs., 32 tables, 32 plates and numerous line drawings. \$25.00.—Bryan Nelson, who erased any doubts that he is the world authority on sulids by publishing *The Sulidae: Gannets and Boobies*, has favored us with a less imposing and perhaps more useful volume on his favored sulids, the gannets. The bulk of the book is about North Atlantic gannets (*Sula [bassana] bassana*), but available information on Australasian and African forms (*S. serrator* and *S. capensis*) is incorporated extensively. After a brief introduction to the basic gannet and its nomenclature, 7 chapters describe the birds in much more detail—recount distribution and numbers, analyze breeding behavior and ecology in a chapter each, follow gannets at sea, compare members of the order and family to which gannets belong, and chronicle relationships between gannets and humans.

Descriptions include distinctions among the 3 gannet species and, for the North Atlantic form, useful details of both the sequence and variability found in subadult plumages.

All known counts of the 34 currently active and several defunct North Atlantic gannetries are discussed. Numbers of Australasian and African gannets are tabulated without discussion. It is encouraging to learn that most European gannetries are growing and that several new ones have been found in recent times. Western Atlantic populations, unfortunately, appear to be retarded by chemical contaminants in their recovery from severe human exploitation. Nelson's estimate of around half a million North Atlantic gannets is unarguably one of the most accurate for a major sea bird, and the details given provide basic data for future studies.

Nelson's long experience with Bass Rock gannets provides the basis for his analysis of breeding behavior and ecology. He carefully interprets morphological and behavioral adaptations that have enabled North Atlantic gannets to live in cold waters on seasonally abundant, relatively large fish. Examples of these adaptations are: the gannet's large size, which enables it to handle large fish and requires that it nest on cliffs; its strongly seasonal and closely synchronized breeding seasons; and its slow sexual maturation. Breeding synchrony is reinforced by social stimulation, which accounts for the evolution of dense nesting colonies and complex behaviors, including intense aggression, that occur there. Information on gannets at sea is far less complete, but Nelson integrates data from band returns, direct observations and the scanty knowledge of fish populations and distribution to complete his discussion of the ecology of the largest sea-going plunge diver. A brief but comprehensive review of the order and family to which gannets belong sharpens the contrast between Atlantic gannets and their near relatives, which inhabit warmer waters and feed on smaller prey. The overview of the other sulids, including fossil forms, is no substitute for the larger book on the family, but it should serve as a good introduction. A number of excellent figures and tables summarize comparisons.

The chapter titled "The gannet and man" is a mix of history, literature, sociology and aesthetics. Missing is any mention of scientific uses of gannets, such as Donald Griffin's exploitation of their gleaming white plumage, an adaptation for communal feeding, in his efforts to learn how they navigate by following displaced birds as they made their way homeward from interior Maine. Human threats to gannets have changed from exploitation for meat and eggs to dangers from oil spills, fish nets and overzealous birders. The future may see competition with man as North Atlantic fish stocks are depleted.

Outright errors are few, but the statement (page 69) "Black-browed Albatrosses are the most likely member of their redoubtable family to be met in the northern hemisphere . . ."

should read, “. . . North Atlantic . . .” in deference to the 3 resident North Pacific albatrosses. Also erroneous is the statement (page 254) that Brown Boobies (*Sula leucogaster*) never rear twins (see Atoll Res. Bull. 192:221–222, 1976).

John Busby's superb line drawings, the watercolor on the jacket and the sequential plunge dive on the spine highlight the book. The excellent black and white photographs add measurably to the text, but are difficult to correlate because they are not referred to by number, and not all are in sequence with the text. Reference to a plate of Bonaventure Island (page 79) seems to have survived a cut which eliminated the plate itself.

In addition to numbered references, there is a chronologically arranged “Annotated select bibliography” of 35 early works, some of them also listed as references. An additional 3 page bibliography lists works not referred to in the text. The book is adequately indexed and each chapter, except the last, has a useful summary.

I suspect that Nelson's hope “. . . that many copies will even see a gannetry in the flesh,” will have been realized long since. No better guide to the seeming confusion and turmoil of a seabird colony can be imagined than the sympathetic insights of Bryan Nelson.—PHILIP C. SHELTON.

