

REVIEWS

EDITED BY KENNETH C. PARKES

A distributional study of the birds of British Honduras.—Stephen M. Russell. 1964. Orn. Monogr. no. 1, Amer. Orn. Union. 195 pp. (incl. map, 12 photos), 2 col. pls., 1964. \$4.50.—The appearance of this workmanlike paper initiates a new advance in American ornithology. The American Ornithologists' Union now has its own series available for papers of unusual length, which previously could be published only in parts (in *The Auk*) or as special, independent publications. The editorial staff of the new *Ornithological Monographs* (headed by Dr. Robert W. Storer), the Union, and the author may well be proud of the high standard set by this opening number.

Russell's is the first full treatment of the distribution of birds in this interesting country. He lists the specimens of each species of British Honduras bird in the Louisiana State University Museum of Zoology and in several other museums, besides listing further localities whence there are published records. Specimens were examined by himself, by W. E. Clyde Todd, and by the late Josselyn Van Tyne. Many data from unpublished field notes are given. There are no distribution maps. Perhaps usually unnecessary for such a small country, these would have been helpful in a few genera such as *Leptotila*. Nor does Russell always specify the exact limits of distribution within British Honduras, occasionally forgetting (as is so easy) that his readers lack his familiarity with local geography and must look up the location of every point of record. The brief summaries (pp. 186–187) do help, but there is no index—my only real criticism. Future numbers should be indexed.

Dates of occurrence are given in greater or lesser detail. For many species full data are still inadequate, as so often happens. Season and site of nesting are indicated whenever data exist, and weights are given. Subspecies are mentioned in polytypic species, but are properly subordinated to the species. Treatment of subspecies is commonly brief but adequate; it ranges from cursory (*Phalacrocorax auritus*) or none (*Cathartes aura*, *Laterallus jamaicensis*) to extensive. Naturally we cannot expect full revisions of hundreds of species in a paper of this scope. The only new race described as a result of Russell's work, *Centurus aurifrons turneffensis*, was published previously.

Species supposedly seen but never collected in British Honduras, or of which the specimens could not be located, are listed in their proper systematic position and are thus easily found. Their hypothetical status is shown by enclosing their names in brackets, as well as by the ensuing discussion. In all, 439 species are recorded in the country, and the reports of 26 hypothetical species are considered "reliable" (pp. 185–186). The reviewer is somewhat more skeptical of a few of the latter.

It is satisfying to find a good discussion of the vegetation of British Honduras, despite the loss of some of the plants collected. Russell "believe[s] rainfall, *per se*, is less of a limiting factor to bird distribution than is commonly believed" (p. 187); amen! He gives interesting comparisons of the British Honduras avifauna with those of comparable parts of eastern México, and of pineland birds with those found elsewhere. A few species—*Glaucidium minutissimum*, *Asio stygius*, *Vireo huttoni* (a surprising occurrence)—are omitted from the pineland analyses on pp. 188–189, presumably for lack of data on habitat preference in British Honduras. Unfortunately Russell gives no similar analysis of bird migration, but one notes with interest, in the text, the occurrence of such western forms as *Chordeiles minor henryi* (not ex-

amed by Russell), *Dendroica petechia morcomi*, *D. coronata hooveri*, and *Passerculus sandwichensis nevadensis* and *P. s. anthinus*. Likewise we find many northern species remaining in British Honduras well into May, with at least *Coccyzus americanus* and *Dolichonyx oryzivorus* still present in early June. A few northern birds return in late July or August, or even earlier (*Dendroica dominica*). Russell finds no good basis for the A.O.U. Check-list's ascription of *Progne cryptoleuca* to British Honduras. Of special interest are specimens of the Cattle Egret, *Bubulcus ibis*, taken as early as 1956.

In taxonomy and nomenclature, Russell adheres generally to the A.O.U. Check-List and Eisenmann's "Species of Middle American birds." He rightly points out that in some cases (*Coccyzus americanus*) use of a trinomial is unwarranted. Certainly anyone interested in the taxonomy and plumages of certain species (such as *Tinamus major*, *Chordeiles minor*, *Cypseloides cryptus*, *Elainea martinica*, various wrens and thrushes, *Chlorospingus ophthalmicus*, *Spinus notatus*) should read Russell's remarks. *Elainea chinchorrensis* Griscom is considered a synonym (variation) of *E. martinica remota*. Russell's findings on *Stelgidopteryx ruficollis* are especially interesting and suggestive.

All in all, this modest publication is packed to the brim with useful, detailed, and 99 per cent accurate data. It compares very favorably with more pretentious papers on the birds of adjacent regions, and sets a high standard for the new A.O.U. Monographs to maintain. Artistically, too, a fast pace is set. The handsome color plates by Don R. Eckelberry portray an Ocellated Turkey, *Agriocharis ocellata*, and three blackish races of savannah birds (*Cistothorus platensis*, *Ammodramus savannarum*, *Aimophila botteri*). All concerned are to be congratulated on an auspicious start, a job well done, and a real basic contribution to Middle American ornithology.—ALLAN R. PHILLIPS.

Aves Brasileiras.—Svend Frisch and Johan Dalgas Frisch. 1964. Irmãos Vitale S/A, Rua França Pinto, 42, São Paulo, Brazil; 245 pp. + index, 38 pls. (25 in color). Paper. In Portuguese, with partial English translation.—*Aves Brasileiras* is introduced as the first of a series of books to describe and picture the 2,000 or more species and subspecies of Brazilian birds. At work on the project for 20 years, Svend Frisch has sketched about 1,400 kinds. In this first volume, 93 species are shown in color on 25 plates. Sepia-tinted plates give impressive views of Brazilian habitats. The text, by Johan Frisch, describes 85 species, representing most of the orders that occur in Brazil. The species accounts, varying from a paragraph to several pages in length, provide succinct descriptions of morphology, terse statements of distribution, and considerable data on natural history and behavior, partly drawn from literature but mostly from personal observation. Terminal chapters briefly treat migration, morphology, reproduction, and conservation. Thirty-six of the species accounts are faithfully and expertly translated into English.

