

ORNITHOLOGICAL LITERATURE

THE RÔLE OF ENVIRONMENT IN THE LIFE OF BIRDS. By S. Charles Kendeigh.

Reprinted from Ecological Monographs, Vol. 4, pp. 299-417, July, 1934.

The revolt against purely observational ornithology is taking two forms.

In one the investigator makes deductions from field observations and then seeks to check and analyze his deductions by controlled experiments. Stoddard and Errington are examples.

In the other the investigator conducts controlled experiments and then seeks to interpret the results in terms of facts observed in the field. Rowan's "Bird Migration" and Kendeigh's present paper both exemplify this approach.

The title is broader than the actual matter. "Temperature Relations of the Eastern House Wren" would be accurate, but too limited, for Kendeigh treats not only of direct temperature responses, but also the interactions between temperature and other factors, and in discussing his data he covers not only wrens, but draws many analogies from the whole ornithological field.

Our author begins with the standard ecological ritual of assigning the Eastern Wren to the *Acer-Fagus* association. However, it "is not confined to nor characteristic of the climax community itself, but occurs throughout the seral stages wherever there are *suitable nesting sites*" (italics mine). In other words, the wren is associated neither with *Acer* nor with *Fagus*, but rather with the preceding stages of the plant succession common to all forest soils. Even then the association depends on nesting holes. Such walking around the block to get next door is, I realize, common practice among ecologists, but hardly necessary for one who has plenty of substantial matter to report. To my mind it adds only length to an otherwise excellent paper.

Kendeigh presents wren census data collected since 1926 on the grounds of the Baldwin Bird Research Laboratory in Ohio. In these data he detects a fluctuation in breeding density and an inverse relation between density and reproduction. Errington's finding of an inverse relation between Bob-white density and winter survival of breeding stock would seem pertinent here, but is not cited. King, I am told, is about to publish on an inverse relation between density and egg clutch in Ruffed Grouse. This confluence of three separate investigations is noteworthy. It may herald an impending discovery of major importance.

To make this experimental study of temperature, Kendeigh had to sacrifice the lives of many birds, hence he used trapped English Sparrows instead of wrens. The survival time of confined unfed sparrows was measured, at various temperatures, for various conditions of body weight, water ingestion, age, sex, humidity, wind, light, season, and plumage. Similar measurements on a smaller number of wrens showed survival phenomena resembling those of sparrows, but controlled by a different and higher range of temperature toleration. This leads the author to the conjecture that migratory species have a faster metabolism than non-migratory, but lack certain endocrine adjustments which enable the non-migratory species to withstand more cold on less food. The long cold nights of winter and the hot humid noons of summer are conceived to be critical times for all birds. The long foodless night is liable to depress the body temperature below its lethal lower limit. Undue activity at noon is liable to raise the body temperature above its lethal upper limit. These are sample parts of a "temperature hypothesis" which can not, for lack of space, be here set forth in full.

The field of bird behavior is next reviewed and interpreted in the light of this hypothesis. Roosting, nesting, feeding, and migration phenomena check well enough. Distribution of wrens is interpreted in terms of "climographs" which seem somewhat less convincing. Incidentally, a new formula is offered for converting standard weather bureau records into temperatures affecting roosts.

New data on certain sparrows are presented in support of the theory that heavy individuals migrate north earliest. The winter survival and reproduction of wrens is analyzed in relation to the night temperatures on their winter and breeding ranges respectively.

There follows a review and discussion of solar radiation as a factor in migration, distribution, and abundance. Some suggestive but not conclusive correlations with sunshine are derived. A correlation with the six-year sunspot cycle seems visible in the survival and reproduction curves, but is not mentioned by the author.

A less thorough review and discussion of food, precipitation, wind, "biotic interactions", and physiography closes the paper.

Viewed in broad perspective, Kendeigh's monograph may be regarded as one of the rungs of a new ladder by which ornithology is climbing out of a blind alley. In the 1920's life history climbed to a higher level when interpreted by ecological studies. In the 1930's ecology seems destined to take on new meaning when interpreted in the light of physiological research. Kendeigh has ably pioneered the beginnings of this second ascent.—ALDO LEOPOLD.

THE INFLUENCE OF CLIMATIC AND WEATHER FACTORS UPON THE NUMBERS OF BIRDS ON A DEPOSITING CREEK BANK. By Jesse M. Shaver. *Ecological Monographs*, Vol. 3, No. 4, Oct., 1933, pp. 535-597, 25 figs., 19 tables.