GREENSHANKS. By Desmond and Maimie Nethersole-Thompson. Buteo Books, Vermillion, South Dakota, 1979:379 pp, 44 color plates, drawings, photographs, sonagrams. \$27.50.—In 1932, Desmond Nethersole-Thompson began his studies of one of Britain's most elusive birds. In 1950, after 17 years of fieldwork, appeared *The Greenshank*, by any measure the most detailed monograph on any wader, and one which seemingly answered every question that might be asked about the species. He then turned his attention elsewhere, but in 1964, with the collaboration of his wife, Maimie, and large family, resumed his studies. The present book, published in 1979, nearly 5 decades (!) after the start of his investigations, is a revision as well as a supplement to the original. It is the impressive culmination of more than 30 years of active field studies on a single species—a remarkable event—and will become an essential reference for shorebird biologists.

Greenshanks (*Tringa nebularia*) are hard to study, and a less diligent person would have long since given up in total frustration. Just finding the nest may require days of concentrated effort. The male chooses a nesting area which may be up to 2½ miles from his courting territory, where pairing occurs. The female is led to the nesting area, where she selects among the scrapes previously prepared by the male and takes over defense of the territory. Incidentally, this seems an unequivocal case of mate selection based solely on sexual characters and having nothing to do with a presumed “assessment” of the “quality” of the nesting territory. The male accompanies the female when the first egg is laid; both share incubation, the female incubating by day, the male by night and nest relief occurs only once at 2 times each day. Parents remain with the brood for about 4 weeks, after which time the female departs.

The strength of the book lies in the wealth of detailed information that has been gathered over a sufficiently long period that variability can be appreciated. Data on mate and nest-site tenacity, behaviors which are far commoner in birds than is generally recognized, are exceptional. Interestingly, the same nest scrape may be reoccupied after a hiatus of several years by birds new to the region, showing that certain habitat configurations are sufficiently superior—even for a ground-nesting species—to be selected *de novo*. The nature of the desirable characteristics remains to be worked out.

Population fluctuations of significant magnitude occur regularly. In one area, the number of breeding pairs varied from 6–7 to 20–23 over 14 years, though there was no apparent explanation for the changes. No species will experience an unbounded series of “good” years, and increases as well as declines are normal events. This seems to have been forgotten by an increasing number of people who consider any decrease as grounds for federal intervention.

The detail of the fieldwork is well exemplified by the data on brood dispersal, which are almost impossible to find in other studies. In some shorebirds (e.g., Common Snipe [*Gallinago gallinago*]) the parents are alleged to divide the brood, each taking 2 young; this is usually interpreted as an adaptive response that acts to minimize the risks of predation. I have never been convinced about either the evidence of that event or its explanation, and the Nethersole-Thompsons’ observations reinforce my skepticism. If hatching is prolonged, one parent may wander away with the early-hatching chicks, while the other remains with the pipping eggs. Later, however, the family will reunite. Thus, in the Greenshank at least the “brood division” is only apparent—a temporary consequence of the normal hatching pattern.

Good research requires the gathering of detailed information, but good writing does not require that all of the data be presented. The book’s major shortcoming is that it lacks synthesis or analysis. Basically, it is a compendium of descriptions, a book for reference but not for reading. Constantly I found myself wishing for a chapter summary or the author’s interpretation of the average condition of some event. It has long been known, for example, that the shapes and coloration of eggs may be sufficiently distinctive to allow the identification of individual hens. Yet the Nethersole-Thompsons present many examples and descriptions, when a single statement would suffice. An entire chapter is devoted to vocalization, with descriptions and sonagrams of 59 calls of everything from the sound of a pipping chick to the variety of adult notes. Yet, there is no attempt at analysis or to use the sonagrams to study the ontogeny of vocalizations. One gets the impression that the sonagram is a wonderful new toy, its scientific application unappreciated. Tabular material (mostly raw data and superfluous to the presentation) and appendices compose 43 pages (17% of the book).

