

BOOK REVIEWS

MARCY F. LAWTON, EDITOR

Neotropical ornithology.—P. A. Buckley, Mercedes S. Foster, Eugene S. Morton, Robert S. Ridgely, and Francine G. Buckley [eds.]. 1985. Ornithological Monographs No. 36, American Ornithologists Union. 1,036 p. \$70.00.

In 1981, the editors of *Neotropical Ornithology* began to assemble in one volume a display of contemporary research on the richest avifauna in the world. The result is a remarkable commemoration of the late Eugene Eisenmann, to whom the monograph is dedicated. It is a credit to the editors and a tribute to the ways in which neotropical ornithology has matured since the pioneering works of Frank Chapman and Robert Ridgway.

The volume is more comprehensive than the other recent major work on neotropical ornithology, *Migrant Birds in the Neotropics* (Keast and Morton [eds.] 1980), with which it overlaps only slightly in authorship and hardly at all in content. Appropriately, each of the 61 chapters is prefaced with English and Spanish abstracts, and many contain extensive tables and appendices of original data.

The geographical representation of study sites and authors reflects the editors' successful efforts to achieve a range of viewpoints on neotropical ornithology. Most countries of the Caribbean and Central and South America are covered, although with an irony familiar to Latin America, the ornithological riches tend to be concentrated in the hands of a few. One in seven studies focuses on Peru, which represents only one of 20 countries in Central and South America. Nine of the papers issue from just one of the volume's 43 academic addresses (the ornithological oligarchy is Louisiana State University).

The authors and editors make up an All-Star team of neotropical ornithologists. Several literally wrote the book on neotropical birds, having published field guides to the avifauna of different countries: Ffrench for Trinidad and Tobago, Phelps for Venezuela, Ridgely for Panama, and (soon to appear) Hilty for Colombia and Stiles for Costa Rica. Others, like Garrido, Sick, Skutch, and Snow, have contributed to the ornithological literature of the Neotropics for over a quarter of a century.

Some of the most interesting and thorough papers are written by younger investigators reporting details of their dissertation research. Willard's comparative feeding ecology of 20 tropical fish-eating birds and Robinson's study of nest pirates and egg and nestling predators of the colonially breeding Yellow-rumped Cacique are outstanding examples.

The editors deliberately avoided removing overlap between papers. In one instance this results in the reader being subjected in successive papers to the same lengthy quotation from H. W. Bates. More importantly, the overlap between papers serves the same purpose as replication in experimental design. It allows an assessment of variation between sites, years and researchers. Independent and sometimes opposing views are presented on the same topics.

For example, Munn and Powell draw on their distinct experiences to describe the behavior of mixed species flocks in the neotropics. Powell's paper provides an in-depth review of the literature on interspecific foraging flocks and demonstrates that the integrity and behavior of flocks depends upon season, site, and the diet of the component species.

Haffer and Cracraft discuss the biogeography of South American birds, attributing the explosive adaptive radiations of neotropical birds chiefly to divergence in forest refugia during the Pleistocene (Haffer) versus earlier vicariance events (Cracraft). This pair of papers, along with

those of Vuilleumier, Snow and Fjeldså, illustrates the extent to which the distributions of neotropical birds are known and suggests that avian biogeography will continue to influence our understanding of evolutionary pattern and process in the tropics.

The monograph ends with an overview of the papers and of the field of neotropical ornithology by Parkes. Most readers will share his enthusiasm for this impressive collection of papers. Many, however, will take issue with his view of the field and its future.

Parkes asserts that there are "three basic and successive stages of knowledge of birds that must precede all other aspects of the study of ornithology," namely, inventory, classification and descriptive zoology. These are important stages in ornithology, and in this volume Bock, Braun and Parker, Lanyon, and Sibley and Ahlquist present them with particular elegance and rigor. However, in the absence of extensive knowledge about systematics or species composition in different habitats, other approaches can yield information of general significance.

Parkes, like Eisenmann, is critical of "north temperate theoreticians like Lack" and the "hit-and-run observers" of the '60s and '70s, and applauds the exclusion from the volume of "these formerly fashionable superficial papers, with more mathematics than data." The criticism is clearly aimed at Robert MacArthur and other ecologists who made forays to the Neotropics to muster data to answer the Big Questions of those decades—Why are there so many species in the tropics? Why do tropical birds have smaller clutch sizes than their temperate zone counterparts? What roles do competition and predation play in structuring communities?

A number of the present papers, in fact, are vulnerable to the same "hit-and-run" criticism, for they are based on observations (by qualified observers, admittedly) gathered during brief expeditions; fewer than half of the studies could be described as "long-term." None could be criticized for being too theoretical or mathematical, although some could be criticized for not being enough so.

