RECENT LITERATURE

Peters's 'Check-list of Birds of the World.'—The publication of volume 3 of Peters's Check-list is the event of the year for the bird taxonomist and museum curator. I can say without exaggeration that during the past years I have used Peters's first two volumes more than any other ornithological publication, and that I have always found it reliable. The third volume[1] contains the orders Columbiformes and Psittaciformes, with the sand-grouse, pigeons, and parrots. Only a few of these forms occur in North America, but still these groups are very important both from the point of view of the aviculturist and that of the student of tropical ornithology. The wide development of these orders in some parts of the tropics is best illustrated by figures: one-fifth (= 230) of the known forms of breeding birds in the New Guinea region (= 1327) are pigeons or parrots.

Compared with the corresponding volumes of the 'Cat. Birds' there are probably fewer additions of forms and other changes in this volume of the check-list than in most others, owing to Salvadori's truly admirable treatment of the pigeons and parrots in the 'Cat. Birds Brit. Mus.' The majority of the changes are due to the evolution of our ideas on taxonomy, which has resulted in the modern concept of species and genus. Sharpe (1909, Hand-list of Birds, vol. 5, Introduction, p. viii) lists 94 genera of Columbae, Peters admits only 59, a reduction of 36%. Sharpe (l. c.) admits 650 species, Peters only 310, a reduction of 52%. Altogether Peters admits 843 forms of Columbae, an increase of 30% over Sharpe's number. These figures on the pigeons agree closely with an analysis made by me of the first two volumes of the check-list (see Proc. Linn. Soc. New York, no. 45–46, p. 19–23, 1935).

Seven subspecies and one genus are renamed because no applicable names were available. The arrangement of the genera and families follows the conventional lines, but Mr. Peters has refrained from splitting the parrots into several families, and groups the lories, cockatoos, etc., as subfamilies. The flightless New Zealand parrot *Strigops*, is placed in a special subfamily at the beginning of the Psittacidae, although it is unquestionably a close relative of the Australian genera *Pezophorus* and *Geopsittacus*, which are placed at the very end of the Psittacidae. More anatomical studies are required before some of the genera, such as *Psittrichus* and *Otidiphaps*, can be arranged in their proper systematic position.

Peters's volumes are in the hands of so many ornithologists that I almost hesitate to mention their principal features for the benefit of those who are not yet familiar with this work. It lists every valid species and subspecies, with the original quotation, the type locality, and such synonyms as were proposed since the publication of Sharpe's Hand-list. The detailed range of each form is given, as well as the winter quarters of the migratory forms, a veritable mine of information for the student of animal distribution. Under each genus some references are listed to recently published monographs or revisions. The author wisely refrains from the use of vernacular names. Most of the birds of the world, with the exception of the well-known North American and European species, have no generally accepted vernacular names and it would place a heavy burden on Mr. Peters to invent English names for them. Besides, this is an international check-list and it is the very purpose of scientific nomenclature to provide names which are understood by naturalists of all nations.

[1] James Lee Peters. Check-list of Birds of the World. Volume III. 8vo, Cambridge, Harvard University Press, xiii + 311 pp., 1937. Price $3.50.

The amount of labor that goes into the preparation of such a check-list, can be estimated only by those who have attempted a similar task. Every ornithologist, be he in charge of a collection, or be he interested in the classification or distribution of birds, is deeply indebted to Mr. Peters for the painstaking exactness with which he has accumulated all this useful information. We congratulate him on the completion of this volume and look forward with anticipation toward the completion of the next one.—E. MAYR.

Arthur's 'Audubon: an intimate life of the American Woodsman.'—The number of volumes by, or about, Audubon, that have appeared in the last twenty years is quite amazing, and must be attributed to the curiosity which his adventurous and romantic life has aroused in the reading public, as well as to the engaging beauty and interest of his delineations of bird life. As a climax to this, all of his great bird plates are now being reproduced in full color, but in reduced form, and accompanied with an appropriate text. Doubtless this legitimate curiosity about the life and accomplishments of so singular a genius has been whetted somewhat by the fantastic theory that Jean Jacques Fougère Audubon was the real lost Dauphin, son of Louis XVI and Marie Antoinette, in name the veritable King Louis XVII of France.

Mr. Arthur, in his recent biography,[1] has given, I think, a very true picture of Audubon the man, and his account is detailed, accurate and very interesting. He portrays Audubon as quite human, with plenty of faults, which cannot always be excused, but with versatile powers that few could match. He shows also that dogged perseverance in attaining his heart's desire, which no poverty, no discords among family or friends, no lack of education, no hardships or misfortune could for more than a moment defeat or keep from eventual success. With all his lacks and all his faults, Audubon was probably one of the most selfreliant of the successful men of his age.

Mr. Arthur is one of the few biographers who have added substantially to our knowledge of Audubon's life history. Particularly noteworthy are his contributions to the history of the naturalist's most famous drawings, made in his favorite State of Louisiana, particularly in Feliciana Parish, the scene of many of his early discoveries. From him also we learn about the numerous persons with whom Audubon and his wife were most intimately associated, both there and at New Orleans, when his purposes were being set and plans for his life work were taking form. Many of the illustrations are new and show us Audubon's early facility with the brush and crayon point; and in an appendix is given an annotated list of all the originals for the plates of 'The Birds of America,' which should prove very useful.

Mr. Arthur frequently refers to William MacGillivray as Audubon's 'ghost writer,' which is fairly descriptive, but it should be added, I think, that Audubon was always his own publisher, so that he could not count upon such editorial assistance or supervision as nowadays the author legitimately expects from a responsible publisher.

The author devotes considerable attention to what is spoken of as "the enigma" or "mystery" of Audubon's birth and parentage, but he offers no final solution. After stating what Audubon's descendants believed, and what Audubon would have his wife believe, the reader is left to judge for himself. He does say, however, that the Dauphin theory is highly improbable, and he is convinced that Audubon was not a native of Louisiana; and he adds: "Was he the boy that was born to Jean Audubon at Aux Cayes, April 26, 1785? A preponderance of evidence appears to

[1] Arthur, Stanley Clisby. Audubon; an intimate life of the American Woodsman. 8vo, pp. 1–518, 65 illustrations, 1937: Harmanson, New Orleans. Price $5.00; limited edition, $10.00.

prove that he was that little boy." I refrain from all further reference to this question since my own opinion has been expressed in the paper 'Audubon and the Dauphin,' which appears in the present number of this magazine.

The Latin phrases "terra incognitus" and "par nobile fratum" look very strange, but Mr. Arthur's painstaking work is very free from noticeable errors. There seems to be some misapprehension in the following: the royal family was imprisoned "in the towers of a feudal fortress, originally the abode of an ancient order of Knights Templar and called the Temple." The Temple did not designate any particular building, but was the name given to a district of Paris. In reality it was an enormous dominion, as Meade Minnegerode says, comprising a palace, a church, a fortress with big and little towers, the latter serving primarily as a donjon or prison, as well as gardens, markets and other facilities. In short it was a walled city within a city, and exercised its own jurisdiction and policing. In 1792 there were several thousand inhabitants.

Mr. Arthur's book is to be commended on all counts, but should have been given a stronger back to work its way in the world.—FRANCIS H. HERRICK.

Niethammer's 'Handbuch der Deutschen Vogelkunde.'—Here at last we have an excellent manual[1] of the birds of Germany, intended to do for that country what the 'Practical Handbook' by Witherby has so well accomplished for the British Isles. No work has yet appeared which treats of the Reich's ornithology in small compass and in so comprehensive and authoritative a manner. Although originally conceived over twenty-five years ago by Hartert in cooperation with other German ornithologists, its preparation has been long delayed by the intervention of the World War and the death of some of the collaborators. The publication of the British 'Practical Handbook' meanwhile, at once demonstrated the value of such a work and spurred the authors to the completion of the first volume of the present manual, which in size and in some points of treatment conforms with the English work. The passage of time has not, however, been altogether a disadvantage, for it has enabled the inclusion of much new and valuable matter, not available until later years, such as migration data based on bird-banding.