So small a cross-section of so large a fauna has to be in some measure frustrating, but this is not intended to be a field guide. Viewed as an effort to provide an inexpensive stimulus for Brazilian amateur bird watchers, the volume certainly must be applauded. North American ornithologists too will find the book a charming addition to their small Latin American collections, and they should be glad that part of it has been translated to English.—CHARLES O. HANDLEY, JR.

Songs of Brazilian birds.—Four 12-inch 33 $\frac{1}{3}$ rpm phonograph records of bird and other animal sounds. Recorded by Johan Dalgas Frisch and narrated by Oswaldo Calfat. 1962–1964. SOM, Caixa Postal 12.888, São Paulo, Brazil.—These, the first recordings of bird voices to be published in South America, gained immediate and great popularity. One was at the top of the Brazilian LP Hit Parade for 18 weeks! They were originally narrated in Portuguese, but other editions have been published in several languages, including English.

The quality of reproduction is very high, and most of the songs are wonderfully clear, without distortion or background distractions. Others have unidentified bird or insect voices in the background, but they usually are unobtrusive. Unlike most North American recordings, the bird songs do not stand alone, but are woven into narratives describing the travels of the recorder. By plane, canoe, ox-back, and on foot he reached the great forests of Amazonia, the swamps and marshes of Mato-grosso, and the fields and dooryards of São Paulo. The satin-like voice of Oswaldo Calfat in the Portuguese edition is delightful. The flourish of his introductions rivals the bird songs!

In all, about one hundred species of birds are represented on the records. The record jackets give Brazilian, English, and Latin names, and describe some of the folklore surrounding the birds.

Vibrantly alive, these records serve very well to convey the beauty of the American tropics to non-tropical latitudes. Many of the bird voices are peculiarly Brazilian, but others such as motmot, trogon, chachalaca, potoo, and pauraque will be recognizable to one familiar with any part of the tropical American mainland.

Briefly, the four records are as follows: SCLP-10502, "Cantos de aves do Brasil" (Bird songs of Brazil); 30 minutes; 34 species of birds, plus frogs, cicadas, and crickets in southern Brazil. This is by far the best of the records. There is good variety and little repetition of similar songs. Especially noteworthy are the discordant metallic notes of a bellbird, the wonderfully resonant notes of a woodhewer, and the escalating notes of a tinamou.

SCLP-10513, "Vozes da selva Brasileira" (Voices of the Brazilian forest); 35 minutes; 24 species of birds, as well as titi monkey, cicadas, crickets, and frogs heard on a canoe trip through the forest. The birds are not so spectacular as those in "Cantos," and the repetitive series are too long in some instances.

SCLP-10525, "Vozes da Amazônia" (Voices of Amazonia); 25 minutes; 28 species of birds, together with cebus and howler monkeys, peccary, otter, frogs, crickets, gun shots, and a falling tree. Recorded in Amazonia, following the path of a 16th century explorer. The bird voices are uniformly pleasing, but the other sounds are a waste. High points of the record are the beautiful, clear, flute-like songs of the Musician Wren, the Rufous-vented Ant Thrush, and *Turdus fumigatus*; the complex songs of the Peruvian and Gray-breasted wrens; the sad, but rollicking notes of a wood partridge; and the harsh cries of a macaw and an Amazona parrot.

SCLP-10527, "Ecos do inferno verde" (Echos of the green hell); 20 minutes; 20 species of birds, 7 insects, 4 fish, 4 mammals, 1 frog, gunshots, and a rainstorm on an air trip to the jungles of central Brazil in search of the Giant Potoo. The mournful notes of the potoo are of interest, but the other bird voices are not particularly attractive. The record is short, there are few birds, and too many greatly amplified sounds of insects, fish, etc. This is by far the least successful of the records.—CHARLES O. HANDLEY, JR.

The terns of the Dry Tortugas.—William B. Robertson, Jr. 1964. Bull. Florida State Mus., 8(1): 1-94.—Breeding behavior, annual cycle, and demography of tropical seabirds have in recent years received considerable attention, particularly by N. P. Ashmole (1962, 1963) in relation to Ascension Island in the tropical Atlantic. This subject is of theoretical importance as it allows for studies of correlations of the internal rhythm of birds with the restricted seasonal variations in the tropics of weather, suitability of nest sites, and food supply.

The present paper apparently serves the double purpose of being a faunistic and demographic documentary of seven species of terns reported nesting on the Dry Tortugas since these islands were first visited by Audubon in 1832. The Dry Tortugas, low, atoll-shaped, coral islands about 70 miles west of the nearest Florida Keys, although difficult of access, have been the site of bird-banding operations from 1936 through 1941 (mainly by Jack C. Russell of the Florida Audubon Society) and, more extensively, by a joint effort with the National Park Service, Florida State Museum, from 1959 onwards. Unfortunately, although a not insignificant part of the general discussions is based on the results from thousands of terns banded, details of recoveries are not given (other than incidentally) either in relation to localities or to age classes. This makes it difficult for the reader to check the conclusions, important as a whole, made by the author, who, it may be recalled, is a careful and competent Park Biologist at Everglades National Park and Fort Jefferson National Monument (on Garden Key, Dry Tortugas).

The description of the locations and physiography of the shoals and islands of the atoll provides an impressive history of the actions of currents, waves, and hurricanes upon the presence, shape, and vegetation of the islands and their repercussions on site and size of terneries. The known changes of each island (including their intricate and confusing names) and of the growth and shifts of the colonies of each species of tern are given separately and in chronological sequence. They are described critically, but in the absence of a comparative tabulation, in which also the hurricanes and the introductions and eradications of rats would also have been helpfully entered chronologically, it is not easy for the reader to reach his own conclusions.

Counting the population size of the Sooty Tern (*Sterna fuscata*) and the Brown Noddy (*Anous stolidus*), which are the most abundant bird species of the islands, involves many difficulties. These include the inadequacy of visual estimations of bird flocks numbering tens of thousands of individuals, the need to allow for the presence of non-breeding individuals (if these are visiting the breeding colonies at all), the need to allow for the arrival of late breeders and the departure of early nesters, and the need to estimate the number of birds which have lost their eggs or young. The Sooty Terns, of which the record starts with an uncertain estimation of probably not over 50,000 pairs in Audubon's time (1832), apparently have had their lows at the end of the last and the beginning of this century when commercial egg taking was heavy (an estimated 5,000 adults in 1903). They reached peaks about 1919 (110,000 adults), 1944 (130,000 adults), and 1950 (over 190,000 adults) with lows in between. The present colony is estimated at 80,000 breeding adults.

