ORNITHOLOGICAL LITERATURE

MARK CATESBY: THE COLONIAL AUDUBON. By George Frederick Frick and Raymond Phineas Stearns. University of Illinois Press, Urbana, 1961: 8½ × 11⅛ in., x + 137 pp., 16 bl. and wh. pls. $5.00.

For this attractive book the authors, Messrs. Frick and Stearns, are assured of a large audience at once because of their secondary title, "The Colonial Audubon." This device is a little worn by now but it will serve to capture the legions of bird watchers here and abroad, who may never have heard of Catesby but somehow know the popular figure of Audubon, already publicized by many books. Zoologists and botanists will be delighted to see this careful biography of such an important figure in their fields of study. It is a charming book at moderate cost.

The book opens with a meticulous search into the occupations and interests of Mark Catesby's forebears. Catesby's interest in nature comes from the Jekyll or mother's side of his family. The authors think that Mark remained in his natal area of Sudbury, with a few journeys to London, until his trip to America; but there is evidence that he was employed in London, although the exact dates, so far as I know, are not published.

Catesby first thought of going to Africa, but he preferred America, and the marriage of his sister, Elizabeth, to William Cocke of Williamsburg, Virginia, was the entering wedge for convincing his father that he should go to America even though his father had disapproved of his daughter's marriage. With relatives in Virginia, Mark had entrée to the prominent families of Williamsburg, including William Byrd; and these good contacts eased his travels through the country so that he could go unmolested and collect plants for shipment home. With these trophies his botanical and gardening friends—John Ray, George Edwards, Thomas Fairchild, and Samuel Dale to mention only a few—were fascinated.

The authors searched the correspondence relative to this first trip by Catesby to America and they examined the minutes of the Royal Society to find the sequence of events that led to Catesby's second voyage. The tragic fate of John Lawson at the hands of the Tuscarora Indians in 1710 was still fresh in the minds of the group of botanists who were eager for more specimens. Catesby had shown ability in drawing and painting and this enhanced his eligibility for a second trip. Two years elapsed between his return from Virginia and his embarkation for Charles Town in February of 1722.

An auspicious circumstance was the departure of Colonel Francis Nicholson for his post as Governor for South Carolina. Though not a botanist he favored the Catesby project and contributed to the costs of the expedition. Others then saw fit to contribute also, and Catesby set off with the personal support of several members of the Royal Society as his sponsors, and the real interest of the Society itself behind him. He continued collecting plants and seeds to further the popular trend to naturalize exotic species in England, but he also collected birds extensively and made drawings from living specimens in their natural environments. He was no skilled taxidermist but the birds were eviscerated, dried, and packed in tobacco dust for shipment, and many, together with his drawings, furnished the first descriptions of their species.

At home at last in England in 1726, Catesby was eager to get his work into print but he had no conception of the time and work needed to accomplish this task. It was necessary that he take engraving lessons and water color instruction. Thus the entire work, "The Natural History of Carolina, Florida, and the Bahama Islands," was published during the years between 1731 and 1743.

Despite much rewarding recognition for this great work, and his election to the Royal Society and the Gentlemen's Society at Spalding, Catesby appears to have fallen on hard times and shifted his residence from St. Paul's Parish Covent Garden to St. Luke's Parish in Old Street, a rather poor part of London. This appears to have occurred about 1742. Apparently, too, Mark Catesby married, but there is definite difference of opinion on this event in Catesby's life.

Messrs. Frick and Stearns state that Catesby's clandestine marriage in 1747 to Elizabeth Rowland was evidently his first venture into matrimony. However, I have published the will of Mrs. Elizabeth Catesby, the first wife (see "The History of American Ornithology before Audubon" by Elsa G. Allen in *Trans. Amer. Phil. Soc.*: 41:470. 1951). In this it is clear that Elizabeth Rowland was Mrs. Catesby's "loving daughter" and probably also Mark's. Mrs. Catesby also had a son Mark and a daughter Ann. Messrs. Frick and Stearns fail to regard it as important that Elizabeth Rowland was "Mrs." at the time of her clandestine marriage to Mark Catesby on 8 October 1747. At any rate, "Rowland" was her probable married name and she was presumably a widow.

The authors suggest that the children, Mark and Ann Catesby, "may well have been the natural offspring of Catesby and Elizabeth Rowland, with possibly both their births preceding a marriage which added a certain solemnity—if little more legality—to an existing relationship." This seems unlikely to me in view of the first Mrs. Catesby's will in which she claims the children as her own. (Of course it is conceivable that she could have agreed to take them into her home, to ease a bad situation.) A brief search has been made to find the birth or christening dates of these two children but so far without success. If found, they will help to clarify this puzzle.

The first Mrs. Catesby lived until 1753, in which year she wrote her will and appointed her husband's brother, Jekyll Catesby, as her sole executor. Peter Collinson, Catesby's staunch friend, witnessed the document, as did a woman friend or relative of Mrs. Catesby, Martha Arther, who was a member of her household.