In now bringing out this first volume, covering the passerine birds only, the editor acknowledges the constant assistance of Dr. E. Stresemann, who himself contributes a Foreword. The introductory matter includes first, a short bibliography of important works on German ornithology, including journals, standard authorities, local faunas, and selected titles dealing with field marks, migration, nests and eggs, and parasites. A chapter defining and illustrating terms precedes a key to the families of German birds, based chiefly on obvious arbitrary characters as size or colors. Similar keys in their appropriate places permit the student to run down the specimen or species in hand. The body of the work takes up each species in turn, giving the accepted name, German vernacular name, original citation, followed by a condensed description of the different races, their plumages, field marks, voice, migrations with general dates, manner of occurrence, habitat, food, nesting, and parasites (names only). Many points of critical value in the determination of closely related forms are depicted in diagrams, such as the wings of the species of *Phylloscopus*, with their differing formulas, while many small maps illustrate migrations of special interest. A single colored plate shows two races of Crested Tit and five of Yellow Wagtail that occur in Germany as resident or migrant forms. Altogether there is condensed here

[1] Handbuch der | Deutschen Vogelkunde | im Auftrag der Deutschen Ornithologischen Gesellschaft | herausgegeben von Günther Niethammer | Band I: Passeres. 8vo, xxiv + 474 pp., 69 text-figs., 1 pl. (col.); Akademische Verlagsgesellschaft, Leipzig. Price RM. 15.

an immense amount of pertinent information, presented in attractive form for ready reference, so that undoubtedly this book will meet with an eager reception by both amateur and professional ornithologists. It seems the more regrettable therefore, that Old World conservatism should continue the use of certain names in nomenclature that have been abandoned on this side of the water, such as Passeres for Passeriformes, *Eremophila* for *Otocoris*, though to some extent these may be matters of opinion. The Holboell's, Greater and Hoary Redpolls are included as subspecies of *Carduelis flammea* and the genus *Passer* is retained without comment in the Fringillidae, notwithstanding its demonstrated position in the Ploceidae. One might have wished for more detailed migration dates. Several American species are included as stragglers, the Black-throated Green Warbler, Pipit and Catbird, Brown Thrasher, Robin, Olive-backed and Hermit Thrush. The book is well printed in large clear type, with appropriate side-headings and in contrast to its British counterpart, is of a size well suited for easy handling.—G. M. A.

Nice on the Life History of the Song Sparrow.—The painstaking studies carried out by Mrs. Nice on the Song Sparrow population of a limited area ('Interpont') near Columbus, Ohio, some of them already published here and abroad, are widely and favorably known. In the present extensive paper,[1] the author not only carries forward these researches in a brilliant manner but also provides a summary of her studies in the light of further experience. Selecting the Song Sparrow as an example of a common and widespread species, she has made over a period of eight years an intensive study of its habits and social behavior, with a view especially to gaining an insight into the varying composition and interrelations of the population not only at different seasons, but from year to year. The fluctuations following changes in the general environment, the effect of enemies, the influence of weather, as well as the normal sequence of events in migrations, nesting cycle and post-nesting activities have been followed with extreme care during the lifetime of many individuals, constituting the population of the area studied. The result is that for the first time we have a fairly adequate picture of the relation of the species to its environment and of the individual birds to one another, as well as of the course of events within the Song Sparrow community as a whole. It is safe to say that no such thorough field study has hitherto been made for any of the smaller American birds with the possible exception of the House Wren. The individual birds within the fifty-acre area were so far as possible trapped, banded, and their individual activities followed throughout each year so that it was possible to study the doings of the different birds, map their territories, record their several peculiarities, determine their manner of nesting, selection of mates and territory, the number of their nestings, the total of successes or failures, the annual reproduction rate necessary to maintain the average population and various other related matters in the normal life of the species.

In the first two years of study the conditions were optimum, and the population was able to maintain its level, but in subsequent years, through gradual clearing and destruction of cover, the environment was rendered less favorable with a consequent inability of the birds to make up for losses. In a brief review, it is impossible to give any adequate abstract of the work. A few points, however, may be mentioned. The sexes, though alike in plumage, play very different rôles: the male defends territory, mate and nest and shares in feeding the young; the female alone usually builds the nest, incubates and broods. Though apparently attached to each other

[1] Nice, Margaret Morse. 'Studies in the life history of the Song Sparrow.' Trans. Linnaean Soc. New York, vol. 4, vi + 247 pp., 3 pls. (1 col.), charts, maps, Apl. 1937. Price $1.50 (care American Museum of Natural History, New York City).

in a given season, the union usually lasts for but a single season. Holding of territory is a fundamental trait, ensured by innate behavior patterns consisting of song, display and fighting, carried out in characteristic manner as carefully described. In autumn and winter, however, this jealousy is more or less relaxed, and the birds become somewhat social. Some Song Sparrows, particularly males, are resident in the area studied, others are migratory, but this status may be varied in different years by the same individual. Early in the season, even in February, warm weather, coupled with increasing day-length, induces migration; while in the autumn the reverse is the case, for cold then starts southward migration. Nesting, however, does not begin until April irrespective of warm or cold seasons, the important factor being perhaps, the increasing sunlight and its effect on the gonads. A well-situated population tends to maintain its numbers readily from year to year, but with less favorable conditions is less and less able to hold its former level. The age of adult birds extends to about two and a half years as determined both theoretically (Burkitt's formula) and by actual observation. In one case, however, a male bird lived to an age of between eight and nine years.

The author's thorough acquaintance with the literature of the subject and the problems involved, makes this study of exceptional value. She has brought together and critically analyzed an enormous amount of data, bearing on almost every aspect of the Song Sparrow's life history. Each of the twenty chapters is carefully summarized and there is a brief general summary of the entire contribution. As a model of careful and painstaking observational study of the life history of a wild bird, this excellent monograph should prove of unusually stimulating value.—G. M. A.

National Geographic Society's 'Book of Birds.'—Under the editorship of Dr. Gilbert Grosvenor and Dr. Alexander Wetmore, there are brought together in these two volumes[1] the series of articles on North American birds, north of Mexico, that have appeared from time to time in the course of the last six years in the 'National Geographic Magazine.' These papers, already familiar to a wide circle of readers, are here arranged as nearly as possible in the systematic order and continuously paged, so that together they form a splendid popular handbook of the birds of the United States and Canada, abundantly illustrated and at a reasonable cost. Each chapter takes up one group,—usually an order,—of birds, and opposite each colored plate, in double columns of print, are brief accounts of the characteristic habits and range of the various species there illustrated. The 204 plates "in full color" depict no less than 950 kinds of birds, including "all the major species" of these countries, and except for the plates of some of the warblers by Fuertes taken from a previous volume on birds, are the work of Major Allan Brooks. Naturally these plates vary in artistic merit and in excellence of reproduction; often it becomes necessary to show several species together on a single plate so that the individual figures lose somewhat through reduction. On the other hand, the advantages of lessened expense and of convenience in comparison of related species are obvious, and on the whole the result is quite satisfactory. The figures of the various jays, each of which has a half plate to itself amid natural surroundings, are exquisite examples of Major Brooks's best work.

The text accompanying the plates was prepared by several well-known ornitholo-

[1] The Book of Birds | the first work presenting in full color all the major | species of the United States and Canada | edited by | Gilbert Grosvenor . . . | and Alexander Wetmore | etc. Vol. 1, viii + 356 pp.; Vol. 2, 123 pp., illustr., National Geographic Society, Washington [1937].

gists, including Dr. Wetmore, Dr. T. Gilbert Pearson, Dr. Arthur A. Allen, Dr. Robert Cushman Murphy, F. C. Lincoln, E. R. Kalmbach, Major Brooks and Professor F. H. Herrick. Occasional chapters dealing with special subjects as hawking, sound-recording, bird migration and bird-banding are interspersed with those treating more especially of particular groups, and are illustrated with a wealth of excellent photographic figures, the greater part by Dr. A. A. Allen. The 'Table of Contents' is arranged alphabetically according to the first word of each chapter heading rather than by the sequence of chapters, a disadvantage perhaps. The weight of the coated paper necessary for the illustrations is offset by the division of the book into two volumes, each of convenient size and well indexed. The work is one that should have a wide popular appeal through its many attractive illustrations and the brief but readable accounts, supplying accurate information concerning so large a number of species.—G. M. A.

Bent's 'Life Histories of North American Birds of Prey.'—After a five-year interval, it is a satisfaction to record the appearance of another number (the tenth) of the well-known 'Life Histories' of North American birds,[1] in this instance Part 1 of the Falconiformes including the American vultures (Cathartidae) and the kites, hawks, eagles and osprey (Accipitriidae). The falcons (Falconidae) are reserved for a second part. The treatment follows the same general plan as in previous numbers, giving for each species a general account of the habits, nesting and eggs, followed by descriptions of young, the plumages briefly, food, general behavior, range, migration and casual records. Where there are several subspecies, the life history of the best-known one is presented in detail, while in order to avoid duplication, the others are given only such additional mention as may be needed in each case. The accounts of two of the species (Black Vulture and American Rough-legged Hawk) were contributed by the late Dr. Charles W. Townsend, while that of the Turkey Vulture is from the pen of Dr. Winsor M. Tyler, and the one on the Gray Sea Eagle was written by Rev. F. C. R. Jourdain. The remainder of the volume was prepared by Mr. Bent himself, notwithstanding that he regards it as a "cooperative work" in which the notes contributed by over four hundred persons were utilized. In the general accounts of the different species, the author shows an unusual power of clear and intimate portrayal of his own wide field experience, here of especial value because he has made the raptorial birds a lifelong study. Under various headings, he not only draws deeply upon his own observations but has summarized practically all the important published matter as well as the notes of many correspondents, contributed for the purpose. The result is that in these 'Life Histories' we have a sifted and condensed mass of well-arranged facts relative to each species, that practically sums up our present knowledge. They thus form an indispensable reference work wherein one may find quickly the available information on almost any desired aspect of the life of these birds.

