REVIEWS

EDITED BY WALTER BOCK

Greenshanks.—Desmond and Maimie Nethersole-Thompson. 1979. Vermillion, South Dakota, Buteo Books. 275 pp. Illustrated by Donald Watson, 4 color plates, 16 monochrome plates, 19 figures, 31 tables, and 11 appendices. $27.50.—Those who have been fortunate enough to be in the north country in spring and have been enchanted by the display flights and activities of scolopacid waders will be delighted by the accounts of Greenshanks (*Tringa nebularia*) and their haunts in this new book by Desmond and Maimie Nethersole-Thompson. The book will also interest those who enjoy reading about fascinating birds that live in remote places and about the people who study them. Not only do the Nethersole-Thompsons present much new information about the biology and life history of Greenshanks, but they convey their enthusiasm, excitement, and whole-hearted commitment to observational studies of birds in their natural environments.

Desmond Nethersole-Thompson made his first trip into the north of Scotland in search of Greenshanks in 1932. Following nearly 20 years of study, mostly in the Spey Valley, he published his first account of this species in 1951 in a now out-of-print book titled "The Greenshank." Since 1964, he and his research team (wife, Maimie, and their six children) have lived each spring in a remote valley in Sutherland where they have followed a population of Greenshanks through 14 consecutive years. The information gathered there forms the core of this new book.

The Nethersole-Thompsons are obviously keen observers of birds and their surroundings, as evidenced by the accounts here of Greenshank habitat, territorial systems, vocalizations, nesting behavior, reproductive success, feeding activities, and relations with other species, including predators. To me the most interesting feature of this large (200 g) tringine sandpiper is its pattern of spacing and territoriality. The birds, which normally occur in boreal forest bogs or, in Scotland, in the treeless submontane regions of the highlands, are normally widely dispersed. Even in the Sutherland valley, which is considered to contain the best Greenshank habitat in Scotland, the nests averaged 760 m apart, and some were over 2 km from the nearest neighbor. Yet Greenshanks possess a well defined and very complex territorial system in which the males defend separate areas, sometimes located several kilometers apart, for 1) mate attraction and pairing, 2) nesting, 3) feeding, and 4) the protection of young. Thus, the functions often attributed to single all-purpose territories are segregated in space and to some extent in time.

This disjunct arrangement of defended sites appears to be a result of the highly heterogeneous nature of the Greenshank's habitat, where, for example, areas suitable for feeding are not adjacent to those favorable for nesting. It is fascinating that these birds can somehow manage to visit such widely scattered sites frequently enough or remain long enough to maintain ownership. A quantitative study of Greenshank time budgets in relation to the distances between defended areas and to the resources being defended at each site might provide some very useful information on the economics of this territorial system.

The tone of the book is distinctly descriptive natural history. The accounts are written in a clear and lively style, which lapses (all too often in this reviewer's opinion) into anthropomorphisms. Nevertheless, the descriptions are exceptionally well detailed and those aspects of Greenshank ecology and behavior that are quantified are given in a series of tables, figures, and appendices. The descriptions of vocalizations are particularly extensive and are supplemented by many sonograms. In addition, comparative information from the published literature and from correspondence with other ornithologists is frequently included. Unfortunately, the citations to these sources are not always clearly given, which will certainly make tracing them difficult for those seeking more details. The book also contains several contributions by other authorities, namely a chapter on Greenshank habitat in Scotland by Derek Ratcliff and special sections on winter distribution and numbers by A. J. Prater, on interpreting sonograms by Joan Hall-Craggs, and on analyses of Greenshank food items by Denis King and Philip Burton.

The book is well produced and nearly error free. I did find it disconcerting that the metric equivalents were given for all measurements except yards, even though the rationale for this was given in an obscure note from the publisher ("yards and metres are roughly equivalent"). The plates and sketches by Donald Watson are excellent and convey much about the nature of Greenshanks, their habitat, behavior, and the humans who observed them. They add much to the charm of the book.

In conclusion, my reaction to "Greenshanks" is that it contains a very thorough, well written, and highly interesting account of the breeding biology of this species. Indeed, this book is probably the most extensive such account yet published for any species of wader, and as such, it will provide the basis for comparative analyses when similar information becomes available for other species.—RICHARD T. HOLMES.