As for the record of Mark Catesby going to the seas, there is a will in the Principal Probate Registry, London, which I found in 1936. This gives much evidence of being the will of Mark Catesby, the naturalist. Messrs. Frick and Stearns, however, summarily dismiss this idea, although the signature to the document appears exactly as in Mark Catesby's letters. There is the additional fact that Catesby's brother, Jekyll Catesby, was the sole executor of this will (made the 30th of October 1749, just before Catesby set out on his intended voyage) and he was also the sole executor of Catesby's wife's will three years later.

The description of Catesby's death published in *Gentleman's Magazine,* 1750, notwithstanding, I am of the opinion that the voyage in the ship *Portfield* was Catesby's escape from the intolerable situation. We do not know with what remorse and suffering, but he died aboard the ship on 20 April 1750, and "amid faint airs and a calm sea his body was committed to the deep." I had previously searched St. Luke's registers in London for Mark Catesby's burial as reported in the *Papers of the Bibliographical Society of America* by Mr. Frick, but there is no such entry. Catesby was said to have been buried in St. Luke's churchyard but I could find no such grave or record.

As previously mentioned, Mark made his own illustrations first in the field and then laboriously engraved and colored them himself over a long period of years. Sixteen of his illustrations are reproduced in this book.

The book's appendix is devoted to a discussion of Thomas More, apparently an erratic but energetic seeker after adventure, somewhat tolerated by the savants of England because of his desire to travel to far places for little money in order to indulge in his

hobby of collecting. More seems to have little bearing on the dynamic Catesby story except that he went to New England and Pennsylvania about the same time that Catesby went to the southern part of the Colonies.

Messrs. Frick and Stearns have produced a useful addition to the literary and historical source books for the present, growing interest in the history of science. However, it does not seem quite appropriate for them to say that they have rescued Mark Catesby "from unwarranted oblivion" when many scientists from George Edwards to the present have written on Catesby's contributions to colonial botany and in larger measure to American ornithology.—ELSA GUERDRUM (MRS. A. A.) ALLEN.

BIRDS OF THE WORLD: A SURVEY OF THE ONE HUNDRED AND FIFTY-FIVE FAMILIES. By Oliver L. Austin, Jr. Illustrations by Arthur Singer. Edited by Herbert S. Zim. Golden Press, New York, 1961: 10¼ × 13½ in., 316 pp., numerous col. illus., maps, and diagrams; illus. lining-papers. $17.50 (Goldencraft edition $11.98).

"Birds of the World" is a non-technical survey of the 150-odd families of birds. It is a well-written, well-illustrated book, with a highly attractive format, that snugly fits a long-felt gap in ornithological literature.

In a brief introduction the Class is defined, its evolution is sketched, and the recent history of extinction is considered. A rather disproportionate amount of space, including a two-page diagram, is given to the highly speculative subject of the relative number of species in the major groups throughout their evolution.

The text follows the usual sequence of orders and the more or less conventional arrangement of families. The latter is very conservatively handled, in that, for example, the Boatbilled Heron ("*Cochlearius*") is afforded familial rank, the thrushes, babblers, Old World flycatchers, Old World warblers, etc. are treated as separate families, and the waxbills, weavers, and Carduelinae are grouped in the Ploceidae. The author does note, however, that these arrangements are currently questioned by some ornithologists.

Under each ordinal heading there are a few paragraphs in which the morphology of the group is broadly characterized and its geographical distribution is outlined. The features differentiating the families are sometimes given, although frequently this is reserved for discussion under the individual families.

The treatment of each family differs widely in length and scope. The range (often shown on a colored map), number of species, and physical characteristics are always considered, but in one group the peculiarities of its range may be dealt with in detail, while in another family this may be presented in the briefest manner and considerable attention is devoted to its ethology or breeding biology. Much of this pleasing diversification of treatment is doubtless a reflection of how well a family is known generally, as well as by the author, but it also indicates an attempt to highlight the most interesting features of each group. Austin possesses a talent, rare among scientists, for presenting an enormous wealth of sound information interestingly, as well as succinctly.

The art work, all of which is in color, is superb and is an integral part of the book, rather than merely an embellishment. About 700 species are illustrated, including a number which never before have been depicted in color. Some birds are shown singly but most are arranged in groups on a branch, which often is in flower or fruit, or against a similarly suitable background. The illustrations are scattered through the text; some appear on the margins of the page, others in the center or in place of one column of text, and others occupy much of one or two pages with the type filling the irregular

gaps. The vernacular and scientific names, range, and dimensions of each species appear next to the illustration.

The colors are generally excellent, although there is an ashy quality to them because of the uncoated paper on which they are printed. A more serious criticism is the matter of perspective. A number of species, of varying sizes, appear next to one another but the degree to which they are reduced varies enormously, and without regard to perspective. For example, the Great Hornbill, which is five feet in length, is depicted in the foreground at about one-fifth life size, while in the same group of birds the Jamaican Tody, which is roughly four inches long, is shown in the background at about one-half its actual size. Even though the dimensions of the living bird are adjacent to each species, and one may be thoroughly familiar with the birds (which the general reader is probably not), the eye is unaccustomed to such manipulations with perspective. The effect is disturbing.