In work of this sort which involves the collation and evaluation of innumerable minor notes and references, it is impossible to avoid an occasional slip. Thus a note on page 197, concerning the nesting of Red-shouldered Hawks at Eastend, Saskatchewan, should, as its contributor writes me, refer to Swainson's Hawk instead. For the benefit of an ignorant public, it might have been a good plan to have summed up in more drastic manner the economic status of each species notwithstanding that under the heading of "Food," all the essential facts are presented. Particularly interesting

[1] Bent, Arthur Cleveland. 'Life histories of North American birds of prey. Order Falconiformes (part 1).' Bull. U. S. Nat. Mus., no. 167, viii + 409 pp., 102 pls., 1937. (For sale by the Superintendent of Documents, Washington, D. C., price 70 cents.)

are the articles on the California Condor and its haunts, the Sharp-shinned Hawk as a widespread bird-eating species, the Red-tailed and Red-shouldered Hawks in their somewhat antagonistic relations, and the Osprey with its specialized fishing habits. The plates present a wealth of photographic record, well selected to illustrate the habitats, nesting and appearance of nearly thirty species or races of the thirty-eight raptorial birds treated. The convenient size of these 'Life Histories' is an advantage in comparison with Bendire's two original volumes, nevertheless one cannot help the thought that a more sumptuous appearance would have been more in keeping with the worth of the contents.—G. M. A.

Hesse, Allee and Schmidt's 'Ecological Animal Geography.'—In spite of its formidable title, no one interested in the distribution and evolution of animal life can fail to find this a most interesting and stimulating book.[1] It is far more than a mere translation of Hesse's work on animal ecology. For both of the American collaborators are recognized leaders in their special fields and from their own wide field experience as well as from their knowledge of investigations made in this hemisphere, have effectively added to the original volume, which in itself covers much European literature less available here. It is a book to which a specialist in the study of any group of animals may well turn with profit in order to obtain a wider outlook on the general problems of distribution, the social relations of various types of animals, their behavior, and the far-reaching effects of the many environmental conditions under which they have developed. Within its nearly six hundred pages is assembled an enormous mass of data, drawn from many sources, published and unpublished, well digested and viewed in long perspective, an undertaking which, with the ever-increasing amount of investigation by biologists the world over, becomes in itself an herculean task. In the face of special interests, the authors have maintained an admirable sense of proportion in the treatment of the general aspects of the subject, although frequently one might wish for more details, as for example, when treating of the alpine faunas of the high mountains of Africa, which are dismissed with a sentence or two.

In a synthetic work of this sort the authors are perforce obliged to rely largely on the work of other investigators when dealing with matters outside their own special fields, hence it occasionally results that the older accounts when utilized, do not now reflect current opinion, as in the estimation of generic values, when faunas are contrasted, or as in the perpetuation of such tales as the happy community of Burrowing Owls, prairie dogs and rattlesnakes, or the use of its two long lower incisors by the kangaroo as shears to snip grass!

The subject is treated under four main divisions. The first considers the ecological foundations of zoogeography, reviewing the conditions of existence for animals and their effects, both immediate and secondary, upon animal life and its distribution. The succeeding sections take up the distribution of marine animals, then the life of inland waters and finally the factors affecting the distribution of land animals, emphasizing especially the communities of the latter as related to vegetation. The long-range aspects of historical change are well covered. With commendable good sense the Wegener hypothesis is given little weight as an explanation of many at first sight anomalous distributions, while multiple land bridges, at one time in vogue, are likewise shown to be largely unavailable. The authors tend to confirm the

[1] 'Ecological | Animal Geography | an authorized, rewritten edition based on | Tiergeographie auf oekologische Grundlage | by Richard Hesse' | . . . prepared by W. C. Allee | . . . and Karl P. Schmidt. 8vo, New York, John Wiley & Sons; London, Chapman & Hall; xiv + 597 pp., illustr. $6.00.

explanation offered by Matthew to account for much of the distribution of both plants and animals as we see it at the present time, through occasional union of the continents at the north combined with secular changes in climate, making possible an occasional overflow from the Old World into the New, with some mutual interchange of faunas. The conclusion seems sound that "a division into faunal regions of general validity for all classes of animals cannot be maintained."

From an ornithological standpoint, the matter included is on the whole excellent, but might be so greatly amplified that a separate volume would be required to do the subject real justice. There is much use of the works of older authors with often insufficient rechecking to make their results commensurate with modern standards. Frequently one would wish for more detail, which the limits of the work cannot give, a fact which only proves its stimulating value. The relatively new subject of 'territory' in its relation to animal distribution is practically omitted. A suggestion worth following out, is that in directing their migration courses "it is specially differentiated belts in the atmosphere, and probably places with frequent ascending air currents, that the birds choose," while the ascent of air currents over water and forests by night may be a factor causing birds to migrate along river valleys and seacoasts, rather than the visual guidance of such features; or possibly both these influences come into play.

Throughout the work, the translation has been excellently done so that the reader is unaware of any idiomatic expressions of the original text. Technical terms are surprisingly few and no attempt is made to invent an ecological nomenclature such as is used for plants. At the end of each chapter are gathered in very condensed form the references to literature indicated by numbers in the text. It is a pity that these could not have been expanded into a full bibliography at the close of the book, but doubtless the limits of space forbade. This is a work well worthy of high place as a textbook and reference volume.—G. M. A.

Delacour and others on Aviculture.—Although the first volume of the original edition of this work was published only eleven years ago, it has long been out of print; hence the present new edition[1] will doubtless be welcomed by all who keep cage-birds, while its value to aviculturists is assured by the fact that M. J. Delacour as editor not only has contributed various chapters of the book, with much new matter, but also has enlisted the aid of other well-known authorities, in the preparation of special chapters. Thus, H. D. Astley treats of the thrushes and warblers; A. L. Butler of finches, larks and buntings; A. Decoux of waxbills, mannikins, grass finches and grosbeaks; E. G. Meade-Waldo of crows, magpies and jays; D. Seth-Smith of birds-of-paradise and bowerbirds; W. Shore-Bailey of weavers and whydahs. The introductory pages give clear and simple directions for the general care of small birds, their housing, feeding, transportation, treatment in sickness, and other phases, that seem of very practical value. The volume covers the Passeriformes only, taking these up group by group, with first a general statement of the characteristics of each type, then a list of the species commonly found in the bird markets, with brief diagnoses and a few words on their adaptability and general geographic range.

Partly on account of restrictive laws, aviculture, except for the conventional canary and parrot, is less an avocation in this country than abroad, so that the book is written more especially with a view to helping bird fanciers of the Continent and the British Isles; but for the amateur it is at once a helpful guide and a manual of

[1] 'Aviculture | a treatise on the management | of foreign and British birds in | captivity.'| Published by the Avicultural Society | Volume I | 1936. 8vo, xv + 298 pages, 27 plates (9 in color), 1936, Stephen Austin & Sons, Ltd., Hertford, England.

the species that reach European markets. Technicalities have been carefully avoided, but too great a conservatism in the use of Latin names results often in their being out of accord with more recent usage, while greater care might have avoided such mistakes as *Sitta carolina* for *S. carolinensis*, *Icteria viridis* for *I. virens*, and others, which should have been corrected in a new edition. The very brief accounts of habits often contain interesting notes on captive birds. Thus a hand-reared female Crested Lark (*Galerida*) sang as well as any male, raising its crest while so doing. The American Robin, Hermit Thrush, Catbird and Mockingbird have been successfully bred in Europe, but these as well as the Bluebird and other North American species now seldom reach the continental markets owing to the effectiveness of prohibitive measures. The chapter on birds-of-paradise is especially full and contains many items of interest and value.

The book is well printed despite occasional misspellings, due no doubt to the fact that the original French text had to be first rendered into English. Of the twenty-seven plates from photographs and drawings, nine are in colors and vary in excellence; those by Grönvald are especially attractive and striking notwithstanding the conventional arrangement of figures. "Aviculture is a scientific pursuit and a source of unending interest and pleasure," we are told in the Introduction, but the editor wisely adds that it should not be undertaken unless one is prepared to devote the time and effort necessary for the proper welfare of the birds.—G. M. A.