A disconcerting fact, which may reflect the status of neotropical ornithology as much as *Neotropical Ornithology*, is that not one of the 61 studies in this volume is principally experimental in approach (Moermond and Denslow's superb review paper refers to their experimental work on fruit selection by birds and five other papers mention experiments conducted). Few of the papers test or even present hypotheses.

The tradition of descriptive, correlational studies may be due to the historical predominance of North Americans versus more experimentally inclined Europeans in neotropical ornithological research, or simply the lure most of us ornithologists feel for just identifying and watching birds. Yet this emphasizes even more strongly that neotropical ornithology can only profit by a redistribution of intellectual wealth and an exposure to the perspectives and methods of academic trespassers like mathematical modelers, plant ecologists, and limnologists—even if they can't identify dendrocolaptids by their alarm calls. Stile's long-term study of hummingbirds and their food plants demonstrates the indispensability of a broad biological background, driving home the point that we need more, not less, cross-fertilization between fields of biology.

Birds are unquestionably better known biologically than any other group of organisms in the neotropics. By building on the wealth of information about their taxonomy, geographical distributions, evolutionary relationships, population dynamics, and natural history, much of which

is admirably exhibited in this volume, ornithology seems poised for more discoveries of major biological significance.—NATHANIEL T. WHEELWRIGHT, Dept. of Biology, Bowdoin College, Brunswick, ME 04011.

The Darwinian heritage.—David Kohn [ed.], 1985. Princeton University Press, Princeton, NJ. 1,138 p.

It is extraordinary how Darwin's popularity has grown since 1959 when the jubilee of the publication of the *Origin of Species* was celebrated. At that time, several historians questioned the validity of Darwin's work and the quality of his mind, to such an extent that H. J. Muller was moved to exclaim "One hundred years without Darwin are enough." Twenty-three years later, at the centenary of Darwin's death (1982), almost a dozen symposia and memorials were held, with all the participants agreeing in the conclusion that Darwin's theories are correct in all major aspects and that Darwin clearly had been a genius of the first order. The most important and most comprehensive of all the recent symposium volumes is the one edited by D. Kohn, with contributions by 30 authors, each a specialist in some aspect of Darwinian scholarship.

Owing to the recent discovery and evaluation of a rich treasure of Darwin notebooks, journals, individual notes, etc. (Darwin apparently never threw anything away), it is now possible to reconstruct the gradual growth of Darwin's ideas more completely than for any other figure in the history of ideas. The steps in this development are convincingly reconstructed in a number of chapters, with enough disagreement still remaining to foreshadow future elucidation. A series of seven other chapters deals with Darwin in the context of his environment and of his associates, giving us a far more balanced picture of Darwin as a person and scholar than previous biographies that were either hagiographic or hostile. Another part of the volume (with seven chapters) provides an up-to-date analysis of Darwinism, as evaluated by modern evolutionary biology. It deals with such questions as, how valid are the criticisms of Darwinism and how much (if any) has the theory of natural selection changed since Darwin? The volume concludes with a rather remarkable overview of recent historical treatments of Darwin ('Images of Darwin') by the Italian historian of science A. La Vergata. A 79 page bibliography opens to the reader the vast field of Darwin scholarship.

Why should an ornithologist be interested in this volume? For the simple reason that ornithology is part of biology, and as Dobzhansky has said so truly: "Nothing in biology makes sense except in the light of evolution." It was Darwin who established this truth. There is hardly a chapter in this volume that does not provide stimulating thought to anyone who is interested in nature.—ERNST MAYR, Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138.

The endocrine system and the environment.—B. K. Follett, S. Ishii, and A. Chandola [eds.], 1985. Japan Scientific Societies Press and Springer-Verlag. Tokyo and New York. xiv + 329 p.

[In Autumn] birds seem all day long to be impressed with the desire to migrate: their habits change; they become restless, are noisy and congregate in flocks.

Charles Darwin, 1871

The importance of cyclic changes in the environment in determining periodic occurrences like migration and seasonal breeding cycles has long been recognized. However, environmental endocrinology, the discipline concerned with how and why environmental changes affect organisms, is not even a generation old. Because this is such a new field and because it has such wide-ranging implications for organismal and evolutionary biology, *The*

Endocrine System and the Environment is an important volume.

The Endocrine System and the Environment grew out of an international symposium held in India, in 1983, and attended by most of the major figures in the nascent field of environmental endocrinology. The volume, which is largely devoted to problems related to thyroid function, is dedicated to J. P. Thapliyal, in honor of his seminal work with thyroxine and gonadal refractory periods in birds and reptiles.

Many of the papers present new information and intriguing insights into the qualitatively different ways in which the endocrine system may respond to environmental changes. However, the volume is seriously flawed because it lacks conceptual cohesion and because most of the contributions fail to discuss the evolutionary or ecological significance of the observed interactions between organism and environment.