Austin is known to be a careful, even pedantic, author and a severe editor and critic, but this book is marred by a profusion of errors, ranging from misspelled scientific names to incorrectly identified birds and a few minor factual inaccuracies. One suspects that the publisher, in order to meet the Christmas book trade, hurried the author and slighted the editor, Herbert S. Zim. The errors are, for the most part, of no real importance but they are annoying to a critical reader. The layman, for whom this book was written, might be confused by an occasional transposed caption, but he doubtless will read most of the book without awareness that, for example, "*Leptoptilus*" should be written *Leptoptilos* or that cedillas are lacking on "Jacana" and "Aracari."—RAYMOND A. PAYNTER, JR.

MORPHOLOGICAL DIFFERENTIATION AND ADAPTATION IN THE GALAPAGOS FINCHES. By Robert I. Bowman. University of California Publications in Zoology, Vol. 58; 1961: vii + 302 pp., 22 pls., 74 figs., 63 tables. $6.00.

Bowman's work represents a renewed study on a famous and much discussed group of birds, the Galapagos finches. The focus of the entire study is on the adaptive responses by these birds to the molding forces associated with each type of food niche exploited. The paper therefore is largely concerned with food-getting apparatus. This includes the bill, the tongue, the skeletal form of the jaws and cranium, and the musculature of the head. The author explores the architecture of the cranial vault and the connections of the cranium with the jaws in terms of mechanical stresses arising in cracking hard seeds and in biting tough wood and bark. He finds that (p. 203), "In large measure, the array of morphological modifications exhibited in the geospizine skulls may be interpreted as osteological adaptations designed to resist the forces of compression and tension that arise in the processes of food getting—probing, tip biting, crushing."

Bowman's extensive field work in the Galapagos Islands provides a strong basis for his interpretations. He has observed the feeding behavior of several species of the finches in detail, and he has collected the finches and analyzed the foods found within the stomachs. He describes the physical and ecological characteristics of each food, so that our knowledge of this phase of the subject is greatly extended.

Bowman summarizes his findings with an outline of the adaptive radiation of the Galapagos finches. Among the 14 present-day species, all presumed derived from a single ancestral immigrant, he discerns six general adaptations, and each one of the latter represents a genus. *Geospiza* has finch-like habits, *Camarhynchus* has parid-like and parrot-bill-like habits, *Cactospiza* has tree-foraging habits, *Platyspiza* has plant-

eating habits, *Certhidea* has warbler-like habits, and *Pinaroloxias* has honeycreeper-like habits. Within each of these general types he describes specializing adaptations which relate to individual species. Thus, in brief, *Geospiza magnirostris* feeds on a small variety of very hard, generally large seeds, *G. fortis* feeds on a large variety of moderately hard, small to large seeds, and *G. fuliginosa* feeds on a large variety of soft, generally small seeds (p. 287). The clear and detailed contrast of the food niches developed in geospizine finches is one of the outstanding contributions of Bowman's efforts.

Of course the development of food niches is related to the opportunities presented by the environment, itself evolving. Bowman says (p. 289), "The array of relatively large, sparrow-like bills... is a reflection of the abundance of hard-coated seeds. Hard, impervious seed coats are typical of many species of angiosperms in arid regions of the world. The 'problem' of exploiting the insect food, mainly concealed beneath bark and wood during most of the daylight hours, has been 'solved' through the evolution of powerful probing and tip-biting bills...." The ecological diversification of the environment, the fragmentation of the environment in the form of isolated island units, and the known history of the Galapagos environment are all considered in relation to the evolution of the geospizine finches.

Unquestionably, in certain features Bowman has carried his analysis beyond any point attained in previous studies. Principally, these would be in his detailed analysis of skeletal and muscular morphology and of the nature of the foods taken. In addition to a large quantity of original data, Bowman also offers ingenious explanations demonstrating an adaptive basis for each variation in structure. In one of the more surprising instances, Bowman interprets the peculiar location of persistent skull windows at the rear of the parietal part of the geospizine skull as an adaptation providing for increased resistance to fracture stresses that are relayed along the frame of the cranium to converge upon the windowed part of the vault.

Much of Bowman's discussion is devoted to evolutionary processes that have produced the adaptive radiation now found in the Galapagos finches. One important point concerns competition, for Bowman concludes that competition cannot be discerned today as an effective selective force maintaining diversity in the Galapagos finches. "Individuals of one species do not now 'compete' for food with certain other individuals of the same species (e.g., large-billed versus small-billed individuals of *G. fortis*), or with individuals of another sympatric species, or at least not in any manner that has evolutionary significance today..." (p. 275). From this he concludes further that competition has not been a molding force in the past—"since there is no direct evidence that competition is occurring at the present time, I see no logical reason to assume that it must have occurred in the past." A clear definition of the concept of competition is essential to this discussion, but unfortunately Bowman's position does not seem completely clear. He defines competition as involving struggle (p. 273), but nevertheless at times he seems to imply selective forces that arise when there is overlap of two species which utilize the same environmental resource in part but without struggle. Certainly competition is present today if competition is to be defined in this latter sense. I feel that he is not as convincing on competition as he is on other matters, and I look forward to amplification when he has more facts with which to deal.