There is no doubt that this is a classic book, both in the exhaustive coverage of the subject and in the personal flavor of much of the narrative. It is a monument to dedication and probably represents the end of an era in field studies. I cannot conceive that anyone will ever deliberately undertake further studies of this duration. It will be sufficient if someone will take up the challenge to make a short term comparative study of the Greater Yellowlegs (*Tringa melanoleuca*), the Greenshank’s new world counterpart.—J. R. JEHL, JR.

THE ROLE OF INSECTIVOROUS BIRDS IN FOREST ECOSYSTEMS. By James G. Dickson, Richard N. Connor, Robert R. Fleet, Jerome A. Jackson and James C. Kroll (eds.). Academic Press, Inc., New York, New York, 1979:381 pp., with figs. and tables. \$24.00.—This book results from a symposium held in July 1978. It reached print in less than 1 year, using the “rapid manuscript reproduction” technique. This requires a camera-ready typescript, and the end result will be as professional as the material provided by the contributors. Unfortunately, frequent typos (or, perhaps genuine spelling errors) occur throughout. In other places corrections have been made without lining them up to the rest of the page. The overall result is a product that often does not look very professional.

The stated purpose of the volume was to provide information on the ecology of insectivorous birds and their roles in forest ecosystems. It consists of 20 papers, divided into an

introduction, censusing techniques, sampling prey populations, foraging strategies, ecology and conclusions. The references are in abbreviated form, meaning that there are no titles for the research papers cited, a format that will no doubt disappoint some, as will the absence of an index.

How successful is this book in accomplishing its stated purpose? In general, it is a distinct disappointment; some papers are only marginally appropriate to the stated theme (e.g., Coulson et al.'s paper on bark beetles), while others are so superficial as to be of limited value. Whiting's paper on feeding niche partitioning of chickadees (*Parus*) and titmice attempts to cover a problem that has already been explored by several others in far greater detail. He tries to draw detailed conclusions from a data set that is far too small for meaningful analysis (it could have been gathered in 1 afternoon). Whiting concludes that his birds are more specialized in their foraging than has generally been believed. Using the minute data set presented, however, it is unlikely that he could have come to any other conclusion. In general, this study more closely resembles a pilot run than a polished scientific contribution. Other papers share these shortcomings to varying degrees. Several appear to be dumped sections of theses, not appropriate for a symposium volume (at least in their present form) and others show duplication to varying degrees. McClelland's contribution on Pileated Woodpeckers (*Dryocopus pileatus*) includes 3 full-page studio photographs (2 of Pileated Woodpeckers, 1 of a Screech Owl (*Otus asio*)) that are inappropriate to this type of presentation. Perhaps the editors or convenors of the symposium are as much to blame as the authors for letting many of these papers be published in their present form.

Having commented thus far on what this compilation is not, let me dwell on what I consider to be bona fide contributions to the literature. A few papers make substantial contributions of high quality. My measure of quality is that a paper would pass the editors of either a major ornithological or ecological journal with little modification. Jackson provides an interesting discussion of the structure of bark and its consequent qualities as a colonizing site for insects and foraging site for birds. Grubb makes the sensible point that optimal foraging theory, about which there is currently so much ballyhoo, may be most useful in forming a behavioral baseline against which observed foraging patterns can be compared. In the few other places where this trendy new theory is brought up in the book, one does not usually see a similarly critical approach. Pinkowski makes some interesting comparisons of bluebird (*Sialia*) foraging patterns as a function of foliage changes that take place over the period of a breeding season. He makes a plea for studies that take place in more than 1 area and for more than 1 year; some of the best advice that could be given to workers in foraging ecology. However, Pinkowski makes assumptions about competition for food between different bluebird species in areas of geographical overlap that seem open to alternative explanations, particularly for species that are hole-nesters. In an unjustifiably long paper of 43 pages, Dahlsten and Copper report on the demography of Mountain Chickadees (*Parus gambeli*). They got this species to use nest boxes with high frequency in comparison to levels expected from chickadees and titmice in eastern North America. In fact, their success approximates that reported from Europe and the British Isles for Great Tits (*P. major*) and Blue Tits (*P. caeruleus*). Thus, they are able to provide some of the first life-table information for North American parids. Most of the values are very similar to those of their European cousins. However, recovery of nestlings is much lower than for the European systems, presumably a consequence of the large contiguous areas about the study area, as opposed to the isolated woodlots generally studied in England or the Netherlands. This paper badly needs editing. At one point the reader encounters 7 consecutive pages of largely unreduced data. Most of this spread treats stomach contents, which in the absence of other data on prey availability, are of limited significance.