Les oiseaux de Chine, de Mongolie et de Corée; non passereaux.—R. D. Étchécopar and F. Hüe. 1978. Papeete, Tahiti, les éditions du pacifique. In French. 585 pp., 22 color plates, 2 b/w plates, 146 line drawings, 2 maps, 265 distribution maps. 383 French Francs (selling for about $100.00 in U.S.A.).—This book covers all the non-passerine birds, about 480 species, known to occur in China (including Tibet and Taiwan), Mongolia, and Korea. The format is the same as that used in the authors' "The Birds of North Africa" (1967) and "Les Oiseaux du Proche et du Moyen Orient" (1970). Scientific nomenclature generally follows Vaurie. Nearly all species are illustrated. There are distribution maps for about 334 species. Dichotomous keys are provided for many groups. There is no bibliography; it is to be supplied with the second volume, now in preparation. Species accounts contain a bit of everything about Chinese birds and are divided into four areas: identification, behavior, nesting, and distribution and subspecies. The "Identification" section has a brief description of the bird, often with some comparisons with similar species. In-hand characters are given for some difficult species. A subsection "In natura" gives some information on field identification. In the "Behavior" section is found a discussion of habits, habitat, food, and voice. The "Nesting" section describes the nest and its placement, the eggs, and the nesting season. The "Distribution and subspecies" section gives the seasonal range of each race and a brief description of some races.

The difficulties encountered in researching and writing this book were tremendous. The literature on China is sparse, the authors could not read Chinese, almost no fieldwork has been done in China since before the beginning of World War II (except in Korea and Taiwan), and François Hüe died in 1972, when the book was still in its early stages, leaving the completion of the book to the senior author. On the other hand, large collections of specimens are available and Mr. Étchécopar was able to visit many areas on the periphery of China. He wrote the book he would like to have if he were to visit China. The task was a sizeable one, as China has a large avifauna (about 1,100 species) and covers a vast area, encompassing great deserts and high mountains, and ranging from the Palearctic Region into subtropical forests. The book was originally intended to cover the deserts of China, a continuation of their coverage of the Eremian zone, the deserts of the Palearctic Region. The authors enlarged their area, however, to include the broader political boundaries.

Although most species could be identified in the field by using this book, those who would like to use it as an identification guide will find it useful but not ideal, as its presentation and format do not lend themselves to identifying all species. The text and illustrations are adequate for those species that are fairly easy to identify. For difficult species, however, especially the diurnal raptors, the identification material given is regularly inadequate (even though it is often available). Further, the illustrations normally only contain male or breeding plumages. Thus only adult raptors, male pheasants, and breeding-plumaged gulls (only five winter birds are illustrated) and terns are pictured. No illustrations of flying hawks, eagles, shorebirds, gulls, or terns are given. Some specific problems in the text are: description of *Circus spilonotus* inadequate, only barely covering male, and not mentioning subadult, female and immature plumages; description of immature of *Circus melanoleucos* lacking; description of immature *Circus macrourus* incorrect; description of immature *Spilornis cheela* and immature *Gyps himalayensis* inadequate and misleading; description of *Porzana exquisita* fails to mention the white patch on the secondaries that is conspicuous in flight and diagnostic of the species.

The authors have carried over large hunks of text from their Near and Middle East book virtually unchanged. This is fine where it is applicable. However, it has resulted in some glaring errors in a few cases. The description of *Aquila rapax* in the Middle East book contains descriptive material on three races, *belisarius, orientalis,* and *nipalensis*. This material was carried over, nearly unchanged, in spite of the fact that only *nipalensis* occurs in China! The description of *Buteo buteo* that was taken from the Middle East book describes *B. b. buteo,* which does not occur in China and differs from those races that do occur there. The description of *Limosa lapponica* was taken from the Middle East book. The race described (*lapponica*) was not identified, and no mention is made of the fact that it doesn't occur in China. Under "subspecies," *L. l. baueri* is described as being darker on the rump, upper tail coverts, axillaries, and wing lining, and larger. However, no mention of what it is darker than or larger than is made. A line drawing of the tail and upper tail coverts of *L. l. lapponica* was carried over (and not identified to race). These parts of *L. l. baueri* are different. Plate 5 of eagles and buzzards was also utilized from the Middle East book. It contains races of *Aquila rapax* and *Buteo buteo* that do not occur in China, without mentioning it.