On the basis of the very substantial contributions in this volume, the promise is great that Dr. Bowman's continuing field study in the Galapagos Islands will yield still more new information of fundamental value. We could hope for additional field evidence in

support of his view that the particular proportions of brown and black in the variable plumages of the finches are each an adaptation to provide a maximum of concealment from predators. We can also hope that future work will explore more adaptations only indirectly or not at all concerned with food getting.—PAUL H. BALDWIN.

WATCHERS AT THE POND. By Franklin Russell. Alfred A. Knopf, New York, 1961: 5¾ × 8½ in., iv + 265 pp., line drawing by Robert W. Arnold. $4.50.

We are informed by this book's jacket that its author has been "variously a farmer, a contractor and auto mechanic, a laborer, a truck driver, and a streetcar conductor." Later he was a newspaper man turned free-lance writer. Born 40 years ago in New Zealand, and after having lived there, in Australia, and in England, he came to this continent in 1954, settling in Toronto, Canada. This, his first book, is "A pinnacle of the natural historian's art," an "unexpectedly dramatic story," "sharply observant," and so on.

On the assumption that the publisher has discovered a talented author–naturalist, however unusual his background, writing of the North American scene to which he was only recently a stranger, we proceed to read hopefully, expecting a fresh approach. The words flow nicely with seeming authority—we agree with the publisher. Then suddenly we find ourselves being told about a muskrat's "short, flattened tail... ready to whack down on the water as a danger signal," a phoebe that would nest in a tree, a Red-tailed Hawk that "smashed ducks to earth in showers of feathers," leopard frogs singing from trees—whereupon we ask, has the publisher been fooled or is he trying to fool us?

When this book first appeared it was given high praise by Orville Prescott in *The New York Times* for 11 December 1961. No naturalist himself by his own admission but a literary critic, Mr. Prescott was taken in by the quality of the writing *per se*. The responsibility for foisting this delusive book on the public is entirely the publisher's. His innocence, if such was the case, is inexcusable. Well aware of the author's background, he should have turned the manuscript over to a qualified naturalist for checking before accepting it for publication.—OLIN SEWALL PETTINGILL, JR.

WISCONSIN'S FAVORITE BIRD HAUNTS: A Guide to 30 of Wisconsin's Most Favored Locations for Bird Study, with Individual Maps. Compiled and edited by Samuel D. Robbins, Jr. Wisconsin Society for Ornithology, Madison, 1961: 6 × 9 in., viii + 77 pp., many maps. Paper-covered. $1.75.

In 1953 the Wisconsin Society for Ornithology began publishing in its journal, *The Passenger Pigeon*, a series of articles by its members on areas for bird finding in the state. Usually devoted to one area, each article described the physical features, mentioned the more noteworthy birds with hints on where and when to expect them, and gave specific route directions, accompanied by a map, to the best vantage points for observations. The articles have now been brought together between the covers of this attractive booklet which cannot fail to stimulate wider interest in Wisconsin's bird life. Other state ornithological societies that publish journals would do well to follow the Wisconsin Society's lead, for here is a means of encouraging members to contribute to journals, of getting significant subject matter (editors sometimes have trouble in this regard!), and of producing a useful and saleable publication.—OLIN SEWALL PETTINGILL, JR.

THE NEW HANDBOOK OF ATTRACTING BIRDS. By Thomas P. McElroy, Jr. Second edition. Alfred A. Knopf, New York, 1960: 6 × 8 in. XIX + 262 pp., 65 figs. $4.00.

Mr. McElroy states in his preface, "This book is written for everyone who would attract and enjoy the birdlife of our land" (east of the Mississippi River exclusive of semitropical species found in Florida and the coastal states). This intent is clearly accomplished through careful instructions ranging from how to build a wren nest-box or a suet-feeder to how to improve conditions for birds on an entire estate or to set up the Articles of Association to establish a Community Wildlife Sanctuary. Some of the 19 chapter topics are: (1) Feeding Songbirds, (2) Attracting With Water, (3) Attracting by Planting, (4) Homes for Birds, (5) How to Attract Hummingbirds, (6) Attracting Game Birds, (7) Attracting Waterfowl, and (8) Care of Young and Wounded Birds.

A chapter on aids to bird study briefly instructs the beginner concerning such matters as bird songs, binoculars, record-keeping, and photography. An appendix supplies basic lists of bird-song recordings, bird books, suppliers of bird items, and a state-by-state list of sources of information on birds.

The numerous line-drawn figures of feeders, nest-box construction plans, food plants, garden plans, etc. are excellent. However, at times it is difficult for the reader to find the appropriate figure referred to in the text material (unfortunately also, the book contains a very large number of typographical errors).