Danforth's 'Pájaros de Puerto Rico.'—In this convenient little volume[1] we have for the first time a popular handbook of the birds of Porto Rico, intended for the use of local students, teachers and others interested in the native birds, written in Spanish, which is still the familiar tongue of that island. The author's acquaintance with the Porto Rican avifauna is the result of continuous residence there since 1921 and in this period he has himself done much to advance our knowledge of the local species, and to encourage measures for their protection. The plan of the work is simple. After a brief introductory chapter setting forth the esthetic and practical value of birds, and the more notable publications dealing with those of Porto Rico, there follows the main part, which lists the island species, giving first the local Spanish names, then the current Latin name, followed in each case by short paragraphs giving a clear description, a statement of the nesting, then the status whether resident or migrant, with in the latter case the general dates, and finally a few short notes on the habits or other important points. The sequence and nomenclature are so far as possible those of the 'A. O. U. Check-list.' Two African weaverbirds are well established as relics of the slave trade, but the introduced Cuban Quail is now exterminated thanks to the mongoose, itself an importation. To its depredations is also believed to be due the extinction of the Porto Rican Chuck-will's-widow, of which but a single specimen, taken in 1888, is known. The body of the book includes 182 numbered species and is followed by a summary list of these and an appendix giving nine doubtful species in addition. Three separate indexes, in which the birds are listed by their Spanish, Latin and English names, respectively, should make the contents readily available while numerous illustrations help to visualize the descriptions. Many of the black-and-white text-figures are from the work of James Bond, with the addition of half-tone reproductions of well-mounted specimens in the Field Museum. Ten colored plates by Miss Frances W. Horne illustrate a number of the species, and though the figures are small and somewhat stiff in pose, help to enliven the book. These with the very clear and well-printed text and untechnical descrip-

[1] Danforth, Stuart T. 'Los pájaros de Puerto Rico.' Small 8vo, x + 198 pages, illustr., Rand McNally & Co., New York and Chicago, 1936.

tions should make it of great value to its intended users, and it will undoubtedly prove of timely aid in encouraging among our island neighbors a sympathetic interest and a much needed appreciation of birds.—G. M. A.

Periodical Literature

Aiken, Charles E. W. Birds of the Southwest. Colorado College Publ., gen. ser. no. 212, 73 pp., 1 pl., map, March 1937.—Professor Edward R. Warren here presents a biography of the late Charles Aiken (1850–1936), together with his diary of two early visits to Arizona and the Gila River in 1874 and 1876 for ornithological exploration. Other matter includes an official report on the first of these journeys, four short notes on birds, fragments of a diary and a list of birds seen or taken on his 1876 trip. Together they form an item of interest in the pioneering days of the Southwest. Aiken was born in Benson, Vermont, but early went to Chicago, where his boyhood days were spent. Following the great fire of 1871 he removed to Colorado Springs, where he opened in 1874 a taxidermist's shop, and carried on this business as well as that of a furrier, until the time of his death. His large private collection of birds amounting to nearly six thousand specimens was purchased in 1907 for the museum of Colorado College.

Attila, Uljas. Ein neuer Apparat zur Registrierung der Intensitätsvariation der Zugunruhe bei gekäfigten Zugvögeln. Ornis Fennica, **14:** 38–43, 2 text-figs., March 1937.—An ingenious mechanism is described and illustrated, whereby the night-time activity or restlessness of caged migratory birds at the season of migration can be definitely recorded as to time and duration by movements of a needle on paper.

Bannerman, David. A review of the genus *Calamoecetor* Sclater (formerly *Calamornis* Scl.). Ibis, (14) **1:** 294–301, Apl. 1937.—Two forms of this swamp warbler, a large and a small, occur living in close proximity, if not side by side over a wide area of tropical and subtropical Africa. The present revision is a great improvement on previous summaries, including Sclater's 'Systema Avium Aethiopicarum,' in that the various described birds are arranged for the most part as subspecies of either one or the other of the two types. The larger bird is *C. rufescens* with five races in addition to the typical one, besides an Angolan and a Cape Verde Island relative, which are retained as full species. The smaller bird is *C. leptorhyncha* with six additional races.

Bates, George L. Birds of Jidda and central Arabia collected in 1934 and early in 1935, chiefly by Mr. Philby.—Part IV. With notes by H. St. J. B. Philby.—Ibis, (14) **1:** 301–321, pls. 8a, 9, Apl. 1937.—This concluding part covers the pigeons, sand grouse, shorebirds and partridges with their allies, found in central Arabia. Many interesting notes on geographic distribution and habits are given on the birds of this little-known area. The local form of Rock Dove was found consorting with tame pigeons on the Mecca road. Ticks were found to be an important food item of these birds. No less than six species of sand grouse were taken. The Spur-winged Plover is for the first time recorded from Arabia, a small party of five or six birds. The new form, *Alectoris graeca philbyi*, is illustrated as well as a desert woodpecker, *Desertipicus dorae*.

Bates, R. S. P. Do birds employ ants to rid themselves of ectoparasites? Journ. Bombay Nat. Hist. Soc., **39:** 394–395, Apl. 15, 1937.—A further contribution to this subject. A Song Thrush in Kent, England, was watched for several minutes apparently "bathing" in red ants, which issued from a crack in the flags. "Not only did it pick up one, two, or sometimes three ants in quick succession and stuff

them in between the tail feathers, into the tail coverts, primaries, and under the wings, but, with tail and wings outspread, it often wallowed amongst the ants which could be seen swarming all over it."

BEDFORD, O. H. The Ostrich in China. China Journ., **26:** 77–78, 1 pl., Feb. 1937.—In a courtyard of a residence in Peiping, China, is a tomb brick of the Han dynasty, on which in repeated stamped design is shown an Ostrich drawing a light two-wheeled cart. This is taken as the earliest evidence of the presence of the Ostrich in China in historic times, since the brick dates back to about 150 B. C. According to an encyclopedia of that time, it was called the la-chüeh or Great Bird, and was described as having the body and neck like those of an eagle, feet like a camel's, its color tan, and height eight or nine feet when erect. Its diet was barley. Another record of that time states that it existed in the Fantou Kingdom, 11,600 *li* distant from the present Sian-fu. About 140–87 B. C., the King sent among other tribute Ostrich eggs. Fossil eggs are known from Shantung, Hopei, Shansi and southern Mongolia.

BELCHER, SIR CHARLES, AND SMOOKER, G. D. Birds of the colony of Trinidad and Tobago. Ibis, (14) **1:** 225–249, April; 504–550, July, 1937.—These two parts conclude the notes on the occurrence and breeding of the Passeriformes in these islands. Among other North American migrants, the Bank Swallow seems to be for the first time reported. Barn Swallows occur on passage but apparently in declining numbers of late years. The parasitic habits of the Rice Grackle upon the Caçique are briefly mentioned, and a list of hosts of the Glossy Cowbird is given. No attempt is made to include the literature on Trinidad birds.

BELL, FREDERICK. Lead poisoning of ducks, investigated. The Flicker, **9:** 1–2, May, 1937.—In early December, 1936, at Bear Lake, Minnesota, extensive lead poisoning of ducks was found. Many dead and dying birds were noted, which when examined in the laboratory were found to contain an average of over ten shot each in the alimentary tract; the highest number of shot in any bird was 49. They showed the characteristic symptoms of lead poisoning. In one was found the blood parasite, *Leucocytozoon.* The American Coot collected contained no shot, but one was parasitized by a fluke.

BENSON, C. W. Miscellaneous notes on Nyasaland birds. Ibis, (14) **1:** 551–582, July 1937.—Among many notes on birds made during three years in Nyasaland are: sixteen species of Palaearctic breeding waders occur in migration; four species of honey-guides were collected. Several forms are for the first time recorded from Nyasaland.

CHAPMAN, FRANK M. Fuertes and Audubon—a comparison of the work and personalities of two of the world's greatest bird artists. Natural History, **39:** 204–213, figs., March 1937.—Comparing the standards and methods of these two great artists "would be a thankless task. . . . Each was the greatest bird painter of his day. Each was inspired by standards that defied time and strength and patience and was satisfied only when he had given his best. But the standards of Fuertes' day, reflecting developments of a century and the criticism of his associates, were the higher and to him was given the power to meet them." The figures reproduce a number of bird portraits and studies by Fuertes.

CREUTZ, GERHARD. Zur Brutbiologie des Trauerfliegenschnappers. Beitr. z. Fortpflanzungs-biol. d. Vögel, **13:** 95–97, May 1937.—The European Blackcap breeds commonly in Saxony and shows much latitude in its choice of sites, nesting even in cavities of trees or in nest-boxes in gardens. Only one brood is raised a season in contrast to *Muscicapa striata* which is double-brooded. Nest-building

begins about two weeks after the birds arrive in spring. Eggs are usually six or seven in number, and in the larger broods there are usually one or two 'runts' which seem under-nourished. Adults return in successive years to the same spot, but the young seem to scatter elsewhere, for of 221 banded young none was retaken the following year in the region, although the number of nesting pairs actually showed an increase.