In contrast to the well known situation on Ascension Island, the Tortuga Sooty Terns definitely have a 12-month cycle, but new breeding birds arrive from April until July and start egg-laying almost immediately. "Commonly hundreds of birds are incubating by the afternoon of the day of landing" (p. 40). First (night) landings are earlier at present than they were 20 years ago (changing from, at the average, 27 April to 14 April or earlier, e.g., 28 March in 1964).

Birds arrive in optimal physical condition and in fresh, unworn plumage. It was thought that they did not visit their breeding site in winter, but recent observations have made it necessary to hold this opinion less rigidly. Other interesting data and their inferences are given by the author in an elaborate discussion. Site tenacity, first arrival of older adults which occupy traditional nesting sites, suitability of nesting grounds (flat, sandy spaces with sparse growth of sea oats), and possible nest-site competition with noddies are discussed with expert knowledge. A comparison with the Sooty Tern colony on Ascension Island is facilitated by a tabulation of data (table 3, p. 51). Particularly, the considerable difference in adult mortality (by feral cats, amounting in Ascension Island to three per cent; insignificant in the Tortugas colonies) and the high (Tortugas) against the very low (Ascension) breeding success of the Sooty Tern are noteworthy. Population size, which, according to Ashmole, is restricted by food supply in Ascension, is in the Tortugas unrestricted by food supply, but rather is restricted by available nesting sites. The termination of the breeding season is fixed by autumnal or late summer storms causing heavy waves and high water and by the passage of migrating hawks, which take the remaining, late, or disabled young. However, no details of this hawk predation (amount? species?) are given, nor are those on the amount of predation by frigatebirds (*Fregata magnificens*).

"Brown Noddies have been banded and recaptured at the Dry Tortugas in much smaller numbers than the Sooty Terns" (p. 58); still, the discussion gives important data on the dependence of these terns on the edges of bay cedar bushes for nesting sites, the devastating effect of hurricanes on the presence and growth of these bushes, and the consequent changes of the number of breeding noddies. Although the noddy was originally estimated to be about as abundant as the Sooty Tern, its present numbers hardly surpass 2,000 adult breeding birds. They must have reached a peak at about 1919 (*ca.* 35,000), after which their original breeding place ("Bird Key") was definitely unsuitable for them through repeated hurricane action.

Faunistically this paper is important, as its results suggest that the total Tortugas breeding population of at least the Sooty Tern does not leave the confines of the Gulf of Mexico, and that a shift of breeding sites in Sooty Terns and Brown Noddies, both individually and as a colony, only rarely occurs. The unpredictable population changes in the other species of terns (Roseate, *Sterna dougallii*; Least, *S. albifrons*; Royal, *Thalasseus maximus*; and Sandwich, *T. sandwicensis*), all occurring in small numbers, are described. These fit well into what is known of these species in their Caribbean ranges. According to the reviewer's experience the breeding places of the Common Tern (*Sterna hirundo*) in the islands of Aruba, Curaçao, and Bonaire in the southern Caribbean do not usually coincide with those of the Roseate Tern. Hence, the author is sufficiently cautious in not yet accepting any definite breeding record of this species in the Tortugas. The Black Noddy (*Anous tenuirostris*), first recorded in the "continental" (*sic*) United States at Bush Key, Dry Tortugas, on 13 July 1960 by the author, has been observed, mist-netted, and photographed on Bush Key in subsequent years, but definite proof of nesting is lacking, though this is strongly suspected.

Robertson's study is an important paper of reference, and probably will be for many years. The reviewer hopes that the numerous banding results will allow a further paper to be prepared on the actual distribution of the members of the Tortuga colonies over the Gulf of Mexico and the Caribbean seas and on the composition of the populations and the life expectancies of Sooty Terns and Brown Noddies according to age classes.—K. H. Voous.

Social behavior and organization among vertebrates.—William Etkin, ed. 1964. Chicago, University of Chicago Press. 307 pp. \$7.50.—This book is intended as an introduction to the social behavior of vertebrate animals. Several chapters by the editor provide a description of social behavior from the viewpoints of ecology and evolution. Five chapters are contributed by an impressive group of active experimentalists, each covering recent developments in his specialty.

Chapter 1, "Cooperation and competition in social behavior," by W. Etkin, is a good summary of some of the ideas of W. C. Allee and his students on the survival value of aggregation to animals and on the regulation of aggressive competition by means of social hierarchies and territories. However, Etkin defines "territoriality" as "any behavior on the part of an animal which tends to confine the movements of the animal to a particular locality," i.e., corresponding to what is called "home range" by most other authors.

Chapter 2, "Neuroendocrine correlation in vertebrates," by W. Etkin, deals especially with some of the basic anatomy and physiology of the endocrine system, the hypothalamus, and the limbic system of mammals, laying some ground work for succeeding chapters that deal more specifically with hormones and behavior.

Chapter 3, "The physiological analysis of aggressive behavior," by David E. Davis, deals with the relationship between aggressive behavior and the gonadal and adrenal hormones in birds and mammals, summarizing much recent work.

Chapter 4, "Reproductive behaviors," by W. Etkin, gives an elementary description of the sexual and parental phases of behavior.

Chapter 5, "Biological bases for reproductive behavior," by Frank A. Beach, is an account of neural and hormonal factors in sexual behavior of mammals. Beach develops his well known generalization on the relatively great importance of cerebral over hormonal control of sexual behavior in primates as compared with other mammals.

Chapter 6, "Control of behavior cycles in reproduction," by Daniel S. Lehrman, considers neural and endocrine factors in sexual and parental behavior in birds and mammals, providing an up-to-date and well organized treatment of the subject.

Chapter 7, "Theories of animal socialization and communication," by W. Etkin, is an exposition by the editor of group integration by instinct and experience with special reference to the views of Lorenz and Tinbergen on instinct.

Chapter 8, "The evolution of signaling devices," by Niko Tinbergen, deals in an objective way with the origin and ritualization in evolution of signaling devices (the "Auslöser" of Lorenz, often translated as "releasers").