The eight plates done by Paul Barruel, as well as his many line drawings scattered throughout the text, are excellent. Two of his plates and many of the line drawings are taken without alteration from the Middle East book. The 16 color plates by Francis Berille are fairly good but many birds are misshapen and appear hastily executed. The head and bill of *Nycticorax* (*Oroanassa*) *magnifica* are twice as large and long as they should be. The black medial stripe on throat is missing on *Accipiter gularis* and *A.*

virgatus on plate 4. *Gecinulus grantia* is painted with a pointed crest on plate 21 (it has instead a full, but rounded, head). The plumage illustrated is often not listed on the caption pages: none of the ducks on plate 3 are sexed (all males); *Accipiter nisus* (♂), *A. gularis* (♂), *A. trivirgatus* (♂), *A. virgatus* (♂), and *Circus melanoleucos* (♂) are not sexed on plate 4 (other birds on plate are adults of species whose sexes are alike); *Coturnix chinensis* (♂) and *Arborophila torqueola* (♂) are not sexed on plate 7; *Turnix tanki* (♂) on plate 11b is not sexed; plumages of *Eurynorhynchus pygmaeus* (winter) and *Charadrius veredus* (breeding) are not labelled on plate 12; 5 species of gulls on plate 13 are in breeding plumage, 3 species have breeding and winter plumage, while 2 species are illustrated in winter plumage only, yet no plumages are labelled; all the *Treron* pigeons on plate 15 are males, but are not so labelled; all species of woodpeckers on plate 22 have both sexes illustrated, but none are labelled; and so on. The captions for *Harpactes erythrocephalus* and *Eurystomus orientalis* are switched on plate 19. There are a number of typographical errors: page 11, line 16 from bottom, "1975" and "1976" were transposed; p. 128, "*Phaethon*" misspelled; *Aythya "nyroca"* misspelled on p. 65; *Circus "melanoleucos"* misspelled on p. 161 and p. 180; *Uria "aalge"* misspelled on p. 408.

The distribution maps were very difficult to prepare because of the dearth of good distributional data, but they give a reasonable approximation that is useful. Only breeding ranges are shown; no winter ranges are given; migration is indicated by arrows. A few obvious errors were made: the captions were transposed on the map on page 38; the map of *Circus melanoleucos* is completely wrong, labelling the winter range as breeding range, and deleting the breeding range entirely (although the text is correct); the SW China portion of the range of *Alcedo hercules* has been deleted.

The English names used in the book are generally those of the older literature on Asian birds and the failure to utilize recent texts resulted in coining some unfortunate new names and retaining many old ones that are no longer much used.

Reading and using this book as well as the North Africa and Middle East books raises the question of what their function was intended to be. They cannot be called identification guides in spite of the fact that 20–40% of each text account is taken up by the "Identification" section. Difficult identifications are not attempted, descriptions of many plumages are too brief or lacking, and most female, immature, and winter plumages are not illustrated. The sections on behavior and nesting are not complete. The distributional material is very short, giving only broad outlines. The descriptions of subspecies are cursory. Thus we have a book that has a little bit for everyone, but would frustrate anyone who had a serious interest in any particular aspect of the birds of this region. How many readers of such a generalized account would want to know the differences between subspecies or even what they are? On the other hand, if you did want to know, you couldn't get enough data here. The question of function (aim of the book) becomes particularly important with a book as expensive as this. I feel that a generalized guide book such as this one, even if it lacked errors, is not worth $100.00. And I very strongly feel that any book that costs that much should have a clear focal point and be definitive on that point. It is not the author's fault that the book costs as much as it does, but it is clear that either it was prepared too quickly or without enough attention to details.

In summary, this book is a useful compilation of what is known about Chinese birds and contains a large amount of information. Heretofore these data were scattered in out-of-print books and obscure journals. The book's main virtue is that it is positioned in what is a huge void in the current literature. Yet it does not fill this gap because there are a significant number of errors, and the information given is often neither comprehensive, nor complete, nor adequate, thus forcing the serious user back to the museum specimens and older literature. Therefore, rather than a "manual" or "textbook" or "reference" book, it must be viewed and used as a "guide" book, a good and general, but not scholarly, introduction to Chinese birds, which will be of help to anyone with an interest in the Chinese avifauna.

I wish to thank Dr. François Vuilleumier for much assistance in preparing this review and Michel Kleinbaum for help in translation.—BEN KING.