The object of this study, as stated by the author, was "to investigate the local motility or change of habitat of birds as the weather changed" (p. 537). The habitat selected for study was a depositing creek bank having a strip of vegetation approximately thirty-six feet in width. Unfortunately, neither the length nor the area of the strip was given so that it is impossible to estimate the adequacy of the sample plot or to compute the number of individuals per unit area. The composition and character of the vegetation was, however, described in the desirable detail. There is a discussion and review of literature dealing with methods of taking bird censuses and with effects on birds of various climatic factors. The author rejects the method of counting singing males only, since censuses were taken at all seasons of the year (weekly from September 5, 1922, to October 1, 1923, and monthly from November, 1925, to January 1, 1926), and counts all species and individuals observed. The author might have mentioned two important papers concerned with methods of taking censuses (Schiermann, *Jour. f. Ornith.*, LXXVIII, 1930, 137-180; Palmgren, *Acta Zoo. Fennica*, 7, 1930, 1-218). These two papers came too late to have influenced the actual census taking but would have aided in the interpretation of the data already obtained.

A total of eighty-eight species were recorded, making an average of 10.51 species and 25.87 individuals per trip. For analysis, both graphical and statistical methods were employed, and the species were separated into permanent residents, summer residents, winter visitors, migrants, and total individuals. The year was divided into two periods for separate study, an autumn and winter period (September 21-March 21) and a spring and summer period (March 21-September 21).

For determining effect of climate on general trends in abundance, statistically smoothed curves of each climatic factor for the hours (or days) of observation were compared with smoothed curves of number of individuals. In this way it was found that, in general, the climatic factors ranked in the following order of importance: temperature, sunshine duration, relative humidity, wind velocity, atmospheric pressure, and precipitation, although the order of importance of these factors varied between the two periods of the year and from one group of birds to another. For determining the effect of weather (as contrasted with climate) on the actual abundance of birds, the deviation of each weather factor on each day from its smoothed curve was compared with the deviation in number of birds from its smoothed curve. For the most part these correlations were very low and of lesser significance, the highest correlations being found between the number of summer resident birds and sunshine duration, relative humidity, atmospheric pressure, wind velocity, and temperature.

The reviewer is of the opinion that the reliability of the correlations between climatic and weather factors and "local motility or change of habitat of birds" would have been greatly increased, if other behavior responses such as migration and establishment of territories had first been eliminated. This could have been approximated more closely by dividing the year for analysis into four three-months periods: the summer months with breeding and territory behavior in full force, the autumn and spring months with migration in full sway and local movements difficult to discern, and the winter months when these forms of behavior are mostly eliminated. Allowance should have been made also for variation in food supply in the area and for increases and decreases in number of birds due to reproduction and mortality. As it is, the results obtained can be considered suggestive only, but at that, the reviewer believes that Dr. Shaver has made a courageous pioneer attempt at analyzing fluctuations in populations of non-game species, that his use of the statistical method of analysis is commendable, and that his paper should be a stimulus to all students in avian ecology for the development of more perfect census methods and the careful and more complete analysis of the rôle played by various environmental factors in the life of birds.—S. CHARLES KENDEIGH.

A GUIDE TO BIRD SONGS. By Aretas A. Saunders. D. Appleton-Century Company, New York. 1935. Pp. i-xvii+1-285. 163 song diagrams. Pocket size. Price, \$2.50.

From his many articles and his handbook on bird song (published in 1929 by the New York State Museum, Albany), Mr. Saunders may now be regarded as the leading authority in this country on this subject.

Mr. Saunders' earlier handbook (1929) dealt more with the science and philosophy of bird song. The present book is a descriptive guide to the recognition of specific songs. And for this purpose the author has developed a rather extensive scheme of graphic representation. Many different methods of bird song notation have been suggested. In all of them a "good ear" and some knowledge of human music seem to be an asset to the student. But the method so fully worked out by Mr. Saunders does seem to have the advantage of simplicity. And anyone who has a special interest in bird song should study this book. For general principles and meaning of bird song the student will find nothing more complete than Mr. Saunders' earlier booklet.