Chapter 9, "The effects of early experience on social behavior and organization," by J. P. Scott, gives a modern treatment of the ontogeny of social behavior in birds and mammals.

Chapter 10, "Types of social organization in birds and mammals," by W. Etkin, emphasizes the phylogeny of behavior with some rather interesting ideas by Etkin on the evolution of human behavior and intelligence.

There is a list of references at the end of each chapter. Apparently the book is intended primarily for undergraduates, and the lack of consistent documentation in the text sometimes makes it difficult to check a specific point. The over-all integration is not particularly obvious and the chapters by different authors often seem like entirely separate units—a collection of good readings rather than a very closely organized textbook. Perhaps no more was intended. The book is top-heavy on birds and mammals and other classes of vertebrates are usually treated incidentally if at

all. It is well illustrated with many graphs and significant drawings, although the latter were apparently not done by professional artists.

This is a good book, fulfilling a need that the editor discerned, and it should be very helpful to many people seeking an authoritative introduction to the study of social behavior in birds and mammals and to the work of some of the best known researchers in this area.—N. E. COLLIAS.

The integration of agonistic behavior in the Steller's Jay, *Cyanocitta stelleri* (Gmelin).—Jerram L. Brown. 1964. *Univ. California Pubs. Zool.*, 60(4): 223–328; 2 pls., 13 figs. \$2.00.—Dr. Brown is one of the few zoologists to combine field behavior studies of birds with interest in and knowledge of the neural mechanisms underlying behavior. The goals of this paper are two: a description of the agonistic behavior of Steller's Jay, a species whose behavior has not been studied previously; and an attempt to integrate behavior as observed in the field with what is known about neural mechanisms. The first aspect, which encompasses most of the paper, is of interest to ornithologists as well as ethologists, while the second is more likely to interest the latter. Therefore, this review will be more concerned with considering the general aspects of agonistic behavior.

The author studied 114 color-banded jays near Berkeley, California. The jays were not highly territorial even during the breeding season. However, there were complex dominance relationships and aggressive encounters were common at certain localities.

Brown describes the form of each posture and vocalization in detail, other movements which are associated with it, the situations in which it occurs, behavior following the act, the sexes of the participants, and the seasonal frequency. There are excellent drawings of many of the displays. Spectrograms of the principal vocalizations are also included. There is a surprising complexity of visual and vocal displays. Many displays include several plumage and body movements and a vocalization. There are relatively few behavioral elements, but these exist in a number of combinations. In a species with such complex dominance relationships and agonistic displays it is not surprising that the author has attempted to assess the function of only a few of the displays. Although this is not a comparative study, the author does compare some displays of Steller's Jay with those of the Scrub Jay (*Aphelocoma coerulescens*) which also occurred in the study area and with the European Jay (*Garrulus glandarius*) studied by Goodwin. Brown feels that comparative aspects of behavior are primarily desirable in evolutionary studies and his is primarily a motivational study. Ultimately, comparative studies should also contribute to an understanding of neural mechanisms.

The two displacement activities of this jay are of interest; bill-rapping, in which the jay raps the bill against the perch in the same manner as opening a hard object; and digging, in which loose litter is tossed aside. Brown points out that these movements are common forms of displacement in the Corvidae and other groups with similar feeding adaptations. These movements occurred as displacement in agonistic situations, particularly in territorial disputes. Brown believes that the role of displacement activities "in the gradual transition from high-level agonistic arousal to normal foraging may be significant." Thus, the selective advantage would not be to release surplus energy (as suggested by some ethologists), but to channel behavior "into more useful modes."

His findings on song in jays have important implications for consideration of song as a homologous display in the passerines. In the Steller's Jay, the "various functions which song has in other passerines seem to be divided among several different calls and the so-called 'song'." Song, although occurring during courtship, does not seem to have a threat function as in most passerines.

Crest movements are of particular importance for a motivational analysis, for they seem to a marked degree to reflect the internal state of the animal. The crest can assume many different angles and the angle is associated with certain types of behavior. It is low during courtship, variable during comfort and nutritive activities, and elevated in aggressive displays. However, the degree of crest elevation is not correlated directly with attack. Although the angle is greatest during fighting, it is variable during supplanting attacks.

Few ethologists have described the context of postures and vocalizations in as much detail and as quantitatively as has Brown. This is of course a necessity for his analysis of the integration of behavior, which he defines as "the processes which coordinate effector actions into behavior patterns." His basic tenet is that with a knowledge of neurophysiology it is possible to set up hypotheses about neural events rather than being restricted to purely behavioral conclusions. Brown and Hunsperger (*Anim. Behav.* 11: 439-448, 1963) coined the term "neurobehavioral mechanism" (NBM), but its usage by Brown in explaining jay behavior seems superfluous in many cases. Controversy about the usage of this motivational term is presented elsewhere (Rowell, *Anim. Behav.*, 12: 535-537, 1964; Brown, *Anim. Behav.*, 12: 538-541, 1964). Most ethologists consider agonistic displays to result from the conflict of attack and escape tendencies (some use the term "drive"). Brown points out that this theory is inadequate for explaining many of his observations. For example, "shook," a call note, occurs in *both* seemingly "pure" attack and escape. He presents evidence for the concept of agonistic arousal which he defines as the "activation of the neural substrate necessary and sufficient for agonistic behavior." This seems to me to be jargon for the concept that agonistic behavior has a neural basis, which surely no one would deny. He states that brain stimulation studies (mainly on cats and chickens) support the concept of agonistic arousal but are ambiguous with regard to the attack-escape theory. His data on the jays led him to the same conclusions. His conclusions do not convince me that field observations of the behavior of an animal give much knowledge concerning neural events. Information from brain stimulation studies is still inadequate to explain much of the agonistic behavior that occurs under natural conditions. Therefore, I disagree with Brown's basic thesis and think it is premature to draw neurophysiological conclusions from field observations. However, this paper is valuable as a detailed study of the behavior of Steller's Jay and for a critical re-evaluation of motivational concepts and particularly in pointing out the inadequacies of attack-escape theory in explaining agonistic behavior.—MILLICENT S. FICKEN.