Population ecology of raptors.—Ian Newton. 1979. Vermillion, South Dakota 57069, Buteo Books; Berkhamsted, England, T. and A. D. Poyser. 399 pp., 32 plates, 50 figures, $35.00.—This fact-crammed book covers the title subject in depth. As one would expect of a student of the late David Lack, the author has a broad grasp of ecology. His intensive work on the European Sparrowhawk (*Accipiter nisus*) provides a background for comparison with other species. It is perhaps worth listing a few of the details he and his colleagues have learned about this secretive bird: sparrowhawks are more numerous and have smaller territories in the more fertile lower reaches of Scottish valleys than at higher elevations; fidelity to territory is greatest for good territories and after a successful nesting; the chicks all hatch from

eggs of the same size, but females are already perceptibly larger at the end of the first day or two; males, nevertheless, eat as much as females, grow feathers faster, and fledge a few days before their out-sized sisters; the young hawks disperse in all directions in diminishing numbers; almost none go farther than 35 km, nonetheless they never mate with siblings or nest, in later years, in the natal territory, even if it happens to be vacant.

Dr. Newton has had considerable field experience in other parts of the world, and has ransacked the literature thoroughly. Much of the information on tropical species comes from Africa; the rich raptor fauna of the American tropics is little studied. The approximately 70 photos have been selected when possible to show points of biological interest. They and the 50 diagrams and maps are scattered at appropriate places in the text. Sixty-four tables summarize a vast amount of data; some run for pages. Sample titles: "Stability in breeding populations"; "Instances of polygyny in harriers"; "Sex ratios in full-grown raptors"; "Four year cycles of two prey-predator pairs in South Norway." Sample chapter subjects are "Breeding density"; "Problems concerning breeding sites"; and "Dispersion." The last five (of 18) chapters discuss pesticides, captive breeding, and conservation. Now that humans are exhausting their resources of food, wood, etc. at an increasing rate, the outlook cannot be regarded as very promising; still, there may be kites and vultures around to pick among the ruins of collapsing civilizations in the future as in the past.

The book opens with a discussion of reversed sexual dimorphism, a subject in which I happen to be especially interested. Newton suggests that raptors that subsist on large agile prey have more opportunity for prey selectivity by sex and hence are more dimorphic. I doubt, however, whether much if any difference in size of prey taken will be found in some rather dimorphic species such as the sea-eagles (*Haliaeetus*); some recent studies of moderately dimorphic owls have shown no size divergence at all in the average weights of prey taken by males and by females. In other words, any sex-for-sex difference in weights of prey may be an incidental result of the dimorphism, not the cause of it, although there might be some secondary selection for food partitioning in the extreme cases (accipiters, large falcons). As to why the dimorphism is reversed, Newton is uncertain, but inclines toward the hypothesis of nest defence and rejects the suggestion that it balances sexual aggressiveness, because then females might pose a threat to males. But pair formation in birds often begins with random aggression toward the female; females tend to become somewhat mopish at the time of pairing and egg laying, and males are inherently the more aggressive sex. At any rate, the book approaches such controversial subjects with caution, with reminders that the evidence is usually circumstantial, and with exhortations to do more research.

Inevitably one thinks of a few topics that Dr. Newton might have discussed but has not. One is the occasional expansion of a species seemingly without or beyond human influence: for example that of the White-tailed Kite (*Elanus leucurus*) throughout Middle America and northern South America or the southward surge of the Goshawk (*Accipiter gentilis*) in eastern North America (possibly related to its reappearance in Britain?). Ecological and faunal comparisons of disjunct but more or less similar areas such as the rain forest of southeastern Asia and the Congo and Amazon Basins along the lines begun by Thiollay would be interesting. Probably, however, information is lacking to carry such topics very far.

"Population Studies of Raptors" will be essential reading for those conducting studies of almost any aspect of the biology of birds of prey and scarcely less so for those concerned with predation more generally. Those with only a casual interest in raptors will also find the volume rewarding. A companion volume on owls would permit interesting comparisons.—D. AMADON.

Survivals of Greek zoological illuminations in Byzantine manuscripts.—Zoltán Kádár. 1978. Budapest, Akadémiai Kiadó (Publishing house of the Hungarian Academy of Science). 138 pp., 232 halftones, and 10 color plates. $35.00.—As for so many branches of classic biology, the subject of scientific illustrations dates back to Aristotle's works. This great master taught anatomy, classification, and systematics of the animal world from line diagrams of the species and their organs. The diagrams were used in a way familiar to every biology teacher of 2,500 yr later: they adorned the walls of the lecture hall in which the professor and his disciples gathered; many of the diagrams were drawn during the lecture itself. The only difference is that the "blackboards" of the ancient Greeks were white and the drawings were executed in black. Care was taken to render true copies of nature; as the master once remarked, "The picture of an animal is both a picture and an animal."