A very ingenious key to songs, covering twenty pages of text, identifies somewhat over a hundred songs of common birds. How workable this key may be

for beginners one can only tell after testing it in the field. But, at least, up to the present time the novice has had nothing like so compact and promising an aid in the identification of bird songs. After the probable identity has been worked out in the key, a citation refers the reader to the more detailed description in the text. The text also includes a description of the field marks and habitat. Thus the book becomes a real field guide. Comments on distribution refer chiefly to the eastern part of the country. With this book in hand we anticipate renewed interest in our field work.—T. C. S.

THE HAWKS OF NORTH AMERICA, THEIR FIELD IDENTIFICATION AND FEEDING HABITS. By John Bichard May. Published by the National Association of Audubon Societies, New York. 1935. Pp. i-xxxii+1-140. Pls. 36. Price, \$1.25.

In 1876 Henry G. Vennor published "Our Birds of Prey, or the Eagles, Hawks, and Owls of Canada". This work gave little emphasis to the economic status of the birds, but the existing knowledge of their habits and distribution was well summarized. In 1893 Dr. A. K. Fisher published "The Hawks and Owls of the United States in Their Relation to Agriculture", as Bulletin No. 3 of the U. S. Division of Ornithology and Mammalogy. Since that classic no similar special treatment of the hawks of America has appeared until the one here reviewed.

Dr. May's book is timely because for many years the public opinion has been against the raptorial birds in general, and they have been persecuted to the point of decimation—quite so with some species and in some localities. The body of the book includes the treatment of thirty-nine species of hawks, with various subspecies. The subject of food and feeding habits is treated fully for most species. For most species a paragraph is given to "description", but less emphasis is put on field identification than would have been expected. The range is quoted from the A. O. U. Check-List, but the small maps of distribution constitute the outstanding scientific feature of the book.

Four of the plates are in black and white, by Mr. R. T. Peterson, and show the field marks of most of the hawks. Thirty-two plates in color are by Major Allan Brooks, and illustrate most of the species. The large plates have made necessary a large format for which the editor has not found a satisfactory typographical arrangement. It is not a field guide, but a useful source of information on these raptorial birds, and we are sorry that the owls were not included. We have been told that the Audubon Association is offering this book to the public at a price below cost, and it would seem that this must be so.—T. C. S.

AMERICAN BIRD BIOGRAPHIES, CONTAINING THE COMPLETE LIFE-HISTORIES OF FAMILIAR BIRDS, WRITTEN IN AUTOBIOGRAPHICAL FORM. By Arthur A. Allen, Ph. D. Published by the Comstock Pub. Co., Ithaca, N. Y., 1934. Pp. 1-238, 183 figs., 20 pls. Price, \$3.50.

This is a beautifully made book. Its mechanical perfection is the first point to be noted. The abundance of photographic reproductions, mostly from the author's own negatives, is a feature which adds to the book's attractiveness. The twenty new full-page plates, half of which are in color, have been made especially for this work by George Miksch Sutton.

The text presents the life-history stories of twenty common birds. We had never read one of these metaphorical, ornithological, life-historical, autobiographi-

cal stories so cleverly written by Dr. Allen. So, in order to review this book we had to read one. We selected the one entitled "Jenny Wren's Diary".

Now, having read the story, we have learned a number of things, if we can believe what a bird says. Jenny Wren says that there are still a lot of boys in Florida with guns, and they shoot the birds. She also says that her mate threw the young ones out of the nest after they had hatched, and some other things that we had already heard as well as some that we hadn't heard about. For instance, that she broke the eggs in the Bluebird's nest in order to destroy competition for food. Now, should we call that an instinctive process or a reasoning process?

So these twenty stories relate many typical events in the lives of the birds. It is probably easy reading for many people, but not for us; for it is a constant mental effort to translate the narrative into reality. But the author's intensive knowledge of bird habits is evident on every page. At the end of the book we find twenty-five questions on each of the species treated. Anyone who can answer all of these questions will have a pretty good working knowledge of the birds.—T. C. S.

NATURAL HISTORY PICTURES. UNIT THREE—BIRD STUDIES. By Gayle Pickwell. Publishers Distribution Service, Inc., Los Angeles, Calif. 1935. Price, \$6.00.

This work consists of forty-eight very excellent 8x10 halftone plates of birds and their nests with eggs. These plates are printed on heavy paper, and are intended as teaching aids. The pictures prove that Dr. Pickwell is a field photographer of unusual skill. A printed text, in book form, accompanies the set of plates. This text gives much information of especial value in nature study teaching. A previous set of pictures dealt with animals in general, and another one with the life of the desert. We feel slighted because Dr. Pickwell did not include the WILSON BULLETIN among the bird magazines, but it is possible he may not have known of it at the time of writing. The publication of so large a series of plates of such size is an expensive undertaking, and we hope that it will meet with success in order that others may follow.—T. C. S.