This book is not merely a cut-and-dried tabulation of methods and materials for attracting birds. It is a result of the author's combined skills as a carpenter, naturalist, and former director of the National Audubon Society's Aullwood Nature Center in Ohio. It is a fine source of practical information and also has many parts which are interesting and informative ornithological reading for the person not faced with an immediate problem concerning attracting birds. The reader can sense the author's personal appreciation of a well-constructed nest box, a properly planted shrub, and an appropriate pond for local waterfowl—and the relationship of the bird to these man-made efforts to attract it.—NICHOLAS L. CUTHBERT.

DISCOVERY: Great Moments in the Lives of Outstanding Naturalists. Edited by John K. Terres. J. B. Lippincott Company, Philadelphia and New York, 1961: 6 × 8½ in., xiii + 338 pp., many wood engravings by Thomas W. Nason. $6.50.

Terres had a bright idea for a book. At his request 36 first-rate, well-known naturalists such as A. A. Allen, Darling, Lack, Peterson, Pettingill, and Sutton, among others, wrote accounts of "one memorable experience about the discovery of a fascinating fact about nature." Each of these accounts, preceded by a brief biographical sketch written by the editor, became a chapter of the book. As would be expected, some of the contributors are better writers than others, and some have selected subject matter more nearly in line with the theme than others. Nevertheless, all the chapters are interesting, most are stimulating, and a few are downright exciting.—EDWARD F. DANA.

WIDEAWAKE ISLAND: The Story of the B.O.U. Centenary Expedition to Ascension. By Bernard Stonehouse. Hutchinson & Co., Ltd., London, 1960: 5¾ × 9 in., 224 pp., 37 photos, numerous sketches. 35s (about $4.90).

This is the day-by-day story of the British Ornithologists' Union's centenary expedition to Ascension Island (1957–59), the scientific results of which are being published

separately in *The Ibis*. If the "methods and materials" sections of many scientific papers were allowed the luxury of full details, informal style, and a fair share of humor, we would have more accounts of this sort. The book is a valuable eye-opener to those who have not had extensive field experience in that it vividly presents the innumerable preparations, pre-arrangements, hard labor, discomfort, organization, and crucial decisions of which a successful expedition is made. The amount of time and energy spent in survival and the routines of daily existence, which directly affect the scientific results of an expedition, should not be forgotten when reading about the number of birds banded, the behavior of the boobies, and the reproductive cycles of each species.

The primary purposes of the 16-month sojourn on Ascension—an isolated, equatorial island in the South Atlantic—were to study the ecology, behavior, and breeding biology of the 11 sea-bird species which breed there and on its tiny satellite, Boatswain Bird Island. To this end each person concentrated on certain species—Bernard Stonehouse on the two boatswain-birds (tropic-birds) and the Frigate-bird, his wife Sally and Dick Allan on the Madeiran Storm Petrel and the land birds (waxbills, canaries, mynahs, and francolins), Philip Ashmole on the Wideawake (Sooty Tern) and two noddies, Douglas Dorward on the Fairy Tern and two boobies. Only the rare Red-footed Booby was not intensively studied. Michael Cullen concentrated on the behavior of various species and Eric Duffey made an ecological survey of the island.

After one month on Ascension, the advance party of two had explored the island, made the acquaintance of those who were to be most helpful during their stay, chosen a camp site, constructed a camp of several huts complete with generator and electric lights, and made arrangements with the Americans at the missile-testing base to obtain fresh water. Still ahead were the caulking and painting of the motor launch, *Ibis*, and the problem of mooring *Ibis*, and landing on Boatswain Bird Island—a more or less sheer, rocky nubbin off the main island, on which many sea birds nest—and the building of a hut on this small island where considerable time was to be spent.

One of the first ornithological tasks, after the arrival of the other members, was the banding of as many individuals as possible of each species early in the breeding season to serve as an aid in behavior studies and to provide solid evidence concerning the length of time between breeding cycles. Their efforts, though often laborious or frustrating, were eventually rewarded; they found that two consecutive breeding seasons of individual Wideawake Terns (*Sterna fuscata*), and also Yellow-billed Boatswain-birds (*Phaëthon lepturus*), were separated by only nine to ten months. The Black Noddy and Brown Booby were also suspected of a less than yearly breeding cycle, whereas the other sea birds appeared to have annual cycles. (Previous studies of the breeding cycle of the Sooty Tern were based on unbanded birds.)

Among the natural-history tidbits presented are a description of the breeding of sea turtles, the role of cats as predators, and the discovery of bones of Wideawake Terns, boobies, and a rail in fumaroles. The bird life, environment, and expedition activities are well documented with photographs and pen-and-ink sketches. The author's search through documents in the courthouse resulted in an interesting section on the history of Ascension. Despite the many activities of the expedition members and their rather successful attempts to get caught up in the social whirl, the year and a half of primitive living on the hot, parched, volcanic landscape must have had its monotonous aspects. These are barely hinted at, and the tone of the narrative remains light and humorous. —Richard L. Zusi.

THE LONELY LAND. By Sigurd F. Olson. Alfred A. Knopf, New York, 1961: 5¾ × 8½ in., x + 273 pp., line drawings by Francis Lee Jaques. $4.50.