DALKE, P. L. Food habits of adult pheasants in Michigan based on crop analysis method. Ecology, **18:** 199–213, April 1937.—A paper that should prove of considerable utility to those interested in intensive pheasant management in similar areas. A high percentage of cultivated grains,—mostly waste,—is eaten. The most common wild seeds taken were ragweed, yellow foxtail, skunk cabbage, and green foxtail. "Adult pheasants are not large consumers of insects and other invertebrates in comparison with plant food eaten. The common belief that grasshoppers are consumed in large quantities is not borne out by the investigation." A good summary,—and three typographical errors. A description of the "playing" of pheasants should, if published, interest students of bird behavior. —W. V.

DELAMAIN, JACQUES AND MAURICE. Le tambourinage des pics. Alauda, (3) **9:** 46–63, 4 text-figs., 1937.—A study of the drumming of the Greater and Lesser Spotted Woodpeckers, with an account of the sort of resonant drumming places used by the birds. Both sexes of a pair may drum at the same spot but not at the same time. A dead stub or knot is tested at various points to find the most resonant spot. The birds may have more than one drumming spot and when, early in the nesting season, one sex drums, the other may reply and come to the tree. The drumming does not result in abrading the wood surface, and the motions involved, concerning which there has been discussion, resemble the series of rebounding movements of a bouncing ball. As the season advances the drumming periods become shorter and in France end about the third week in June.

DEMANDT, C. Beobachtungen an einem westdeutschen Wanderfalkenhorst. Beitr. z. Fortpflanzungs-biol. d. Vögel, **13:** 99–100, May 1937.—The Duck Hawk is common in the region of the Weser and the Rhine in western Germany, and has increased in numbers of recent years due to protection. Near Lenne a pair nested for the first time in 1934 and remained throughout the year, in winter hunting at distances up to fifteen km. from the nesting site. In 1936, the brood perished, apparently as the result of a late snowstorm. This pair of falcons seemed not to disturb the small birds nesting in the vicinity of the eyrie.

EATES, K. R. The status of the Koel [*Eudynamis scolopaceus* (L.)] in Sind. Journ. Bombay Nat. Hist. Soc., **39:** 406–414, map, Apl. 15, 1937.—In this part of western India this bird has been increasing steadily and extending its range during the last twenty years. It is a parasite of the Sind House Crow, and in one instance no less than six of its eggs were found in a crow's nest.

FRANKE, HANS. Aus dem Leben der Beutelmeise. Beitr. z. Fortpflanzungs-biol. d. Vögel, **13:** 85–94, 3 text-figs., May 1937.—In Austria the Penduline Titmouse appears in the latter half of March and remains till about the third week of October. The pendulous nest is constructed of long fibers of wild hop and the down of willows or poplars. In April nests, the willow down and in May nests the poplar down are used, and these two species of tree are preferred as nest sites. Eight stages in the construction of the nest are recognized, beginning with the weaving of an anchorage near the end of a long twig, then the construction of a ring to form the entrance, from which the pocket-like bag depends. Finally the cylindrical

entrance tube is built out from the entrance as in the case of certain weaver-bird nests. Two nests were found each with two entrance tubes on opposite sides, both in use for coming and going. Three weeks are required for the completion of the nest. In May after the brood nest is completed, extra nests may be found in various degrees of construction, but it was not determined if these are made by one or both sexes. Nests are usually placed on the side of the tree away from the prevailing east and southeast winds of spring.

GRISCOM, LUDLOW, AND GREENWAY, JAMES C., JR. Critical notes on new neotropical birds. Bull. Mus. Comp. Zoöl., **81:** 417–437, May 1937.—Study of collections from the Amazonian, Surinam, and Brazilian regions has resulted in the detection of the following new forms: *Crypturellus soui decolor*, Para, Brazil; *Micrastur mirandollei extimus*, Permé, eastern Panama; *Psophia viridis interjecta*, Cametá, Para, Brazil; *Leptotila rufaxilla hypochroos*, Paramaribo; *Amazona amazonica micra*, Surinam, Pomonakreck; *Graysidasculus brachyurus insulsus*, Lago Grande, Rio Amazonas; *Tyto alba hellmayri*, Paramaribo; *Nyctiphrynus ocellatus brunnescens*, Bahia; *Nyctipolus nigrescens duidae*, Mt. Duida, Venezuela; *Caprimulgus rufus minimus*, Panama City; *Hydropsalis climacocerca canescens*, Para, Brazil; *Pharomachrus pavoninus viridiceps*, lower Amazon; *Galbula leucogaster viridissima*, Rio Tapajoz, Pinhy; *Ramphastos tucanus oblitus*, Rio Tapajoz, Tanuary; *Pteroglossus aracari vergens*, Valparaiso, São Paulo; *Selenidera maculirostris hellmayri*, Rio Tapajoz, Boim; *Chrysoptilus punctigula pallidior*, Rio Amazonas, Lago Grande; *Cerchneipicus tinnunculus angustus*, Para; *Nasica longirostris australis*, Santarem; *Ancistrops strigilatus cognitus*, Tauary, Para; *Philydor erythropterus diluvialis*, Para; *Xipholena lamellipennis pallidior*, Santarem; *Todirostrum latirostre senectum*, near Obidos; *Molothrus bonariensis riparius*, Pinhy, Rio Tapajoz; *Tanagra cayana littoralis*, Paramaribo; and *Habia rubica hesterna*, Patua, Para.

HAMPE, HELMUT. Zur Biologie des Rosellasittichs, *Platycercus eximius*. Journ. f. Ornith., **85:** 175–186, 7 text-figs., April 1937.—The Rosella Parrot of Australia readily adapts itself to life as a cagebird. Its food consists in a free state of various seeds, fruits and to some extent, insects; and in captivity it thrives on a mixed diet of oatmeal, toast, ant pupae and green stuff, with codliver oil, charcoal powder or lime. The characteristic movements, calls and social behavior are described as well as the display actions and threat attitudes or actions toward intruders. Cagebirds will breed when a year old. Birds may safely be said to be capable of breeding up to an age of from twelve to fifteen years. Development and growth of the young are described in detail.

HEIM DE BALSAC, HENRI. Une conséquence inattendue de la dissémination de la belladone par les oiseaux. Alauda, (3) **9:** 122–123, 1937.—An unexpected result of the spread of seeds of deadly nightshade (belladonna) by birds, is established. When such seeds are scattered in pastures, and cattle (immune to the alkaloids of this plant) feed upon the resulting growth, the poison concentrates in the liver of the animal. Such livers, when used in the manufacture of certain medicinal extracts, may retain the poison in these extracts, hence certain maladies treated by this extract may result in showing typical symptoms of intoxication. Similar effects may result from eating the livers of cattle that have fed on belladonna plants. The means of prevention is to root out the plants from the pasture.

HENZE, OTTO. Neue Wege des Vogelschutzes im Obst und Gartenbau. Veröffentlichungen Württ. Landesstelle f. Naturschutz, **13** (1936): 157–162, 2 photos, 2 tables, 1937.—On a farmstead of about 25 acres, embracing an orchard of 1500 fruit trees, conditions were favorable for birds and special measures for attracting

and protecting them had been taken, including the provision of fifty nest boxes formed of hollowed-out sections of trees. House Sparrows (*Passer domesticus*) and Field Sparrows (*P. montanus*) occupied all of the nest boxes and had driven away the titmice, redstarts, and flycatchers until in 1932 not a single pair of such birds nested on the place. In that year, despite the number of sparrows present, looper caterpillars defoliated the apple and cherry trees. The Field Sparrow (especially in the nestling stage) consumed some loopers but occupied only twenty of the fifty nest-boxes; House Sparrows, in possession of the remainder, were of even less value as destroyers of caterpillars.

Realizing that a change must be made, the proprietor, in the autumn of 1932, removed all of the nest boxes, closed all tree cavities, and put up 100 new bird houses of a type easily opened, and provided with cat guards. In 1933 the number of houses was doubled, and in 1934 trebled. In four years (1933–36), 500 nestlings of useful species were reared, largely on insects injurious to the orchard, and 3000 young House and Field Sparrows were allowed to live through the period of maximum consumption of insects, then eliminated. This treatment did away with objectionable flocks of sparrows. The number of destructive insects steadily decreased during the four-year period until at last there was only a small fraction of the original population.

Conclusions drawn are that (1) nest boxes not properly inspected and controlled aid the enemies of orchards; (2) the boxes should be of a type easily opened and cleaned; (3) all young sparrows should be destroyed and all useful species preserved; and (4) in the instance described, orchard insects were so reduced in numbers as to be negligible. Commercial and political propaganda in the article are here ignored.—W. L. M.

Hindwood, K. A. The flocking of birds with particular reference to the association of small insectivorous birds. Emu, **36:** 254–261, pl. 35–36, Apl. 1, 1937.—These notes are interesting for comparison with similar habits in small insectivorous species in other lands. Just as in our northern woods, where chickadees form the activating basis of miscellaneous flocks of warblers, nuthatches, small woodpeckers and kinglets in the autumn, so in Australia the Sittellas provide leadership and a mixed flock of various species of small birds troops from tree to tree, always with more or less calling which serves to keep the group together as well perhaps as to space the birds. The cause of such an association is not only the common desire for food at the given time, but no doubt a strong desire for a certain sociability is a chief factor in the cohesion of the group.