PROCEEDINGS OF THE LINNAEAN SOCIETY OF NEW YORK. Nos. 45-46, for 1933-1934. Published by the Society at the American Museum of Natural History, New York. Issued in April, 1935. Pp. 1-119. Price, 75 cents.

This journal is probably not very well known in the Middle West, unfortunately. The reviewer has been surprised to find that its content is chiefly ornithological. The volume at hand contains several important papers worthy of extended notice, but we can scarcely do more than mention the titles. Dr. William K. Gregory has a paper entitled "Remarks on the Origins of the Ratites and Penguins". The question is whether the ratite birds have degenerated from flying ancestors, as rather generally held, or whether they have descended from birds which never possessed the power of flight, as proposed by Dr. Percy R. Lowe, of England. Dr. Gregory reaches the so-called "orthodox" view, on the basis of skeletal characters, that the ratite birds had flying ancestors. Dr. Ernst Mayr discusses "Bernard Altum and the Territory Theory". Altum's work, published in 1868, is now given credit for the first reference to the territory idea. The present paper is a translation of the portions of Altum's work which refer to territory, with a considerable amount of discussion, besides. There are five other ornithological papers and several short notes, mostly of a local nature. The pre-

ceding volume (Nos. 43-44, for 1931-1933) is likewise wholly ornithological. Of special interest is a paper on "Morse's American Bird Lists of 1789 and 1793", by L. Nelson Nichols, with interpolations by Dr. Ernst Mayr. It is a little difficult to be certain of the authorship of all bracketed interpolations—as to whether by Dr. Mayr or Mr. Nichols. Apparently the 1789 list contained 130 bird names, while the 1793 list contained 258 with possibly a few duplications. In another paper Mr. Charles A. Urner discusses the effect of the decrease in eel grass upon the population of wintering geese and brant. James L. Edwards reports that a praying mantis caught and held a hummingbird.—T. C. S.

SECOND REVISED LIST OF THE BIRDS OF OHIO. By Milton B. Trautman. Issued by the Bureau of Scientific Research, Division of Conservation. Columbus, 1935. Pp. 3-16. Price, 5 cents.

This is the second condensed list of Ohio birds issued by the same authority for sportsmen and others. It contains 345 forms, with notes on several others not admitted to the list.—T. C. S.

THE HUNGARIAN PARTRIDGE IN THE GREAT LAKES REGION. By Ralph E. Yeatter. Bull. No. 5, School of Forestry and Conservation, Univ. Michigan. 1934. Pp. 1-92.

While this report deals with a game bird, and is presented in the parlance of game management, it does contain a great amount of interesting ornithological information. The facts are assembled under these chief headings, life history, food and feeding habits, experimental liberations, mortality factors, population fluctuations, management. The student of life history problems can not overlook this paper.—T. C. S.

NOTES ON THE BIRDS OF THE WESTERN PANHANDLE OF OKLAHOMA. By George Miksch Sutton. *Annals Carnegie Museum*, XXIV, 1934, pp. 1-50.

The list here mentioned is based upon observations and specimens collected in 1932 and 1933, and includes 136 forms. The forms are listed under trinomials where the author feels sufficiently certain. But in a large number of instances binomials are used, followed by a more or less futile speculation as to the subspecific probability, either with the skins (e. g., Bob-white, Great Horned Owl, Hairy Woodpecker, Blue Jay, Grasshopper Sparrow, to mention only a few); or, on the basis of range (e. g., Solitary Sandpiper, Mockingbird, Nashville Warbler, etc.). In one or two cases doubt was expressed by the author as to specific identity (e. g., Brewer's Blackbird). Furthermore, in a considerable number of cases the author is safely non-committal in subspecific determination by using such words as "apparently", "presumably", and "should be". Other writers, who are more cock-sure, are probably less correct.—T. C. S.

BULLETIN OF THE ESSEX COUNTY ORNITHOLOGICAL CLUB OF MASSACHUSETTS. Salem, 1934. Pp. 1-60. Price, 50 cents (S. G. Emilio, Peabody Museum, Salem, Mass.).