The original illustrations executed by Aristotle and his disciples are lost with the exception of later, Byzantine copies of the illustrated book *De Motu Animalium* (Mechanics of Animal Locomotion). It is certain, however, that most of his works were illustrated. Dr. Kádár's researches amass evidence toward

the assumption that Aristotle also prepared an anatomical atlas, consisting solely of illustrations and diagrams pertaining to the whole animal kingdom.

During the following centuries of the Hellenistic era, the medical schools of Greece's Asiatic provinces produced great physician-scholars such as Nicander of Kolophon, Dioscorides, and the great Galen of Pergamon. Based on the Aristotelian tradition (and likely in part directly on his works), they wrote pharmacological treatises illustrating venomous or pathogenic animals, toxic plants, and drug-yielding species of the animal and vegetable world known to them. Accuracy of detail and unity of form and function characterize these pharmacological illustrations.

Another root of scientific illustrations is to be found in the practical economical texts of the classic writers. Plato himself systemizes the practical knowledge dealing with the animal world into three branches of the arts. *Cynegetica* entails hunting of land animals (mainly with dogs), *Ornitheutike* was birding, and *Halieutike* fishing—all were important branches of ancient economy. When the Greek provinces were incorporated into the Roman Empire, the Near Eastern and Asiatic settlements kept on with the scientific traditions, not only in the field of medical zoology, but also furthering knowledge of the economically important animal world. There in classic Syria Dionysius, a poet and scientist lived in the 1st century B.C.; the first known ornithological text, the *Ornithiaca,* is attributed to him.

As is well known, the flourishing ecclesiastic literature of the expanding Christianity was full of legendarizing, mythologizing, and mysticism, which led to the decline of the realistic traditions of the Greco-Roman scientific schools. We know of no new biological undertaking based on facts and observations during the "dark" Middle Ages. Yet the classic works, though unknown in the West, did not entirely fall into oblivion. The antique Greek traditions and knowledge were partly saved by Arab scholars as Islam conquered the far-eastern provinces one by one. For the greater part, however, we owe their survival to the flourishing Byzantine Empire, especially during the cultured Macedonian dynasty of emperors (867–1,025 A.D.). Many of the classic books were rediscovered, recopied, and paraphrased, including even those of Dioscorides, Nicander, and Dionysius, with all their magnificent animal (and plant) illustrations. When the expanding Islamic power threatened Byzantium itself, many of the Byzantine copies (miniatures) were shipped to Italy and, surviving to our days, are now known as codices in the Vatican, in Oxford, Vienna, etc.

Kádár, who is an art historian and archeologist as well as a trained biologist, meticulously and brilliantly analyzes the various copies of animal illustrations. Stripping them of the idiosyncrasies of the various copiers who were influenced by their own artisic environment, he traces their origins, often to Aristotle. This album-sized book will become a pride of many coffee-tables around the world in addition to being an essential addition to private and public collections of ornithological illustrations and art history. The illustrations of the ancient Greek codices are very well rendered. The 117 bird pictures in black-and-white half-tone and the 78 renderings of birds in original color give us a good insight into the ornithological knowledge and realistic accuracy of our forebears of two millennia ago. Though birds also often figure in other manifestations of classic art, more than half of the 75 species treated in these codices are unique; these illuminations are our only proof that the bird species concerned were known, described, and studied by our early scholarly ancestors.—M. D. F. UDVARDY.

The dynamics of arthropod predator-prey systems.—Michael P. Hassell. 1978. Monographs in Population Biology No. 13. Princeton, New Jersey, Princeton Univ. Press. Pp. vii + 237, illus. Cloth $16.00, paper $6.95.—Animals live by eating other organisms, and for several decades population ecologists have attempted to model the dynamics of these predator-prey systems. Hassell's approach to such systems in this book builds squarely upon the mathematical foundations established by Nicholson and Bailey in the 1930's. Hassell first develops the basic components of predator-prey models: a density-dependent form of prey population growth, functional responses of predators to changes in prey densities, nonrandom search behavior of predators, interference among predators, and the factors affecting predator survival, developmental rate, and fecundity that in turn influence predator population growth rates. These components are then woven into more complex models that consider how the activities of polyphagous predators can foster the coexistence of competing prey populations, and how interactions among predator species can influence the coexistence of the predators themselves. In treating these topics, Hassell provides a good overview of existing models, develops additional extensions of these models, and relates their structure to information from experimental and natural systems. The models are clearly and carefully developed, in a logical sequence of growing complexity; many of the mathematical details are relegated to appendices. Throughout, Hassell is careful to lay the key assumptions of the models bare for open evaluation and inspection.