The quiet crisis.—Stewart L. Udall. 1963. New York, Holt, Rinehart and Winston. Pp. xiii + 209, illus. $9\frac{1}{2} \times 6\frac{1}{2}$ in. \$5.00. (New York, Avon. Paper. \$.95). —Many ornithologists are at least peripherally involved in conservation work, and so try to keep a small reference library on the subject. The present title would make a valuable and inexpensive addition to such a library; it is an excellent analytical history of the conservation problems of the United States, and it is available in either paperback or hardcover editions.

The quiet crisis is not an ordinary conservation history, an excruciating documentation of resource misuse, or an angry wailing over past and present conditions. Instead, the author has taken a positive, managerial approach. Most of the book is a penetrating analysis of what was done to American resources, and why. Understandably, the author's background as a westerner and as the Secretary of the Interior is evident throughout. He presents a convincing argument for strong federal stewardship of resources in the light of the often disastrous results of weak government and private "enterprise" in the past. If the United States had had more top government officials of Udall's caliber, probably most of this book would never have had to be written.

The book begins with a brief discussion of the early decades in American history: the prevailing land ethics, why, how, and by whom they were formed. The depth to which the author has gone in thinking through and preparing this book is evident in his short profiles of the men who influenced the formation of a land ethic: men like Thomas Jefferson, Daniel Boone, and William Bartram, each of whom made important contributions, but are seldom mentioned in the usual conservation history. The author then goes into a discussion of the "raider" years, the orgy of waste when land was free or nearly so and resources were believed to be superabundant. He spends little space documenting the well known excesses of the period. Instead, he concentrates on the ideas of the times, how they were formed, what their consequences were. The bulk of the book is devoted to the leaders of the conservation movement of the last 100 years. Again, a number of less familiar but important names appear, such as George Perkins Marsh, Carl Schurz, and John Wesley Powell, whose activities and ideas gave rise to the later successes of Gifford Pinchot, John Muir, and the others we usually think of as the "first" conservationists of this country. From the historical background, the author then goes on to discuss current problems. The "quiet crisis" is his term for the new problems that have arisen from modern scientific and technical advances: our preoccupation with hot and cold wars and with outer space, to the neglect of the "inner space" in which we must live accompanied by a human population explosion. The author does not merely present problems, he also presents solutions or pathways to solutions; these suggestions are obviously well thought out and have a wide, international approach. It is good to know that the man with these ideas has the opportunity to carry out at least some of them during his period in office.

The reader may suppose that the Secretary of the Interior wrote this book as a statement of and argument for his philosophy of resource management. Udall is, of course, a politician as well as an extraordinarily far-sighted conservationist, but he manages to keep politics out of most of his presentation. He is particularly adept at describing the "style" of presidents and others, explaining their effectiveness or lack of it. He is very critical of President Grant, but full of admiration for both Roosevelts. In spots he is perhaps overenthusiastic over Franklin Roosevelt and the contributions of big dams, but this is understandable in view of his background. The author also discusses the efforts of certain private organizations such as the National Audubon Society, as well as the activities of the federal government; one striking omission is the contribution of state and local governments. These are very minor faults, however, and do not measurably detract from a unique and outstanding book. "The object has been to tell, between two covers, the land story of the American earth and the changing land attitudes of those who have used it and lived on it" (pp. 193-194) and Secretary Udall has done it extremely well.—MARY A. HEIMERDINGER.

Birds of the Athabasca River region.—Robert W. Nero. 1963. Saskatchewan Nat. Hist. Mus., Spec. Publ. no. 5, 143 pp. With many habitat and bird photographs, maps, and with drawings by R. D. Carson. \$2.50.—This book is the result of a thorough exploration of parts of northwestern Saskatchewan. Nero's field party observed and collected during most of the summer of 1960, in July, 1961, and during six weeks in the summer of 1962. The faunistic data of the earlier literature have also been covered and thus all available data from the northern third of the province lying on the Canadian Shield, north of the Clearwater and Churchill rivers, are now brought together into one publication. The book contains field data and many good behavioral observations of the species encountered. The field party obtained the first specimen of the Glaucous Gull from the province and the first breeding data for the Semipalmated Plover, Common Redpoll, and Savannah Sparrow. The known ranges of the Sharp-tailed Grouse and the Northern Phalarope are substantially extended by Nero's records. The occurrence of the Little Gull, a very rare visitor (and, lately, breeder) from the Old World has been established for the region. The check list of the area includes 169 species of which 82 breed and another 48 probably breed.

Northern Saskatchewan is faunistically a relatively simple area where the vegetation belts belong to the northern half of the transcontinental taiga zone with the forest gradually changing into parklike groves, muskegs, and barren sand dunes. In such an area distributional changes can easily be followed. In the ecological description of the area Nero discusses F. Harper's (*Ecology*, 12: 18–31, 1931) findings. Recent climatic change seems to have resulted in the occurrence of 14 species, 5 of them now common, not found by Harper 40 to 45 years earlier.

Thorough faunistic explorations such as this are welcome additions to our scanty knowledge of the uninhabited northland. The book is well documented and provides many details of the circumstances of finding the birds the author encountered. I could wish only that the description of these circumstances had been more accurate with respect to the vegetation types in which the different birds were encountered. Ecological classifications of the lake, bog, and forest types of the taiga are abundant, yet we still do not have a grasp in our literature of the ecological requirements of birds in the North American taiga region. Especially lacking is knowledge of the habitat factors that enable a species to live near its northern limits. A foundation for such an appraisal, based on surveys by the Saskatchewan ornithologists, would be a logical continuation of the faunistic records here published.—MIKLOS D. F. UDVARDY.

More voices of African birds.—Myles E. W. North and Donald S. McChesney. 1964. One LP (33 $\frac{1}{3}$ RPM) record in sleeve. Produced by the Cornell University Laboratory of Ornithology; published by Houghton Mifflin Company. \$7.75.—This phonograph record is a welcome sequel to Cornell's *Voices of African birds* produced in 1958. For this new production Donald S. McChesney, leader of the Cornell African expeditions in 1956 and 1957, appears as co-author with Myles North, one of East Africa's best-known ornithologists. The recordings themselves are by North, Marian McChesney, and Peter Paul Kellogg. This is one of the finest compilations of bird voices to reach the American market, being highly instructive, with well-chosen examples, an absolute minimum of spoken announcements, and sufficiently long samples of each song or call. These generally are well reproduced and remarkably

free of background sounds. Accompanying the 12-inch, long-playing disc is a seven-page booklet containing descriptive material and comments on each species.