Although certain papers in this book note that birds' greatest significance in forest eco-

systems may lie in helping to keep insects at low levels, the overall argument presented leaves one with the unmistakable impression that the contributors believe birds to be of major importance in controlling insects. Since this symposium was about birds, this conclusion is probably not surprising. At this point a balanced review attempting to evaluate the relative roles of birds, parasitoid insects and other possible biological factors in controlling numbers of forest insects would have been of great value. Many entomologists and even ecologists will probably be surprised at the importance implicitly accorded to birds here as controlling factors.

In sum, in spite of the scholarship of certain contributions, I cannot recommend this book. The papers taken as a whole raise serious doubts about the wisdom of publishing entire symposia, regardless of the merit of the individual parts. Perhaps part of the responsibility should fall on the shoulders of the editors. If so, the contributors should know of this in advance of preparing their presentations.—DOUGLASS H. MORSE.

SAMPLING DESIGN AND STATISTICAL METHODS FOR ENVIRONMENTAL BIOLOGISTS. By Roger H. Green. John Wiley & Sons, New York, 1979:257 pp., 64 numbered text figures, 15 tables. \$19.95.—As the title suggests, this is primarily a handbook to guide environmental biologists through decisions about the design, analysis, and presentation of the results of studies of the effects of man-originated changes on the environment. But it is also a valuable reference for ecologists in general. For the skeptics who are concerned that statistical methods may sometimes be used to extract differences that do not really exist in nature, the book is a good introduction to an alternative view. Properly applied statistical methods can save us from claiming that our favorite theory is substantiated by observations that do nothing of the sort, and in addition they can identify complex patterns in nature that are not obvious from mere examination of large data sets. Since the world is neither all chaos nor all order, insightful analyses based on probability theory are our best hope for clarifying relationships. If birds are rarely mentioned, that is at least partly because imaginative experimental design and data analysis are hard to find in the ornithological literature.

The book has 4 well-organized sections: Introduction, Principles, Decisions, and Sequences. In the first section the author presents principles of inference, sampling and statistical design, hypothesis formulation and testing. Section 2, Decisions, gives a key to five broad categories of environmental studies and specific decisions that must be made about the design, analysis and display of results. Ten principles give rules of sampling strategy, emphasizing such procedures as replicates, controls, the importance of preliminary sampling, stratified versus random sampling, tests for error variation, and transformations. Section 3, Sequences, gives examples from the literature and discusses them in detail. The examples are mostly in aquatic systems, reflecting the author's experience.

One of the most valuable features of the book is its comprehensive bibliography, cross-referenced to the text, and keyed by types of methods and environments studied. This covers the general ecological literature in addition to the literature on environmental studies. In combination with the 1978 edition of T. R. E. Southwood's *Ecological Methods* and statistical texts such as *Biometry* by R. R. Sokal and F. J. Rohlf and *An Introduction to Quantitative Ecology* by R. W. Poole, we now have excellent up-to-date summaries of the state of the art in ecological research.

Green emphasizes that the options for data analysis are greater than most people realize. Certainly ornithologists have been overlooking tools such as contingency tables, nonparametric ranking procedures, and time series analysis. He warns that the properties and as-

sumptions of a model must be considered critically. Clustering routines will make patterns out of random numbers. Arbitrary compounds of independent variables such as indices and importance values should be avoided unless their interpretive sense is very clear. Most ecologists have abandoned the H' information theoretic diversity index as not having any biological significance. In his plea for robust but conservative methods Green recalls that when Watson and Crick described the double helix structure of DNA they said it had "novel features of considerable biological interests" (*Nature* 171:737-738, 1973).