Horst, Fritz. Wie gross ist das Jagdgebiet des Wanderfalken? Beitr. z. Fortpflanzungs-biol. d. Vögel, **13:** 98–99, May 1937.—One pair of Duck Hawks nested in southwestern Germany for eighteen seasons on the same cliff. During ten of these years a second pair settled some 13.5 kilometers away, nesting on cliffs. They hunted during the breeding season at distances of from four or five up to eleven km. from the nest. The bird is commoner in North Germany where suitable nesting sites are more numerous.

Hyem, E. L. Notes on the birds of "Mernot," Barrington, N. S. W. Emu, **36:** 262–272, pl. 37, Apl. 1, 1937.—A list replete with interesting local notes. Possibly polygamy is indicated in the case of *Sittella*, three of which are often seen building one nest or feeding one brood. Brown-headed Honey-eaters in their desire for hair to line their nests will often pluck it from the backs of cows in pasture or from kangaroos. The author once had a White-eared Honey-eater alight on his own head and pluck out a few hairs! A Gray Butcherbird was seen to capture a

small bat at dusk, but having killed it, dropped it. The European Starling has greatly increased in the region of recent years; one bird was an especially good mimic, imitating the calls of at least four native species.

KENDEIGH, S. C., AND BALDWIN, S. P. Factors affecting yearly abundance of passerine birds. Ecological Monographs, **7:** 92–123, January, 1937.—Statistical methods are applied to House Wren populations on 15 acres over 14 years. The "following yearly averages were obtained: number of adults, 19.7; sex ratio, 109.6 males: 100 females; number of broods during first and second breeding periods, 7.8, 6.0; broods per female, 1.5; percentage increase in number of birds during breeding season, 284; percentage of polygamous cases of breeding, 5.2; and percentage annual mortality, 72.8 . . . the non-breeding population . . . may amount to one-sixth to one-third of the total population during the first breeding period and one-third to one-half during the second . . ." Other significant facts and conclusions, too numerous for quotation here, are given. It seems dubious whether *Troglodytes aedon* may be assumed to be "a typical passerine bird"—whether, indeed, a "typical" passerine exists—and whether, as a consequence, the authors are entitled to generalize, especially since their observations are based on only 15 acres.—W. V.

KOENIG, ALEXANDER. Bericht über ein in der Freiheit gesammeltes Ei von *Bucorvus abyssinicus* (Bodd.). Beitr. z. Fortpflanzungs-biol. d. Vögel, **13:** 113–114, May 1937.—An account of the discovery of the nest of a Ground Hornbill in the hollow trunk of a large Podocarpus tree on Simba Farm, Ngare Nairobi, in the Kilimanjaro region of East Africa. It contained a single egg, in which incubation had already begun on December 10, 1935. The hollow of the trunk was about breast-deep and was lined with a few dry leaves. Both birds were very shy and had been previously observed to exchange places on the nest at midday. The egg is shining white, thickly beset with excrescences.

LILLIE, FRANK R., AND JUHN, MARY. The origin of the after-feather in Fowl: a process of twinning. Science, new ser., **86:** 38–39, July 9, 1937.—In the developing feather, the place of origin of the barbs is here designated the ventral locus, a single center at or near the mid-ventral line of the fomative ring or collar surrounding the base of the feather germ and enclosing the neck of the pulp. At this formative center and on its opposite sides the barbs are constantly being initiated during growth. Shortly after regeneration starts, the formative center divides, and from the inner one develops the aftershaft which is a mirror image of the mainshaft.

LIVESEY, T. R. The habits of vultures. Journ. Bombay Nat. Hist. Soc., **39:** 308–309, Apl. 15, 1937.—The vultures in Burma are found to soar when the "day begins to heat up," after the early hours of the morning. They may so continue to levels of "several thousand feet," probably as much to escape the heat of the lower levels as to search for prey. In finding this, they especially, he believes, watch the dogs, wolves and jackals, as well as crows, the actions of which often betray the whereabouts of a carcase.

LÖNNBERG, EINAR. Die kurzschnäbelige Saatgans, *Anser fabalis curtus* Lönnb. Ornith. Monatsber., **45:** 73–74, May 2, 1937.—The author reaffirms his belief that this is a valid race. Originally described from specimens from Shansi, China, the Short-billed Goose is believed on evidence brought forward, to be the breeding race of the Taimyr peninsula and adjacent parts of western Siberia.

LOWE, WILLOUGHBY P. Report on the Lowe-Waldron expeditions to the Ashanti forests and northern territories of the Gold Coast. Ibis, (14) **1:** 345–368, pl. 10,

Apl. 1937.—The first part of a list of the birds obtained in 1933–34 and again in 1934–35, in the Gold Coast Colony, including many rare or little-known species. The forest fauna is chiefly represented, with open-country birds in clearings and other suitable areas. The Vulturine Fish-eagle feeds chiefly on fruit of the oil palm in season and is described as good eating. The natives have nearly everywhere domesticated the guinea fowl, *Numida meleagris galeata*, with the result that very soon the majority of such birds become pied.

LUDLOW, F. The birds of Bhutan and adjacent territories of Sikkim and Tibet.—Part II and III. With notes by N. B. Kinnear. Ibis, (14) **1:** 249–293, Apl.; 467–504, July, 1937.—These two parts conclude the listing of the collections from this relatively little-known region, with critical remarks on many of the forms, and much valuable data on altitudinal distribution. A new race of the Brown Dipper, *Cinclus pallasi dorjei*, from eastern Bhutan is described. Of the Rose Finch, *Pyrrhospiza punicea*, the paucity of red-colored males inclines the author to suppose that the species is dimorphic. Probably as with other red finches, not all adult males attain the full development of this color. Both gray and rufous phases of the owl, *Glaucidium brodei*, occur.

MATHEWS, GREGORY M. Remarks on Procellarian and Puffinine petrels. Emu, **36:** 273–280, Apl. 1, 1937.—The remarks take the form of a key to the characters of the shearwaters of the genera *Procellaria*, *Calonectris*, *Ardenna*, *Puffinus*, *Alphapuffinus* and *Reinholdia*.

MEYLAN, OLIVIER. Contribution à l'étude de l'avifaune des Alpes. 4.—La Haute-Maurienne. Alauda, (3) **9:** 22–42, 1937.—In this portion of the French Alps, birds occur as high as the 3000-meter level as nesting species. A list with annotations details the species of these upper levels. On a recent excursion the author found no evidence that the Bearded Vulture still occurs here, although the region is supposed to be one of its last strongholds in the Alps. It may already be gone. Skylarks occur in the upland meadows to 2700 meters. Above this level the Snow Finch is found locally in small groups to the height of some 3300 meters.

MILLER, ALDEN H. Structural modifications in the Hawaiian Goose (*Nesochen sandvicensis*), a study in adaptive evolution. Univ. of California Publ. in Zool., **42:** 1–80, pl. 1–6, 12 text-figs., Apl. 30, 1937.—The external characters, skeleton and hind-limb musculature are described in this goose and comparisons of various features made with *Branta*, *Anser*, *Chen*, *Philacte* and *Cloëphaga*. The Hawaiian Goose is probably nearest related to *Branta* but is peculiarly adapted for life on the dry lava uplands of the Hawaiian Islands, through modification of its feet and musculature for running and climbing over dry ground. The interdigital membranes are reduced, the toes strengthened, and the nails lengthened for this method of life, while the swimming power and flight power are much lessened. The skeleton reflects these adaptations very little. Correlation is considered between muscle development and muscle function as shown in the habits of this goose.

MILLER, R. S. The Helmeted Friar-bird. Emu, **36:** 249–253, pl. 33–34, Apl. 1, 1937.—This plain-colored honey-eater is a resident of the coastal areas of northern Queensland, where it inhabits various types of country but nests usually near water and flowering trees. The rather large nest is pensile, suspended from the fork of a branch. Four or five eggs are laid, in the defence of which the birds are unusually aggressive, even striking the intruder's head if he approach too closely. The old nests are frequently used by other birds such as the Red-browed Finches, Banded Finches and even doves. A common parasite is the Eastern Koel. The food is largely insects taken in the air, and the nectar of flowering trees.

MOREAU, R. E., AND MRS. W. M. Biological and other notes on some East African birds.—Part II. Ibis, (14) **1**: 321–345, April 1937.—Among many interesting points, *Pitta angolensis longipennis* is believed to be a seasonal migrant in East Africa. Two nests of the large Green Bush-shrike, *Nicator chloris gularis*, are described, one with two eggs, the other with two young. The two Violet-backed Sunbirds (*Anthreptes longuemarei neglectus* and *A. orientalis*) of which one is regarded by Sclater as a race of the other, occur, it is found, in ecologically different surroundings in the same districts and keep entirely distinct. They are thus regarded as separate species. The interrelationships of the described species of Golden Weavers are discussed.