In accepting the John Burroughs Medal for his book, "Iceland Summer," Dr. George Miksch Sutton remarked: "No person in our world should be denied the privilege of getting lost.... There must be wilderness areas in which man can pit himself against nature, recognize his dependence on God, and discover himself through being threatened with losing his way."

Mr. Olson and five members of his party, which included a diplomat and a bank president, found their "place to be lost" in northwestern Saskatchewan where they followed the Churchill River from its headwaters at the height of land near Ile à la Crosse for five hundred miles to Cumberland House—a trail relatively unchanged since the explorers and voyageurs traveled it so long ago.

This is a pleasant book. The author is constantly aware of the birds and mammals and plants, of the geology, and of the changing scene along the River. There is no crisis, no hair-breadth escape from death, no "getting lost"—but there could have been. The possibility was always there. The men were alone in their fragile canoes, making split-second judgments in the white-water of a swift stream, using their last ounces of strength against the huge waves of a wind-tossed lake, trying to follow the main channel through the maze of cattails and willows in a great swamp.

Quotations from the diaries of the earlier explorers and voyageurs add interest to the text and Mr. Jaques' illustration for each chapter heading artfully sets the stage for the story that follows.—OLIN SEWALL PETTINGILL, JR.

ANIMAL ECOLOGY. By S. Charles Kendeigh. Prentice–Hall, Englewood Cliffs, New Jersey, 1961: 8 × 11 in., x + 468 pp., 196 illus. $11.00.

"Animal Ecology" was "designed for a course given at the junior–senior–graduate level, to students who have at least a year's background in zoology." In an effort to stress principles and basic concepts, Dr. Kendeigh has divided his book into four major sections: I. "Background" (4 chapters); II. "Local Habitats, Communities, Succession" (5 chapters); III. "Ecological Processes and Community Dynamics" (10 chapters); IV. "Geographic Distribution of Communities" (9 chapters). In general, the major headings suggest the subjects discussed under each section, but one is not always certain from a chapter title what subjects may be found there. The subjects dispersal, migration, and ecesis are discussed in the chapter so titled (Chapter 10); emigration is treated in Chapter 16, and irruptions in Chapter 17. Dr. Kendeigh considers the terms irruption, outbreak, and plague to be synonymous. In "Food and Feeding Relationships" (Chapter 13), one finds a discussion of cryptic coloration, deflective colors, directive markings, counter-shading, aggressive resemblance, aposematic coloration, and others, under the general heading "Protective devices." Dr. Kendeigh did not think it "desirable to devote a special chapter to applied ecology or, more particularly, to wildlife management," but he did include short sections on applied ecology in several chapters. "Physiological ecology, the study of the manner in which organisms respond and adjust to environmental factors, is dealt with sparingly." Some consideration of physiological ecology by an author with physiological interests, however, would have added immeasurably to the discussion of "Speciation" (Chapter 19). The text is followed by a 31-page "Bibliography," a 45-page "Subject Index," and a 20-page "Species Index." Some readers may object to the double-column offset printing on relatively thin paper.

I liked the historical emphasis throughout much of the book because the beginning student should learn about the pioneer workers in a given discipline. I also liked the generally straight-forward definitions of the countless ecological terms and references to the definitions in the Subject Index. A broad spectrum of the animal kingdom, from protozoa to mammals, is given in the examples cited to illustrate ecological principles. Although probably only a reflection of my own preoccupation with the significance of population dynamics and ecological peculiarities of the Kirtland's Warbler, I was surprised to find no mention of this remarkable species. Dr. Kendeigh has discussed a vast array of subjects, mostly in a cursory and superficial style in keeping with the aims of the book.

Dr. Kendeigh considers the science of ethology "an essential branch of ecology" (page 14). It may come as somewhat of a shock to ethologists, psychologists, and neurophysiologists, however, to read that "ethology differs from psychology in that it is concerned with understanding not only the causality of behavior but also the *survival value* of behavior patterns under natural conditions, and the *evolution* of these patterns. Psychology is concerned more with analyzing the nervous mechanisms that are involved." This may be a useful pedagogical distinction for an ecologist, but it also is typical of the widespread naive concept about the basic nature of ethological theory. As such it does much to brand ethological research as a superficial "descriptive science" without a sound foundation, for it is virtually impossible to think in terms of the "causality of behavior" without considering the underlying neurophysiological mechanisms.

Ornithologists will be interested in the presentations on the zoological regions of the world, paleo-ecology, and the major biomes and their characteristic bird species (Chapters 20 through 28), as well as the discussion and outline for the study of a "complete ecological life history of a species" (page 16). The life histories presented in the book, however, are not written in accordance with this admirable outline.

Despite Dr. Kendeigh's statement in the preface that "the science of ecology, born at the beginning of the present century after a gestation period of several hundreds of years, has now matured into an honored and respected scholarly discipline and field of research," one still has the feeling that some ecologists continue to confuse "scholarly discipline" with superficial research couched in a welter of ecological terminology contrived to create the impression of profundity and scholarship.—ANDREW J. BERGER.