The primary emphasis of the models, and of the examples to give them some basis in reality, is upon arthropods, partly because the details of predator-prey dynamics are known for at least some systems, but largely because their discrete-generation dynamics make them well-suited to the difference equation structure of the models that Hassell develops. For birds, the precise form of these difference equation models will rarely be applicable, and one might thus conclude that this volume is of little interest to avian ecologists. The general properties of these models, however, and the manners in which they couple predator and prey population dynamics, are central to any consideration of predation as a process, and the discussions of nonrandom search patterns of predators and the ways in which these may stabilize predator-prey systems are particularly pertinent to avian predators and their prey.

The primary thrusts of all the models developed in this book are toward simplicity and the definition of stable solutions. Hassell opts for simple models partly to avoid the mathematical intractability of more complex forms, but also because such models can provide a basis for beginning to understand the variable and inevitably more complex real world systems without becoming submerged in the model structure itself. By detecting inconsistencies between the models and nature, one may be prompted to seek their causes through further study that has a clear focus. But why is stability of such interest, not only in these models but in most of the models and theories of population ecology? Part of the explanation undoubtedly lies in the common belief that natural systems are in equilibrium (or if not they should be), and thus solutions of model manipulations that offer stability of populations are intrinsically of greater interest than unstable solutions. But stable solutions also have management implications, which Hassell considers in a chapter addressing biological control. Here the long-term persistence of stable population levels of noxious prey and of predators used as biological control agents is of obvious importance. Perhaps most important and most often unstated, however, is the utility of stable solutions to population models in posing a null or ideal condition against which we can compare natural systems. If we know that stability is likely or unlikely given the initial premises and constraints of a particular predator-prey model, we then have a defined context for evaluating the behavior of natural systems, and can begin the search for the factors that cause a particular natural system to be stable or unstable in a direction dictated by the model structure and its assumptions, rather than through haphazard guesswork. Perhaps the greatest value of Hassell's book is in drawing together the various components of simple predator-prey population models and elucidating the conditions of stability or instability in their solutions. At the same time, the simplicity of the approach in relation to the complexity of predator-prey interactions that are so apparent to those of us who work with vertebrate predators indicates the enormity of the task in developing truly sophisticated population models.—JOHN A. WIENS.

ALSO RECEIVED

Museum studies and wildlife management. Selected papers.—Richard C. Banks (Ed.). 1979. Washington, D.C., National Fish and Wildlife Laboratory, U.S. Fish and Wildlife Service, Smithsonian Institution Press. 297 pp., $2.00 (U.S.A., Canada, Mexico; $3.25 elsewhere). (Order from Association of Systematics Collections, Museum of Natural History, University of Kansas, Lawrence, Kansas 66045).—Museums, once the hotbed of activity in American ornithology, have declined in their apparent importance in recent years as other avenues of investigation have become more fashionable. This book is a collection of previously published papers that have been gathered together in response to the "expanding breach between the disciplines of museum biology and wildlife management," to demonstrate that the linkage between these areas has been quite close and can continue to contribute important insights. The 38 papers are arranged into sections dealing with definitions of the disciplines, collections and their uses, identification, faunal surveys, endangered species, regulation and protection, introduced species, environmental assessment, cooperative studies, and a final overview concluding paper by John Aldrich. Collectively, the papers leave little doubt that museums have contributed importantly to wildlife studies, although one can easily gain the impression that this activity was more intense a decade ago than it is now. The emphasis is almost entirely upon how museums and their resources have provided perspective, information, or insight for wildlife studies, with little indication that this has or can be a two-way exchange. By and large the papers are presented here in their entirety, which is good; some selections, however, contain detail that was undoubtedly quite relevant to the original purpose, but which seems rather tedious here. At the bargain-basement price, however, it's certainly worth sorting through the routine papers in this collection to find those that offer real insights.