MOSTLER, GERHARD. Versuche zur Gedächtnisleistung der einheimischen insektenfressenden Vögel. Zeitschr. f. Naturwiss. d. Naturwiss. Ver. f. Sachsen u. Thüringen, Halle, **91**: 102–121, 1937.—The author concludes, from experiments with various native insectivorous birds, reared from nestling stages, that they learn to choose their food by trial and error, and that the number of such trials necessary to learning, is extraordinarily small. Having once learned that certain insects are distasteful, the memory of this is retained, from three to six months, or even longer. Experiments show that the birds are guided in discrimination by the sense of sight alone, and the sense of smell appears to play no part.

NORDBERG, SVEN. Biologisch-ökologische Untersuchungen über die Vogelnidicolen. Acta Zool. Fennica, **21**: 1–168, 4 text-figs., 1936.—An extensive account of the arthropods found in birds' nests in Europe, whether truly parasitic species or not. These include isopods, myriapods, podurans, earwigs, psocids, mallophagans, many beetles, flies, fleas, ants, spiders and mites. These many nidicolous species are considered according to the groups of birds in whose nests they occur, their distribution in different layers of the nests, their food requirements and ecological characteristics. Many species may find the desired nests by scent, and the nidicolous fauna may be quite different when the nest is new, from what it is if the nest persists a second year or more.

PALMGREN, PONTUS. Ueber einen auffalligen Massenzug, nebst Erörterungen über die zugstimulierenden Witterungsfaktoren und den Richtungssinn der Vögel. Ornis Fennica, **14**: 4–17, March 1937.—An account of an unusual migration wave in Finnland on April 14, 1936, in which great numbers of Bullfinches, Fieldfares and Skylarks were noted in unbroken streams passing from west-southwest. The approximate extent of the movement is plotted and its correlation with the front of a mass of polar air in contact with warmer air is suggested as a cause of the direction maintained by the migrating birds, with the possibility that birds may be sensitive to electromagnetic currents set up by these air masses and orient themselves by them, notwithstanding the lack of any positive evidence.

PETERS, JAMES L. A new genus for *Pseudoptynx solomonensis* Hartert. Journ. Washington Acad. Sci., **27**: 81–83, 15 Feb. 1937.—For this owl of the Solomon Islands, a new genus, *Nesasio*, is proposed, which proves to be not a bubonine but a strigine owl. It is probably derived from "an offshoot of *Asio flammeus* stock." It is proposed, further, to disregard as a generic character the feathering of the tarsi and feet in owls, since "where a genus is widely distributed with representatives in both temperate and tropical regions the feathering on the toes of the tropical forms varies from sparse to bristly and in some species of *Otus*, for instance, the toes are quite bare."

RICHTER, ROLAND. Einiges über die Lebensweise des Eissturmvogels (*Fulmarus glacialis* L.). Journ. f. Ornith., **85**: 187–200, 10 text-figs., April 1937.—Unlike

many of its relatives, the Fulmar is largely active by day and nests in open situations rather than in holes. During the last fifty years it has enormously increased in numbers in the British Isles. The writer has studied a colony of twelve years' standing on the Scottish coast where the birds arrive on their breeding areas even in mid-December, much earlier than in the North Sea. Breeding follows in spring, and then the number of birds at the colony fluctuates daily when the birds probably go far to sea for food. Fishing boats are followed for the refuse parts of fish thrown over and fish are even captured and opened for their livers. Squid form an important article of diet, the digestion of which results in the pinkish liquid ejected by the Fulmar on being disturbed. A pair becomes much attached to a definite spot, returning year after year. The incubation period in one case was 57 days, which corresponds well with a 58- to 60-day period reported by others. The young in the last week or two of nest life are fed little or not at all.

RINGLEBEN, HERBERT. Ueber die Umstellung in der Ernahrungsweise der Ringelgans (*Branta bernicla*) infolge der Seegraskrankheit. Ornith. Monatsber., **45:** 82–83, May 2, 1937.—Before the appearance of the eel-grass disease on the coasts of Denmark and Germany, *Zostera* formed the main food of wintering Brant and Red-fronted Geese. In the spring of 1935 a flock of about a thousand Brant was present in the Schlei, but the disease meanwhile had made such headway that there was insufficient food for the birds, which ate the diseased eel-grass either not at all or in diminishing quantities. As a result the birds were forced to feed instead on the short grass growing on the flat parts of the neighboring island of Schleimünde. The same thing was noted in 1936 but the flock of Brant was much smaller, about four hundred birds. They paid no attention to the salt plants along shore but would spend almost the entire day on the grass flats feeding, then flying out to sea for the night. Barnacle Geese apparently underwent a similar change in diet.

RULLIER, —, AND HEIM DE BALSAC, HENRI. L'infection des oeufs de cane et son mécanisme; frequence, dangers, precautions hygieniques. Alauda, (3) **9:** 95–109, 1937.—Contamination of ducks' eggs by pathogenic bacteria is common, and may be intermittent so that one laying of eggs may be infected, and a previous one not, a result perhaps of an endogenous discharge from time to time in the oviduct. Eggs of the domestic duck should therefore be subjected to thorough cooking before being eaten as food. Such bacterial infection appears to be independent of copulation and is not a necessary result of it.

SÄLIM, ALI. The ornithology of Travancore and Cochin. With notes by Hugh Whistler. Part VII. Journ. Bombay Nat. Hist. Soc., **39:** 320–342, Apl. 15, 1937.—This portion of the list contains the bubonine owls, the Falconiformes, and Columbiformes, with brief notes on status and breeding times. The known range of the Indian Great Horned Owl is extended to southern Travancore.

SCHULZE, PAUL. Die erste Zecke von einer Salangane, *Ixodes collocaliae* n. sp. von Neupommern. Ornith. Monatsber., **45:** 77–80, 1 text-fig., May 2, 1937.—The first known tick from an Edible Swift is described and figured, from a female individual. The unknown male is conjectured to haunt the caves where the birds breed.

SICK, HELMUT. Morphologisch-funktionelle Untersuchungen über die Feinstruktur der Vogelfeder. Journ. f. Ornith., **85:** 206–372, 96 text-figs., 1937.—An elaborate paper on the microscopic structure of the barbs and barbules of the primary feathers particularly, in various birds, with many outline figures showing the characteristic differences found, with an excellent bibliography. The tips of the

radii are especially modified in the areas of contact of the wing and tail feathers which bear upon one another in flight. The genus *Turdus* shows a somewhat generalized condition and various more complex types of structure are illustrated, culminating in the owls in which the tips of the radii are diffuse and long, correlated with their silent flight; a somewhat similar condition is found in goatsuckers.

SITS, ERIK. Die Invasion der Schnee-Eule in Eesti (Estland) im Winter 1935–36. Ornis Fennica, **14:** 36–37, March 1937.—An account of a Snowy Owl invasion in Estland, Finnland, in the winter of 1935–36 is described and the localities where specimens were recorded are plotted on a map. The birds appeared first at the end of October, then were not noted again for about a month, after which they were generally distributed until about January 29. After this time only a few were seen, the last one noted at about the 22d of March.

STEGMANN, B. Die Nasendrüsen von *Charadrius asiaticus* and *Charadrius veredus*. Ornith. Monatsber., **45:** 80–81, May 2, 1937.—These two Asiatic plovers differ notably in the size of the nasal gland and its consequent influence on the magnitude of the bony area in which it is lodged. They have at various times been regarded as subspecies one of the other, as two different species, or even as forms of two different genera. The author shows that the enlargement of the nasal glands in *C. asiaticus* is associated with its greater predilection for salt water.

STEINFATT, OTTO. Aus dem Leben des Grossbuntspechtes. Beitr. z. Fortpflanzungs-biol. d. Vögel, **13:** 101–113, May 1937.—A continuation of the paper on life history of the Great Spotted Woodpecker in Germany. On account of the warmth retained by the nest cavity, the young of this and other hole-nesting species were found to be left for considerable periods without being brooded by the parents. Notes on the voice of the young and their feeding by the old birds are given. In the cases observed, the female feeds the young about a third or a quarter more times than the male. Details are given of the relation of activity to weather conditions and of the amount of food brought to the young. A table is given showing for this and other hole-nesting species the number of days required for the eggs to hatch and for the young to remain in the nest, from which it appears that in this woodpecker, the incubation period is twelve days and the young do not leave the nest until from 21 to 23 days old.