For instance, several papers present new information on the effect of the physical environment on thyroid function. Leloup and de Luze report on the effects of temperature and salinity on thyroid function in eels. They find that increasing either temperature or salinity leads to increased thyroid hormone secretion and increased peripheral T4 to T3 conversion, but not to increased plasma T4. Although they suggest a role for thyroid hormones in acclimation to changing environments, and mention in this context both the estuarine fish *Fundulus heteroclitus* and salmon in addition to their eels, the authors do not discuss the implications of their findings in understanding the evolution of estuarine and anadromous fish.

Similarly, Nicholls et al. deal with the gonadal refractoriness seen in adult male starlings exposed to long days. Thyroidectomy blocks the testicular regression seen in starlings on an 18 hr photoperiod, and thyroxine inhibits testicular recrudescence in short day length birds. Further, prolactin increases in long-day birds and following administration of thyroxine. However, Nicholls et al. do not relate their findings to the natural history of starlings, nor do they provide much comparative discussion; neither the older avian literature nor the recent work in reptiles on the same topic is cited.

A further flaw is that studies on the effects of the social environment are not well represented here. Although several papers examine the effects of hormones on a behavior—for example, territoriality, sexual imprinting, or migration—only one paper deals with how social factors affect hormones. In her paper on the social factors involved in the breeding cycle of ducks, Bluhm presents and reviews studies on, among other topics, the influence of flock vocalizations on serum LH levels in nearby unpaired females. It is unfortunate that so little space is devoted to the social environment; Lehrman, Hinde, Silvers, Crews, and others have shown how important—and how fertile—an area it is.

Although the book is disappointing in that its scope is so limited and that many of the papers fail to relate lab findings either to natural history or to the work of other researchers, there are essays which do present a more broadly based perspective. For example, Lofts' review, while brief, is truly international and cross-disciplinary; he cites German, Italian, and Indian journals in addition to the more accessible (for us) American journals. He further puts his discussion of the environment and reptilian reproduction into a context that includes more than reptiles, extensively citing the avian literature.

Published international symposia like this, which attract the major workers in a field, have the potential for presenting the relevant issues and questions in a field to nonspecialists. Further, these symposia can provoke new insights from comparative studies, can describe techniques that can be adapted to studies of other organisms or problems, and can foster a kind of synergistic inter-

action that results in both greater awareness of the state of our knowledge and the creative insights necessary to expand that state. It is surprising that cross-disciplinary innovation by exploitation of methods or approaches is not more widely employed, but perhaps not; most of us need help with developing creativity. Sadly, this volume offers little assistance. There are no essays to give structure to the volume or to introduce or to provide a conceptual context to the papers, and, in fact, the papers are not even grouped or discussed. Although *The Endocrine System and the Environment* is a good sourcebook of recent research, and valuable insofar as it serves as an introduction to a new and growing field, this volume does not serve as either a review of the important questions and state of our knowledge, or as much of a stimulus for further research. It is, rather, simply a collection of papers.—WILLIAM R. GARSTKA, Department of Biological Sciences, University of Alabama, Huntsville, AL 35899.

BOOKS RECEIVED

- The fall of a sparrow. S. Ali. 1985. Oxford University Press, NY.
- Gulls and Plovers: The ecology and behaviour of mixed-species feeding groups. 1986. C. J. Barnard & D.B.A. Thompson. Columbia University Press. \$30.00.
- Occupation of urban habitats by birds in Papua New Guinea. 1986. H. L. Bell. Proceedings of the Western Foundation of Vertebrate Zoology. Vol. 3. No. 1, Los Angeles, CA. \$7.00.
- Birds of the Indiana Dunes. 1986. K. J. Brock. Indiana University Press, Bloomington, IN. \$7.95.
- Handbook of the Birds of Europe, the Middle East and North Africa. Vol. IV, Terns to Woodpeckers. 1985. S. Cramp, [ed.] Oxford University Press, NY. 60 Pounds, British.
- Tales of a low-rent birder. 1986. P. Dunne. Rutgers University Press, New Brunswick, NJ. \$15.95.
- Natural selection in the wild. 1986. J. A. Endler. Princeton University Press, NJ. \$40.00 cloth, \$13.95 paper.
- Indiana birds and their haunts: A checklist and finding guide. 2nd ed. 1986. C. E. Keller, S. A. Keller and T. C. Keller. Indiana University Press, Bloomington, IN. \$22.50 cloth, \$10.95 paper.
- Immigrant killers: introduced predators and the conservation of birds in New Zealand. 1985. C. King. Oxford University Press, NY. \$35.00.
- Modeling nature: episodes in the history of population ecology. 1985. S. E. Kingsland. University of Chicago Press, Chicago, IL. \$27.50, cloth.
- Birds of the Texas coastal bend: abundance and distribution. 1985. Texas A&M University Press, College Station, TX. \$19.50.
- Birds in Scotland. 1986. V. M. Thom. Buteo Books, Vermillion, SD. \$47.50.