The record presents vocalizations of 90 East African species compared with but 42 on the 1958 record—the result of a long-overdue decision to relegate introductory and other comments to the printed page instead of occupying record space with material that, once heard, may become tiresome to those who play the record repeatedly in an effort to learn the songs. (And this, after all, is the object of many purchasers of such records.)

Side one of the record deals with non-passerines from herons to honey-guides, with such fascinating rarities as the Whale-headed Stork (*Balaeniceps*) and African Swallow-tailed Kite (*Chelictinia*) in addition to the more common species. Following the shrikes on side two is *Nicator chloris*, listed as “Nicator Shrike (or Bulbul?).” The vocalizations of this bird, reaching the ears of one experienced with African shrikes and bulbuls in the field, certainly support the opinion of Chapin, Rand, and White that *Nicator* is better placed among the Pycnonotidae.

Also of taxonomic interest is the recording of the “Somali Crow,” *Corvus edithae*, treated by most authors as a race of the Common Raven, *C. corax*. The recording demonstrates that this form is vocally much like the Pied Crow, *C. albus*, and the accompanying printed information refers readers to Blair’s account (*Ibis*, 103a: 499–502, 1961) of *edithae* interbreeding with *C. albus* in Ethiopia. North’s opinion that *edithae* is no raven is not difficult to accept after comparing its voice with that of *C. albus* (which is on the 1958 record).

Another noteworthy item is the recording and discussion of *Caprimulgus clarus*, here considered distinct from “*Scotornis*” *climacurus* of which it has been considered to be a race. For some 15 years Mr. North has been working on African nightjar taxonomy and has demonstrated (unpublished notes and tapes) quite convincingly that if voice is a meaningful character the existing caprimulgid taxonomy is not an entirely accurate reflection of specific relationships among the African species. The suggested separation of *C. clarus* from *C. climacurus* is one of the results of his study.

The printed material accompanying the record discusses such taxonomic matters as those here referred to, and also provides the exact locality and date of each recording of each species, a statement on range and abundance in Africa, and often something of the bird’s habitat as well. There is frequent reference to the *Voices of African birds* record for purposes of comparison.

The two records, if properly studied in advance of one’s first trip to East Africa, should materially aid in reducing the bewilderment that accompanies one’s initial plunge into a wholly new and remarkably vociferous avifauna. Together these records provide many particularly helpful vocalizations, such as 11 species of doves, 7 cuckoos, 9 hornbills, 3 owls, and 8 *Cisticola* warblers (including one possibly undescribed species!). The new record itself reveals the voices of three *Chrysococcyx* cuckoos for ready comparison, and three robin-chats (*Cossypha*), two of which must often be identified by voice alone. Of special interest is what must be one of the least typical bustard voices, that of *Lophotis ruficrista*; the amazingly melodious song of *Mirafra cantillans*; and the wonderful voice of the Wattle-eye Flycatcher (*Platysteira cyanea*), a guarantee of nostalgia for anyone who has worked in an African forest.

The authors, Cornell, and Houghton-Mifflin are to be congratulated for a fine production. Hopefully we shall not have to wait another six years for a third record in this series.—DALE A. ZIMMERMAN.

Ornitologia Brasileira. Catálogo descritivo e ilustrado das aves do Brasil. Volume 1.—Oliverio M. de O. Pinto. 1964. Dept. de Zoologia da Secretaria da Agricultura, São Paulo, Brasil. Caixa Postal 7172. Pp. xiv + 182 + 1 (errata); 25 col. pls., 281 line drawings. Price \$15.00 U.S. (in Portuguese).—The first volume of this monumental descriptive work on the birds of Brazil, by the scholarly dean of Brazilian ornithologists, covers the Rheiformes to the Cuculiformes (in the Wetmore order, except that the Psittaciformes are reserved for the next volume). This is the first modern work intended to provide diagnostic descriptions of every species and subspecies known from Brazil. Earlier works purporting to cover the Brazilian avifauna, published in the 19th century, are so incomplete, and are so outdated in their nomenclature, as to be of little practical usefulness to those seeking to make identifications. Up to the present, except by resorting to the collections of a major museum, workers on Brazil birds have had to rely mainly on the taxonomically antiquated, but still useful, multi-volume, descriptive work of the birds of the world, the "Catalogue of the birds in the British Museum," which appeared at the turn of the century, and which is no longer readily available. Such a fine study as Pinto's earlier *Catálogo das aves do Brasil* is a distributional list not designed to serve for identification.

To treat so vast an avifauna as that of Brazil, Pinto felt that in the present work he must confine himself to description and distribution. The importance and need for books of this kind as a basis for any ornithological studies cannot be exaggerated. The ecological and behavioral investigations popular today presuppose the accuracy of specific identifications. Many naturalists in areas like Europe or temperate North America, for which excellent identification manuals have existed for generations, do not seem to realize that for most of the Neotropical region, which contains by far the greatest variety of birds, the basic descriptive texts still remain to be written, and even knowledge of distribution (on which species taxonomy rests) is at a pioneer stage. What may be regarded as "old-fashioned" ornithology in regard to the birds of the United States or Europe is the most needed and most useful ornithology in regard to the Neotropical avifauna. Those of us who have our task made easy by the availability of a great museum collection, or who have not experienced the problems of ornithological students in the tropics, can hardly imagine how valuable a descriptive work like this can prove in South America and what a prodigious amount of labor is required to produce it. This first volume alone contains descriptions of 426 species and subspecies, not to mention the higher taxa.

The book contains a short introductory account of the basic anatomy and external topography of birds. Then, starting with the Rheiformes, each order, suborder, family, subfamily, and tribe is diagnosed. These diagnoses often mention briefly basic habitat, food preference, nesting site, or other behavioral features applicable to the group as a whole. For genera there is either a diagnosis or a key under the immediately higher taxon. Good line drawings by J. P. da Fonseca of external structural morphology of 71 species show the characteristics of the higher taxa and many of the distinctive genera. The account of each monotypic species and each subspecies begins with the scientific name, followed by a short basic synonymy, including the reference in the "British Museum Catalogue." Brazilian vernaculars are stated, where known, but no selection is made among competing common names and none is invented. For each form the general distribution is outlined, with the Brazilian localities from which specimens are known, indicating state or region. Then follows a diagnostic description, with measurements supplied for one or two specimens, carefully stating the localities of such specimens. There are no keys to species, but

in this volume very few genera contain more than three or four Brazilian species. To anyone who can read Spanish, the Portuguese text offers little difficulty.