A SYNOPSIS OF THE BIRDS OF INDIA AND PAKISTAN, TOGETHER WITH THOSE OF NEPAL, SIKKIM, BHUTAN AND CEYLON. By Sidney Dillon Ripley II. Bombay Natural History Society, 1961: 6¾ × 9½ in., xxxvi + 703 pp., 2 maps (1 col.). Rs 25. (Available from Peabody Museum of Natural History, Yale University, for $6.50.)

All Indian ornithology takes as a touchstone Stuart Baker's monumental seven-volume work on birds in "The Fauna of British India" (1922–30), the final volume of which appeared more than thirty years ago. The period when this classic was prepared, and for about ten years after, were the heydays of Indian ornithology, as well as a time of profound changes in avian systematics. As a consequence, the portions of Baker's work concerned with distribution and taxonomy became outmoded nearly as soon as published, although the life history studies remain of paramount importance. An up-to-date checklist has been greatly needed. Ripley's "Synopsis" meets this need admirably.

The area covered by the "Synopsis" is similar to that in the "Fauna," except for the omission of Burma, which has been adequately treated by Smythies' "The Birds of Burma" (1953). About one-seventh of the world's avifauna occurs on the Indo-Pakistan

subcontinent. In this region the author recognizes about 1,200 species, with an aggregate of 2,060 species and subspecies; about 1,750 forms are resident.

The introductory portion of this volume is important, for in addition to the usual acknowledgments, definitions, and similar matter, it covers the recent history of ornithology on the subcontinent, defines the 15 vegetational zones recognized (following Champion's classic "A Preliminary Survey of the Forest Types of India and Burma," *Indian Forest Records*, 1:1–286, 1936), and considers the zoogeographical affinities of the avifauna. The latter section, most of which is a recapitulation of earlier work, stresses the importance of an Ethiopean element in the composition of avifauna and the relatively minor influence of Palaearctic species.

Two useful maps are included. The first, entitled "India and Pakistan before the 1956 reorganization of the Indian States," is actually a map of India before the 1947 partition of India and Pakistan. This is accompanied by a clear overlay outlining the present international boundaries, the Indian states after 1956, and the nearly 400 districts (roughly comparable to counties) into which Pakistan and India are divided. Unfortunately, the key to the districts is separated from the map by some twenty pages of text. The second is an orographic map, in color, with an overlay depicting the 15 vegetation zones, although it is entitled "Distribution of Climatic Types." One wishes it had been possible to include a map showing the locations of the more important collecting stations.

The check-list presents the orders and families in what is a more or less conventional sequence, with the Fringillidae and Emberizidae ending the list. The Babblers, Flycatchers, Warblers, and Thrushes are considered to be subfamilies of the Muscicapidae, and the House Sparrows, Weavers, and Waxbills are treated as subfamilies of the Ploceidae. The latter arrangement is debatable. The generic and specific treatment, particularly among the Muscicapidae, is sometimes not that which is generally accepted by taxonomists. One might prefer a more conservative approach in a list which doubtless will be the standard work on the region for many years. For example, some may question the use of *Microura* for the Wren-Babbler long known as *Pnoepyga*, or the lumping of *Luscinia* and *Tarsiger* under *Erithacus*, or the combining of *Ficedula* and *Niltava* with *Muscicapa*. The subspecies frequently are divided rather minutely.

The list is amplified beyond the usual check-list approach with liberal references to recent revisions of families, genera, and species. Footnotes abound, pointing out differences of opinion, the reasons for changes, etc. The author is to be commended for this, since too often a check-list seems to imply finality and hides existing problems. A worker in Indian ornithology could spend a lifetime of research merely resolving the points raised in the footnotes.

The distribution of each form is traced in convenient detail and its habitat preferences are described. There is considerable duplication, as one would expect, in sketching the biotopes of contiguous subspecies and it is obvious that the author often searched for synonyms to avoid monotony. A substantial reduction in the size of the volume might have been made if the habitat had been broadly outlined under the species heading and the variations, if any, had been noted under each subspecies.

This book not merely meets a long-felt need but does it with great competency. For this ornithologists may be particularly grateful, since Ripley is the only taxonomist with sufficient experience with Indian birds to have prepared such a list. Had his work been poor we might have waited an additional thirty years for an adequate study.—RAYMOND A. PAYNTER, JR.

THE EYE OF THE WIND. By Peter Scott. Houghton Mifflin Co., Boston, 1961: 6 × 9 in., XXII + 679 pp., 4 col. pls., 50 bl. and wh. photos. $10.00.

Naturalists who have known Peter Scott chiefly from his splendid pictures of waterfowl have now in this autobiography an opportunity to learn about some of his other interests. The result is more acquaintance than intimacy with the author for, as he says, his story tells what has happened to him rather than what he is or has been, but a good many interesting things have happened to him and he recounts them vividly and enthusiastically.