There is little doubt that museums do represent important storehouses of critical information that have

become increasingly neglected as wildlife management has turned more to field studies of populations and as basic ecology has become increasingly infatuated by neat stories and theories. But, as Ricklefs has recently observed (Auk 1980, 97: 206), museums provide a foundation resource for establishing the orientation of these studies and testing current ideas. It would be a grave mistake to think that museums have outlived their usefulness, and that the sort of contributions represented by the papers in this volume are no longer needed.—J.A.W.

A guide to the birds of Ceylon.—G. M. Henry. 1971. Second ed. (reissued 1978). London, Oxford Univ. Press. xl + 457 pp., 27 color plates, 3 b/w plates, 136 line drawings, 1 endpaper map. $27.00.—This reissue of one of the better books on south Asian birds is welcome as it is a very useful book and has been periodically allowed to go out of print. It covers all the 370 species known to occur in Sri Lanka (Ceylon) up to 1971 [for updated information on distribution see W. W. A. Phillips "Annotated Checklist of the Birds of Ceylon (Sri Lanka)" (1978), reviewed in Auk 96: 644–645]. The species accounts contain descriptions, identification material, habits, habitat, voice, and nesting, all in a narrative style. The illustrations by the author are excellent, picturing most of the species covered. While the book is not a field guide, with a little effort one could identify most of the birds of Sri Lanka. The identification material on the passerines is good, while the groups that are more difficult to identify, such as the oceanic birds, diurnal raptors, shorebirds, gulls, and terns, are not quite as well done and sometimes require supplementary data for identification. The entire text of the first edition (for review see Auk 73: 140–141) was unchanged in the second edition. What is new in the second edition is: a 1⅓-page preface; an appendix of "Additions and Amendments," consisting of 10¼ pages; a 1½-page appendix comparing his order of species with that used by Phillips in the 1952 edition of his "Checklist of the Birds of Ceylon"; and 12 pages of very attractive new line drawings illustrating nests of some Ceylon birds as well as some of their builders. One unfortunate aspect of this book is Henry's cantankerous maintenance of the crows-first order of families in the face of the worldwide shift away from it, which will be a source of confusion to many. However, I highly recommend this book for its valuable, useful, and entertaining coverage of the birds of Sri Lanka.—BEN KING.

Pelicani, pelicani.—Mircea Bichiceanu. 1973. Bucharest, Romania, Editura Pentru Turism. 69 pp., 88 black-and-white plates. Price 60 Lei.—This beautifully illustrated album belongs to the coffee table book category, aimed at the cultured public of Romania, as it is entirely written in Romanian. Its subtitle translates "Pelicans in Legends and in Truth." It deals chiefly with the common White Pelican, *Pelecanus onocrotalus,* of Eurasia, which is the legendary bird throughout written and depicted history. The richly illustrated short text begins with the tamed pelicans on Egyptian reliefs of 4,500 yr ago, and then discusses Aristotle's account of the bird. The pelican also figures in the illustrated Greek codices, in Pliny's writings, and becomes a religious symbol during the Middle Ages.

The parent pelican feeds its young from the throat: the chick sticks its head and neck deep into the gullet of the parent to get the regurgitated food. The odd behavior of the parent bird, trying to bring up food and in this effort pressing its beak against the belly, looked like it tore open itself to feed the young by its own blood. This reminded the imaginative believers—who were not exactly good observers of nature—of the self-sacrifice of Jesus Christ. Thus the pelican became a widely used symbol in all kinds of religious art, as shown in many illustrations.

During the Renaissance period the first modern zoological treatments of the bird appeared with Gesner's and Aldrovandi's descriptions in the 16th century. But the legendary role of the bird survived in the Reformation, and the Protestant churches took it over unaltered. Several beautifully engraved or sculpted pelicans are shown from the 17th century Lutheran and Calvinist cathedrals and churches of Transsylvania (then part of Hungary), whose Hungarian population joined the church reform movements.

The large breeding colony of pelicans at the delta of the Danube on the Black Sea attracted many famous ornithologists of the last century, and the author pieces together from their accounts what we now know of the vicissitudes of this colony. The second part of the book, consisting of the plates, is devoted to various photos (many detailed closeups) by the author. The colony mainly consists of the White Pelican, but several pictures show the rather rare Dalmatian Pelican (*P. crispus*) as well. A number of interesting photos show the communal fishing of the birds, executed the same way as we now see it at the breeding lakes of the White Pelican (*P. erythrorhynchos*) of western North America.—M. D. F. UDVARDY.

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