The attractiveness of the book is enhanced by 25 color plates by T. Meissner, depicting 65 species, which, although a little stiff in pose, still are pleasing and useful for identification. Indeed it is a great pity that (as intimated in the preface) economic considerations precluded use of more of the almost 200 water colors prepared.

One new subspecies is described from northern Maranhão. This is the ground-cuckoo, *Neomorphus geoffroyi amazonicus*, said to be the form occurring through Amazonia south of the Amazon. The text also labels as "subsp. nov." the chachalaca, *Ortalis guttata remota*, but actually Pinto published the original description in 1960 (*Pap. Avul. Dept. Zool., S. Paulo*, 14, art. 2, pp. 11-12), a reference not mentioned, presumably because this part of the book was written previously. It would be convenient if, in subsequent volumes, all new names introduced were indicated at the start of the volume, with a reference to the page of the text on which the new taxa are described.

Usually and understandably, Pinto adheres to the nomenclature of the Hellmayr and Conover volumes of the "Catalogue of birds of the Americas" or to Peters' *Check-list of birds of the world* (whichever is later with respect to the particular family). As a result, not all recent changes have been adopted; e.g., *Guara* is used for the Scarlet Ibis, although the earlier *Eudocimus* is now accepted as valid under current nomenclatural rules; *Podiceps major* still appears in the genus *Aechmophorus*. Pinto states he has compromised between Delacour's and Peters' classifications of the Anatidae. It flattered me to note that Pinto adopted (as he mentions) my view expressed in correspondence that the tiger-heron, *Tigrisoma fasciatum* is not a race of *T. lineatum*, but a sympatric species, of which *salmoni* is a subspecies. In this connection perhaps I should indicate a correction: two Brazilian specimens (now in Poland) from Porto Xavier da Silva and Ilha do Mutum, Rio Paraná, attributed in the literature to *fasciatum*, are almost surely *T. lineatum marmoratum*; while one from Chapada, Mato Grosso (in the American Museum of Natural History), listed in the literature as *marmoratum* is definitely an adult *T. f. fasciatum*.

In examining a book of this kind, the reader, depending on his personal interest, is certain to wish something more were included. To aid in the primary function of identification it would be helpful if in subsequent volumes keys to species were inserted, at least wherever a genus contains more than four or five representatives. More useful even than keys under genera, although admittedly more difficult to prepare, would be species keys under each family (without regard to intermediate taxa)—comparable to those of de Schauensee in his check-list "Birds of Colombia" published in *Caldasia*. It is often easier to recognize the distinguishing characteristics of a bird species than of a bird genus. Some readers are bound to regret the lack of information on habitat, or behavior, or breeding biology of individual species. But, on consideration, it is evident that effort spent by the author in writing up material on habits would necessarily reduce the time available for conclusion of the basic descriptive work. *Ars longa, vita brevis*. It might, however, be possible, with rather little expenditure of effort or space, to include a general statement of habitat (where known), and, when there is any *significant* literature on habits or nesting in Brazil, to cite the reference, with a merely parenthetical indication as to whether it relates to behavior or nesting. Another thing I should appreciate in a future volume is a discussion of those major ecological and zoogeographic divisions of Brazil important in bird distribution and speciation, with an accompanying map. Pinto is by far the most experienced ornithologist in that vast country, and as a taxonomist, he un-

doubtedly bases his work on certain zoogeographic conceptions developed over the years. There are ecological works on Brazil, but none of a truly wide scope written by an ornithologist with knowledge comparable to that of Pinto. It is easy to mention matters which might usefully be included in future volumes and which would broaden their interest. But the essential thing is to finish the descriptive phase of the work. Let us hope that nothing deters the author from completing that monumental endeavor and the Departamento de Zoologia of São Paulo from giving him every assistance to ensure early publication.—EUGENE EISENMANN.

2° suplemento de las aves de Chile.—J. D. Goodall, A. W. Johnson, and R. A. Philippi B., with the assistance of F. Behn, G. R. Millie, and L. E. Peña. 1964. Platt Establecimientos Gráficos, S. A., Buenos Aires, Argentina. Pp. 443–521; photographs. (Available from A. W. Johnson, Casilla 327, Santiago, Chile.)—This is the second supplement to the two-volume handbook on the birds of Chile, published in 1946 and 1951. The first supplement appeared in 1958; the new supplement continues the paging. The contents include description of a new subspecies *Diuca diuca chilensis* from Chiloe Island, with authorship attributed to R. A. Philippi B. and L. E. Peña; four species and six subspecies added to the avifauna of Chile; data on nesting for 22 forms; Chilean range extensions or further information on habits for some 80 forms; changes of nomenclature; and addenda and errata. Of special interest to North Americans is the recording of the Red-eyed Vireo (*Vireo olivaceus*) and Least Sandpiper (*Erolia minutilla*) from Chile and data on other migrants from the north. The care and accuracy of *Las aves de Chile*, the most useful and complete handbook in Spanish that has yet appeared on the birds of any South American country, is characteristic also of this second supplement, which brings the work up to date. It is reported that Mr. Johnson, one of the authors, has in preparation a two-volume handbook in English.—E. EISENMANN.

Birds on a May morning, Songs of the forest, The swamp in June. 12" monophonic LP recordings. \$5.00 each. **Song Sparrow and The brook.** 7" 33 $\frac{1}{3}$ RPM monophonic LP recordings. \$1.50 each. Recorded by Peter Kilham and published by Droll Yankees, Inc., Box 2355, Providence, Rhode Island.—This group of recordings, designed primarily for listening pleasure, should be well received by bird enthusiasts and nature lovers of wider interests as well, particularly those who have a special nostalgia for the New England countryside. Sides A and B of each recording are identical except that commentary and identification of the sounds have been included on each side A. The recordings can therefore be used to play guessing games to aid in training the ear to recognize species by sound as suggested on one of the jackets. In *Songs of the forest*, in *The swamp in June*, and in *Song Sparrow* identification of the sounds and interesting ecological remarks are effectively presented as casual conversation between Alfred L. Hawkes, Executive Director of the Audubon Society of Rhode Island, and Peter Kilham at the scene of the recording.