Some of the author's positions reflect his personal taste. In the section on the form of data he recommends that with presence-absence data, quantitative densities, or rank abundances one should use transformations so that linear models can be used rather than "fleeing" to nonparametric methods. In the section on ratios he follows Atchley in recommending analysis of covariance. In addition, he totally ignores species-area effects and discredits the rarefaction procedure. These are points on which we disagree. But I found the book rich in its treatment of the overall subject, very well-written, and I recommend it highly.—FRANCES C. JAMES.

ANALYSIS OF ECOLOGICAL SYSTEMS. By David J. Horn, Rodger D. Mitchell and Gordon R. Stairs (eds.). Ohio State Univ. Press, Columbus, Ohio, 1979:ix + 312 pp. \$27.50—This volume of contributed papers is the result of a colloquium held at Ohio State University in 1976. The 9 chapters include: "Fitness, survival, and optimality," by R. C. Lewontin; "Darwinian analysis: the new natural history," by R. D. Mitchell and M. B. Williams; "The ecology of colonizing species, with special emphasis on animal invaders," by D. G. Embrée; "Niche segregation in desert lizards," by E. Pianka et al.; "Development of theory in insect-plant interactions," by L. E. Gilbert; "On the theory of central place foraging," by G. H. Orians and N. E. Pearson; "Quantitative plant ecology," by P. C. Miller; "Population models: experimental tools for the analysis of ecosystems," by R. G. Wiegert; and "Parasitoid ecology and biological control in ephemeral crops," by D. J. Horn and R. V. Dowell.

As in any symposium with various participants, there is a great difference in coverage given to particular topics. For example, Lewontin presents an interesting cautionary tale on the dangers of assuming that some particular organismal trait is optimized by natural selection. He points out that many selective forces, and many genes, affect particular phenotypic characteristics, and that optimizing 1 specific process might be detrimental to other equally important organismal functions. Pianka, Huey and Lawlor present a long chapter comparing desert lizard niches in Australia, Africa and the United States. They show that the species of a particular guild differ in one or another niche component, but that they do not necessarily differ along the same niche parameter in the different deserts. Also, the greater the species diversity in a particular site, the lower the niche overlap (presumably because of diffuse competition). Orians and Pearson present a theoretical optimality model for central place foraging. They support their model weakly with a bit of data on foraging blackbirds, and note that most of their ideas are still waiting to be tested. The papers of Miller and Wiegert are synthetic approaches to broad ecosystematic topics.

By and large these papers are interesting, though they approach ecosystems from very different points of view. One has to ask whether 9 papers are worth the high cost of the book. They may be to a seminar group, although even this is debatable. Probably a book like this belongs in a library rather than on one's own bookshelf.—MICHAEL A. MARES.

WORKING BIBLIOGRAPHY OF OWLS OF THE WORLD WITH SUMMARIES OF CURRENT TAXONOMY AND DISTRIBUTIONAL STATUS. By Richard J. Clark, Dwight G. Smith and Leon H. Kelso. National Wildlife Federation Scientific/Technical Series No. 1, Washington, D.C. 1978:319 pp., soft cover. \$9.00.—Owls have been widely studied, but the results have appeared in such a diversity of publications that students of strigiforms sometimes miss important work as they survey the literature. This book is therefore of practical value to many avian biologists. The coverage of the literature, which took 11 years to survey, is remarkably extensive. The master list, arranged chronologically by author, cites 6590 references that deal with owls to a substantial degree. General papers on raptorial birds that incorporate a discussion on owls are included, but popular and photographic articles, and faunal studies, are not. There is a 172 page bibliography, plus 3 chapters of summaries and cross-references. Master numbers (relating to the master list) are arranged by geography, subject category and genus. The first chapter organizes the literature geographically, with the master numbers arranged by genus in each subheading. The second chapter subdivides all genera into the categories of anatomy, behavior, ecology, physiology, taxonomy, conservation, general information and distribution. The third chapter simply lists reference numbers by genus, a seemingly redundant feature given the information in the previous chapter. To find references for a particular species, one must examine either the geographic or the generic reference list, or both. Certainly these 3 chapters save the researcher a great deal of time, and justify the title "working bibliography."