Scott's interest in natural history dates from his earliest memories. Much of the first part of the book recounts his growing interest in shooting and hunting, his exploits in pursuit of wildfowl, and the gradual change from wanting to kill birds to wanting to study and paint them. This change in attitude led to the founding and development of the Severn Wildfowl Trust after the war at Slimbridge where Scott now makes his home, and where there is a living collection of nearly all the waterfowl of the world.

More than a third of the book is devoted to the war. Scott recounts many of his experiences on destroyers and steam gunboats which were exactly to his adventurous taste. He writes with enthusiasm which is contagious and for the most part carries the reader along with him through extensive details and technical descriptions. There are times when the story lags but soon exciting action speeds it on its way again.

Scott is an outstanding yachtsman and, in addition to developing new racing techniques and winning the Prince of Wales's Cup, as President of the International Yacht Racing Union, he was instrumental in the adoption of a uniform Code of Racing Rules. From sailing what could be more natural than to take up gliding as an adventurous recreation? Scott quickly became an enthusiastic and proficient pilot and competitor. A trip to Australia with skindiving on the Barrier Reef has recently opened a significantly new field of activity which in all probability will result in another book and more beautiful paintings.

"The Eye of the Wind" is more adventure story than autobiography. Scott is an "incurable recorder" and at times allows his "capacity for recording useless details" to get out of control. On the other hand, though long, the book is lively, interesting and at times revealing of character. It is printed in England and handsomely put together and jacketed.—EDWARD F. DANA.

BIRDS OF THE CARIBBEAN. By Robert Porter Allen. The Viking Press, 1961: 8½ × 11½ in., 156 pp., 107 color photos. $15.00.

This is one of the best of the "picture books" I have seen. Although basically a volume of superb color photographs, the text is interesting, informative, and accurate, which is a notable contrast to the verbal pap which publishers often sandwich between the pictures.

"The Caribbean," which the author suggests is perhaps a state of mind, as well as a sea and a region, is defined as including the Antilles, Trinidad and Tobago, and the mainland coast from Yucatán through Central America and northern South America. Inland The Caribbean extends to where "the natives have never heard of the merengue or of a steel band."

Within the area are about 1,000 species of birds, 98 of which are pictured. Each species is allotted one "plate," although here a plate is synonymous with "one species," since it may consist of one to four photographs, printed on a portion of one page to

two full pages. Although an unusual concept, the reader expecting 98 photographs is pleasantly surprised to discover a ten per cent bonus.

The photographs range from the more conventional, but lovely, ones of graceful egrets to the seldom-photographed Pale-breasted Spinetail (*Synallaxis albescens*), Blue-gray Tanager (*Thraupis virens*), and Grayish Saltator (*Saltator coerulescens*). My favorite is a full-page portrait of the King Vulture (*Sarcoramphus papa*). The color reproduction is generally excellent; a notable exception is the aquamarine Little Blue Heron (*Florida caerulea*).

The purist may be disturbed to learn that about one-third of the pictures are of captive birds. This is sometimes very evident, as in the case of the Channel-billed Toucan (*Ramphastos vitellinus*) and the Scarlet Macaw (*Ara macao*), the latter of which looks like the prized snapshot of a Florida vacationist.

The work of 23 photographers, ranging from A. A. Allen, A. D. Cruickshank, and C. H. Greenewalt to K. H. Maslowski, P. A. Schwartz, and K. Weidman, appears. A section, "The Photographers," is devoted to a brief biography of each and to photographic data concerning his contributions. Unfortunately, there is no way readily to determine which picture was taken by whom. One must search the biographies for the answer.

For each species there is about one page of text. This is of a broad scope, and no set pattern, often touching on distribution, behavior, breeding biology, and the author's own experiences. There is little that is new, but many an author of a scientific paper will be pleased to see his data deftly, yet accurately, "popularized."

A section entitled "Identification Guide," follows the main text. For each species is given its vernacular names, a brief morphological description, and its distribution.

The bibliography contains most of the literature on the avifauna of the region which an amateur would find helpful.

A novelty, which I have not seen in a bird book before, is the use of different colored paper (gray, blue, tan, salmon, etc.) for the signatures containing the text. It is attractive and lends variety, although the literal-minded, as this reviewer, may initially hunt for some significance beyond the esthetic.—RAYMOND A. PAYNTER, JR.

BIRDS OF REGINA. By Margaret Belcher. Saskatchewan Natural History Society, Special Publication No. 3, Regina, 1961: 5½ × 8¼ in., 76 pp., many drawings by Fred W. Lahrman, 9 photos, 2 maps. $1.00.

As a treatment of bird life in a small area, "Birds of Regina" leaves little to be desired. The species accounts give status, habitat preferences, and a digest of records from widely scattered sources, including the literature. (Overlooked is a note in *The Wilson Bulletin*, vol. 58 (1946), p. 53, on an occupied Barn Swallow nest at Regina on 22 September, a few days later than the record cited.) Preceding the species accounts, which take up all but 17 pages of the booklet, is a careful description, involving 12 pages, of the different major habitats, with indication of where one may see them and mention of their occupant bird species. Mr. Lahrman's drawings, though varying greatly in style, are nonetheless pleasing.—OLIN SEWALL PETTINGILL, JR.