In *Birds on a May morning*, 36 avian species are identified by a guide who leads a "bird walk" beginning in a farmyard and extending through fields, an orchard, some woods, a swampy place, and then back to the farm. The songs of 14 species

of birds, mainly Wood Thrush and Hermit Thrush, as well as other sounds of a Vermont woodland in spring are presented in *Songs of the forest*. *The swamp in June* includes a medley of sounds of "swamp" dwellers in and around a beaver pond. Insects buzzing, pickerel frogs groaning, beavers slapping the water with their tails and baby beavers crying are among the cast of this interesting performance. Practical suggestions by Peter Kilham for sound recording enthusiasts are printed on the jacket. A single Song Sparrow accompanied by green frogs and six avian species provides the focal point for the short but enjoyable recording entitled *Song Sparrow*. In *The brook* one takes a downstream trek along a New Hampshire brook with the companionship of Alfred L. Hawkes. Heard along the way as darkness approaches are 21 avian species plus spring peepers, a fox, a fly, and a cricket.—JOYCE L. WILDENTHAL.

Kingfisher. News and comment about wildlife and conservation at home and abroad.—Edited by Richard Fitter. Vol. 1, no. 1, February, 1965 *et seq.* 1 Bedford Court, London, W.C. 2. 15 shillings per annum for 9 issues.—In the first issue of this modest new journal, the editor defined the "ecological niche" of *Kingfisher* as follows:

. . . an independent news record and commentary over the whole field of wildlife and its conservation, both at home and abroad. Most existing wildlife journals speak mainly for the bodies which publish them; KINGFISHER has no axe to grind except an urgent desire to promote the conservation of wildlife and other natural resources throughout the world . . . KINGFISHER will appear nine times a year, at intervals of five or six weeks, and will consist mainly of straight news, with comment added where this is needed to explain its significance.

The first four issues are at hand at this writing, and it is apparent that *Kingfisher* does, indeed, fill a vacant niche in our periodical literature. Each issue, only $4\frac{3}{4} \times 7$ inches in size, includes 16 pages. Although these constitute numbers 1 through 4 of volume 1, each issue is paged separately. There are no illustrations. The first three issues carried no advertising; the fourth is the first to have a cover, the back of which bears one advertisement. The items of conservation news selected for publication are truly worldwide in scope, and of great variety. Conservation legislation, pesticide research, publications, news of new parks and reserves or threats to existing ones, and personalia appear in each issue. A "Who's who in conservation" page introduces conservation organizations, giving goals, programs, officers, etc.

The range of primarily ornithological items may be illustrated by part of the contents of a sample issue (no. 3): the effect of fox bounties on Minnesota pheasant populations; the return for the seventh successive year of a Scottish pair of Ospreys (almost extinct in the British Isles); a summary of British ringing results for 1963; Bullfinch damage to fruit tree buds; formation of a bird-watching society within the Royal Air Force; new species added to the Wildfowl Trust collection at Slimbridge; reintroduction of Eagle Owls to Swedish forests wherein the species had been extirpated; steps taken to conserve the dwindling populations of the Lammergeier in Natal, the Monkey-eating Eagle in the Philippines, the California Condor in the U. S., etc.

Mr. Fitter is performing a valuable service to the field of wildlife conservation, and *Kingfisher* deserves a wide audience.—KENNETH C. PARKES.

North American birds eggs.—Chester A. Reed. Revised and with a new preface by Paul A. Buckley. 1965. New York, Dover Publications, Inc. Pp. i-xii, 1-372, photographs, marginal line drawings. $8\frac{5}{16} \times 6\frac{1}{8}$ in. (paper). \$3.00.—Although this book, originally published in 1904, is a relic of the era of egg-collecting, it is a useful reference work, and Dover has published it at one-third the recent book dealers' price for the first edition. A note by Dean Amadon expresses the hope, seconded by the reviewer, that the new Reed book will not revive interest in egg-collecting as a hobby. Buckley, a graduate student at Cornell, has written a brief preface to this edition, which he also "revised." The preface outlines some changes in classification and nomenclature since 1904, but fails to note that the sequence of orders and families differs from any of the several followed in modern literature. The revisions are chiefly in nomenclature. Scientific names of species follow the 1957 A.O.U. Check-List. Oddly enough, only binomials are given for subspecies of polytypic species, but Reed's original English names are given for subspecies, followed by "(should be . . . [species name])." Thus "*Aphelocoma coerulescens*" is given as the scientific name for eight forms (of which egg photographs are supplied for four), while the English names are given as "Scrub Jay"; "Woodhouse's Jay (should be Scrub Jay)"; etc. If it were really necessary to reprint these obsolete English subspecific names, the word "now" would have been briefer than "should be."

Footnotes occur here and there to record certain range changes or refinements of knowledge since Reed's day. There is much inconsistency in noting range expansions. Thus the extension to Long Island of the breeding ranges of the Great Black-backed Gull and of several Ciconiiformes are duly recorded, as is the introduction of the House Finch to the eastern states. But we still read that the Western Meadowlark breeds "west of the Mississippi," Brewer's Blackbird "west of the Plains," and the Evening Grosbeak in the "western United States in the Rocky Mountain region." In view of recent Russian discoveries (see "Recent Literature," Kuzyakin, A. P.: *Auk*, 82: 308, 1965), it is amusing still to read of Marbled Murrelets in a "large colony breeding in company with Ancient Murrelets"!

A photographic reproduction process has been used in printing this volume at the exact size of the original, which is important as the egg photographs are life-size. Although there is an inevitable loss of sharpness in the photographs this is not excessive, and the textures of certain eggshells (see loons, waterfowl, Pelecaniformes) are reproduced with gratifying fidelity. Although the illustrations are in black and white, colors are given under each egg photograph. This reprint should prove to be a handy reference for identification of nests and eggs.—KENNETH C. PARKES.