This work is also a valuable general reference. The authors present a summary of owl taxonomy and a synopsis of genera from recent checklists. This is helpful because it minimizes any problems one might encounter owing to the past use of more than 1 scientific name for a particular species. The authors should be commended for their exceptional coverage of common names, spanning 54 languages, which are listed both alphabetically and under scientific names. For example, 60 common names are given for *Asio flammeus* alone. Another tabularized summary, covering 133 species, incorporates information on the approximate number of races, distribution, habitat and a section of general remarks.

Although in general this volume is exceptionally well done, a few aspects require critical comment. As the authors warn, a careful reading of the introduction is necessary to make the best use of the bibliography because it is in the introduction that the methods of compilation and scope of the text are outlined. I was overwhelmed at times by the amount of information in this book, and sometimes found it difficult to locate a particular section quickly. Rapid location of specific information is not enhanced by the narrow page margins or the rather cryptic demarcation of chapters. Computer page generation of the summary reference lists has created some problems, e.g., incomplete cross-references. Laboratory studies are categorized by the location of the experiment, rather than by the species under examination. This practice could result in users overlooking some papers. Care must also be taken in interpreting the subject categories used in the generic reference list as they are rather loosely defined.

The book is a bargain considering the amount of information that it contains, and its value in circumventing the anguish commonly associated with literature searches. It may be ordered from the Raptor Information Center, National Wildlife Federation, 1412 16 St., N. W., Washington, D.C. 20036.—GARY BORTOLOTTI.

RARE AND ENDANGERED BIOTA OF FLORIDA, VOL. 2: BIRDS. By H. W. Kale, II (ed.). Univ. Presses of Florida, Gainesville, Florida 1978:xix + 121 pp., 1 color, 35 black-and-white photographs, 1 line cut, 67 range maps; paper. \$7.00.—This authoritative publication was prepared by 26 separate contributors; the lion's share was written by W. B. Robertson, H. W. Stevenson, H. W. Kale, J. C. Ogden, or O. T. Owre, but many others supplied from 1–3 accounts. The book covers 74 taxa: species, subspecies and 1 color morph (Great White Heron [*Ardea herodias occidentalis*]) that either are resident in, or migrate through, Florida. The birds are grouped into 7 categories, by their status in the state: 11 species that are endangered, 13 threatened, 11 rare, 29 “of special concern,” 5 whose status could not be determined (*Falco columbarius*, 3 rails and 1 ssp. of seaside sparrow [*Ammodramus maritima*]), 3 recently extirpated, and 2 extinct. Of the 11 listed as endangered in Florida (7 breeding species, 4 endemics), only 9 are also so designated on Federal lists; the other 2 (Wood Stork [*Mycteria americana*] and Florida Grasshopper Sparrow [*Ammodramus savannarum floridanus*]) have undergone recent serious population declines or are poorly known and probably have vanishingly small numbers. The categories of threatened, rare and species of special concern include a mixture of a few otherwise common species with peripheral breeding populations in Florida (e.g., American Redstart [*Setophaga ruticilla*] which breeds only in the northwestern panhandle); some that are literally threatened (the only colony of Magnificent Frigatebird [*Fregata magnificens*] lies on the edge of a Navy artillery range); many herons, shorebirds and terns that may not be “individually” endangered but whose habitats are rapidly disappearing; some that are truly rare but still too numerous to be classified as endangered; and the Eastern Brown Pelican (*Pelecanus occidentalis carolinensis*) and Southern Bald Eagle (*Haliaeetus l. leucocephalus*) that are Federally listed as endangered, but that have healthy enough Florida populations to be classified here as just threatened.

The book begins with brief descriptions of the major terrestrial and wetland habitats of Florida, followed by the species accounts grouped by status. Each of the accounts takes from 1–4 pages, and contains a description of the species and its range (both within and outside of Florida), a range map, habitat notes, and sections dealing with its life history and ecology, specialized or unique characteristics, the basis for its status classification, recommendations, selected references, and usually a photograph of the bird and/or its habitat. My only negative note about the book as a whole is that it is awkward for a reader to find any given species account quickly; the list of taxa included is rather buried on pp. xviii–xix, contains no page references, and there is no index.