STEINIGER, FRITZ. "Ekelgeschmack" und visuelle Anpassung (einiger Fütterungsversuche an Vögeln). Zeitschr. f. Wiss. Zool., sect. A, **149:** 221–257, Mar. 1937.—Experiments are detailed in which tame cagebirds of common insectivorous species in Germany were offered various insects which are supposed to escape being preyed upon by birds because of unpleasant taste or protective mimicry. Ants (*Formica rufa*) offered to Redbreasts, Bluethroats, Garden Warblers were taken exceptionally or not at all, but Gray Flycatchers and Chinese Sunbirds liked them, but have the peculiar habit of wiping them on the feathers of the back or tail before swallowing them. Similar habits have been recorded of other birds when eating insects of strong taste. Most birds will eat a certain syrphid fly in spite of its supposed resemblance to a wasp. Ladybirds were eaten occasionally by a Gray Flycatcher. A twig-mimicking caterpillar (*Biston*) was frequently overlooked by a Redbreast. In an hour it found more of these when they were on leaves than when they were stretched out in a twig-simulating position. On the other hand, this device was no protection against Blue Tits, while a Gray Flycatcher paid no attention to such caterpillars. One geometer reacted by dropping on a silk thread several centimeters and was then passed by not only by the Blue Tits but by Redbreasts and Chaffinches. Experiments with a counter-shaded

caterpillar showed no evidence of the protective value of this coloration. The experiments show that different insectivorous birds differ greatly both specifically and individually in their ability to find and prey upon insects supposedly protected by some device. Such devices may be of value against certain enemies only or under certain circumstances.

STEPHENS, LAURA A. European Goldfinches. The Gull, **19**: 1, May 1937.—Two small groups of this bird, one of seven and one of five, were seen in Marin County, California, and others were reported in the same region the previous autumn. They are probably the progeny of escaped cagebirds, but no evidence of their introduction was discovered.

STRESEMANN, E. Vögel vom Monte Iliniza (Central-Ecuador). Ornith. Monatsber., **45**: 75–77, May 2, 1937.—This paper adds two species to the list of Dr. Chapman of birds of this peak, numbering twenty-four species. These are named as new, *Elaenia aenigma* and *Scytalopus latebricola spillmanni*.

STRESEMAN, E., MEISE, W., AND SCHÖNWETTER, M. Aves Beickianae. Beiträge zur Ornithologie von Nordwest-Kansu nach den Forschungen von Walter Beick (†) in den Jahren 1926–1933. Journ. f. Ornith., **85**: 375–576, 1937.—This extensive paper is a memorial to the late Walter Beick, giving an account of his career, and more especially of his extensive exploration and ornithological collecting in the northwesternmost part of China, the Province of Kansu. The large collections he made, were sent to the Berlin Museum and form the basis of the account here given of the avifauna and the ecological conditions under which it lives. Other explorers have made collections in this general region but seldom with the enthusiasm and devotion displayed by this naturalist. The following new races are described from the specimens sent to Berlin: *Cyanopica cyanus kansuensis*, *Mycerobas carnipes nanschanicus*, *Emberiza cioides tangutorum*, *Calandrella rufescens stegmanni*, *Rhopophilus pekinensis beicki*, *Tarsiger cyanurus albocoeruleus*, *Luscinia calliope beicki*, *Troglodytes troglodytes longicilla*. The many field notes and accounts of nests and eggs add much to a knowledge of the birds of this area which lies on the borderland between desert and mountain forest.

TAVERNER, P. A. Birds of the eastern Arctic. Canada's Eastern Arctic, Ottawa, Dept. of the Interior, pp. 113–128, 6 text-figs., 1934.—A convenient résumé of the species of birds found in the Canadian arctic regions and along the northern limit of tree growth. The list includes 113 species of which some 45 are Charadriiformes, 22 Anseriformes, and only 15 Passeriformes. Baird's Sandpiper has a high northern distribution at least to Smith's Sound; the European Golden Plover occurs in northern Baffin Land as a migrant. The specific distinctness of Kumlien's Gull is maintained. The fact that its known breeding areas are far removed from those of Thayer's Gull and the Iceland Gull, seems to preclude the idea that it is a hybrid between them. The arctic areas now most in need of ornithological exploration are the Melville and Boothia peninsulas and the mainland directly south of them. One of the remaining enigmas of the North is the breeding place of Ross's Snow Goose.

TOUT, WILSON. The ducks of Lincoln County, Nebraska. Publ. North Platte (Nebr.) Bird Club, no. 3, 16 pp., pl., 1937.—Seventeen species of ducks are here recorded from Lincoln County, while nine others, known from the State, may be expected. Ducks are abundant in the Platte River on migration, and are much shot from blinds on the islands in the main channel. During the past two years two large reservoirs have been made, which already attract numbers of the birds. The Mallard is the commonest species, the Red-legged Black Duck occurs as a rare

migrant, and the Bufflehead, formerly abundant, is now extremely rare. Various notes of occurrence concern the other species listed.

TROLLER, JULIUS. Der Raubwürger, *Lanius excubitor excubitor* L. Der Ornith. Beobachter, L'Ornithologiste, **34:** 105–148, Apl. 1937.—From a study of the northern forms of the Gray Shrike, the author concludes that three different groups may be recognized in Eurasia. Only one of these, the group with two white wing-mirrors, has its origin and center of distribution in Eurasia, extending from the Atlantic in a broad belt east to the Pacific in a series of races. The *borealis* one-mirror shrikes of Eurasia on the other hand are of North American origin, and have penetrated by way of Bering Strait to the margin of the area of the first group. The more southern group, *Lanius meridionalis* of southwestern Europe and northwestern Africa, so closely resembles the type of the southern United States that the two can hardly be told apart. The two American types are not closely related to each other. A similar parallel might be drawn in the distribution of the voles of the genus *Pitymys* in Europe and the United States.

VERLAINE, L. L'instinct et l'intelligence chez les oiseaux. VI. Le canard va-t-il à l'eau par instinct? Bull. Soc. Roy. des Sci., Liège, **8:** 149–152, Apl. 1937.—To test whether ducklings on hatching seek water instinctively or not, this investigator placed a dozen eggs each of Domestic Duck and Fowl in an incubator, so timing it that all would hatch on the same day. All these young were then loosed together in a garden six meters square with a small pond in the center, around which was a narrow walk, and a ramp by which the young birds could reach the water. He found that the sight of water had no effect on either species, for none showed the least tendency to approach the water when they apparently sighted it a few inches away. But the first chance contact of their feet with the water affected all in the same way for both chicks and ducklings became excited as with pleasure and both entered the water and swam with flapping of wings. The chicks, however, not having so impervious a coat of feathers, had to be gotten out and it took them several days ere they learned not to follow the ducklings into the water, and even these latter must not at first be allowed in too long lest they become water-soaked.

WHISTLER, HUGH, AND KINNEAR, N. B. The Vernay Scientific Survey of the Eastern Ghats (Ornithological section). Journ. Bombay Nat. Hist. Soc., **39:** 246–263, Apl. 15, 1937.—Continues the list of birds known from the eastern part of the Indian peninsula, particularly of the Madras Presidency. This installment covers gulls, terns, and shorebirds through the snipe, with critical examination of various more or less questionable records. A new name, *Leucopolius alexandrinus leggei*, is proposed for the form of this plover resident in Ceylon, since it differs from other races in not assuming a distinctive breeding dress. Seven species of snipe of the genus *Capella* are listed with detailed notes of migration.

WITSCHI, EMIL. Effect of gonadotropic and oestrogenic hormones on regenerating feathers of weaver finches (*Pyromelana franciscana*). Proc. Soc. Exp. Biol. Med., **35:** 484–489, 4 figs., Dec. 1936.—Except in the breeding season males of the African Orange Weaver Finch are colored like the females. The cock plumage is not determined by testicular hormone since castration does not prevent its appearance. Feathers regenerating in plucked areas of entire and castrated birds of both sexes, treated with gonadotropic hormones were of the cock type. The author concludes that, (1) the hen plumage represents a neutral, basic condition; (2) the cock plumage is induced by a high level of gonadotropic hormone, and (3) the ovarial hormones offset the inductive effects of gonadotropic hormones on the feather type. In the light of such findings, how insecure appear the speculations

of Darwin and successors as to regulation of plumage differentiation by sexual selection.—W. L. M.

WOOD JONES, FREDERIC. The olfactory organ of the Tubinares. Emu, **36**: 281–286, pl. 38–41, Apl. 1, 1937.—In this first paper, a general account of the structure of the olfactory region in *Puffinus tenuirostris* is given. A section of the brain shows that in this species (and the same is true of others of the order), the olfactory lobes are relatively large in comparison with most other birds, which suggests that the sense of smell is better developed than usual. It is suggested that this may be correlated with the fact that, as in mammals in which scent glands play an important rôle, there is a strong and characteristic smell in the Tubinares which may play some important part in their habits. While the birds of this group resemble the Pelecaniformes in the articulations of the quadrate they differ profoundly in the highly functional development of the olfactory apparatus.