Throughout, one finds strong emphasis on population declines as the result of habitat destruction, and the need to preserve habitats if the birds are to be preserved. In many instances concrete recommendations are offered that would improve the species' condition. The main objective of the Florida Committee on Rare and Endangered Plants and Animals, and its Special Committee on Birds that produced this exhaustive inventory, is to increase public awareness of the damage (sometimes unwitting) to natural habitats through unregulated development. It is heartening indeed, to have this publication written by highly competent local scientists—both amateur and professional—and produced through the joint efforts of private environmental organizations, 2 industrial interests, a private wildlife foundation and state and federal agencies. Florida is to be congratulated on this fine (and continuing) effort; I can only hope that this is the first in a series of equally thorough floral and faunal inventories by other states. It is not only of academic interest, but should serve as an important planning tool in the future.—MARY H. CLENCH.

MY WORLD OF BIRDS: MEMOIRS OF AN ORNITHOLOGIST. By George J. Wallace. Dorrance & Co., Philadelphia and Ardmore, Pennsylvania, 1979:345 pp., 28 pp. photos. \$10.00.—How many ornithologists have started their careers armed only with a Reed bird guide, with inadequate or more likely no binoculars, but with the seemingly endless energy and intense enthusiasm of youth? George Wallace, like many others, followed this path while growing up on a farm in Vermont. It is difficult in this age with its plethora of bird guides to imagine a time when Reed's "Land Birds East of the Rockies" and "Water and Game Birds" were the only guides small enough to be slipped into a pocket and taken into the field. The shapes of all the species illustrated, especially in the land guide, were somewhat similar, and the colors in the later printings of the book apt to be distorted. It still remained a necessity for any youth wishing to identify birds. Binoculars were both costly and difficult to obtain, so few had them. In retrospect, one can see that the training resulting was of great value. To observe a bird closely, it was necessary to approach slowly and quietly, blending as much as possible with the background. For how many did a red-letter day arrive when they slowly approached that first Scarlet Tanager (*Piranga olivacea*)? Without binoculars, one became more aware of other features of the landscape such as flowering plants, trees, and mammals, giving an early awareness of the habitat preferences of various species of birds. Starting on the home farm and then to areas within hiking distance, Wallace extended his bird lists. In later years, he was able to note the difference between the bird life in the unsprayed orchards, fields, and woods of his youth and those drenched with pesticides. Thus he became a crusader against the use of D.D.T. and the indiscriminate use of other toxic poisons.

Eventually the University of Michigan became his choice for college years, partly because the hard-to-obtain tuition was only \$93 per year. In order to get to Ann Arbor, he hitchhiked from Vermont to Michigan. After graduation, he undertook graduate work at the University of Michigan, selecting for a thesis the life history of the *bicknelli* form of the Gray-cheeked Thrush (*Catharus minimus*). This meant summers back in Vermont, living far up on the slopes of Mt. Mansfield. Later, he went as Warden to the Pleasant Valley Sanctuary in the Berkshires. Finally in 1942, he joined the teaching staff in the Department of Zoology at Michigan State University, where he was to remain until retirement in 1972. The first section of the book relates his experiences growing up and later as professor, and affords revealing glimpses into the lives of other ornithologists such as Josselyn Van Tyne, the Craigheads, Maurice Broun, Harold Peters, and others.

The latter part of the book deals with trips taken to various sections of the United States, and with trips to South America (Colombia, during a sabbatical year), Europe, India and surrounding areas, East Africa, Australia, and New Zealand. These chapters are a trip into nostalgia for those who have visited the areas, and can be used as a guide by those planning to visit these regions. Appended to each chapter is a list of species of birds seen with dates and locations.

George Wallace has written many articles for technical journals, and in 1955 he published the first edition of his "Introduction to Ornithology." One wishes that his autobiography had a more in-depth discussion of his research and related problems.

The extensive bibliographies at the end of each chapter are an important asset for any reader wishing to delve further into the subjects that have been mentioned in the book. An index would have been of further assistance.—MARGARET H. HUNDLEY.