This annual is published this year by the lithoprint process. Quite remarkable results were obtained in the spacing of the typewritten line. The work seems to be quite satisfactory and, because of its economy, this method of printing might be of interest to many other publishing societies. One of the leading articles is by Mr. Fred H. Kennard, and gives a rather full history of the vicissitudes of the Junco group at the hands of the systemists. All science is, of course, tentative; and it progresses by the publication of the researches and

opinions of scientific workers. However, in reading a summary of particular systematic work, such as Mr. Kennard's, one wonders whether there is not a great and unnecessary waste of effort and publication space.—T. C. S.

AT HOME WITH THE BIRDS. By Alfred M. Bailey. Illustrations by Earl G. Wright. Six pages of text. Eight colored plates. Price, ten cents.

The two authors, both of the Chicago Academy of Sciences, have produced an authentic booklet on a few of the most common birds which is to be sold in the major chain stores. The text deals chiefly with the nests. The eight colored plates, illustrating as many species, bring to our attention the work of a new bird artist, and are very pleasing. The booklet is designed, of course, to interest the children in birds.—T. C. S.

THE AUDUBON ANNUAL BULLETIN FOR 1934-1935. Published by the Illinois Audubon Society (Chicago Academy of Sciences, Lincoln Park at Center St.). Pp. 1-80.

Many short articles dealing chiefly with local ornithology are contained, as usual, in this Annual. Of particular general interest is a paper by Mr. Gault on "Martins and Martin Houses". He calls attention to a number of defects in the structure of the average martin house, and gives diagrams for one that he considers acceptable.—T. C. S.

BIRD STAMPS OF ALL COUNTRIES. Published by Grosset & Dunlap, 1140 Broadway, New York. Price, \$1.00.

This novelty in ornithological recreation may be of interest to some of our readers. It is a stamp album with spaces for stamps of all countries which carry illustrations of birds—all different types of stamps being illustrated. There are several hundreds of them. The book includes about fifty pages, half of which are for the stamps, the other half giving descriptions. It is a well bound little book, suitable for the purpose.—T. C. S.

Mr. E. A. Preble has a splendid biographical sketch of Audubon in the April number of *Nature Magazine*. Portraits of Audubon and his devoted and efficient wife are presented. On a following page in the same magazine an editorial writer gently takes Mr. J. N. Darling to task for being too outspoken in *demanding* protection for wild life, and appeals for patience, tolerance, and cooperation. We can very well understand Mr. Darling's disgust (if he has it, and we suspect it) with protectionists. For twenty years or more protectionists have been mildly or vigorously criticizing the Biological Survey for too much delay, patience, and cooperation with the duck shooters, the cattle grazing interests, and other destroyers. Now, when a Survey Chief, whose sincerity is beyond question, gets a little worked up about the waste of time, eternal discussions, passing of the buck, etc., you can depend upon some good brother conservationist stepping in to calm him down and suggest patience. It is a great world.

The last December number of the *Migrant* (V, No. 4) gives a list of nesting birds for northeastern Tennessee by Messrs. Lyle and Tyler, and numerous other short articles and notes. The issue for March of this year (VI, No. 1) appears in a very attractive new cover, designed by Mr. Ijams, of the T. O. S. With this volume Mr. A. F. Ganier becomes the Editor. The leading article is on whisper songs and is by Mrs. F. C. Laskey. Any contribution to this subject is worth while. It is a subject which has by no means been exhausted. Anyone who has

made observations on night singing and on whisper songs should not hesitate to offer them for publication.

The *Nebraska Bird Review* for January (III, No. 1) contains a list of birds, with migration dates, at Red Cloud, Nebraska, including 172 species. Among the general notes are reports of an unusually extensive invasion of Magpies into eastern Nebraska and the continued spread of the Starling. The April number (III, No. 2) has a paper on the songs of the Western Meadowlark in Nebraska. And Mrs. Geo. W. Trine presents an article condemning the Bronzed Grackle as a marauder and destroyer of other birds. A note from Red Cloud reports that birds were choked to death by the dust in the air.

Iowa Bird Life for June (IV, No. 2, 1934) gives an account of the Annual Meeting at Ames. The September issue has a very full review by P. A. DuMont of the status of the Starling in Iowa. Mr. Pierce gives in the December number a list of birds found in the Backbone State Park (Iowa). The March number (V, No. 1, 1935) contains an article by Mr. E. D. Nauman relating an early experience of Iowa farmers with wild geese. Each issue contains many notes on Iowa bird life.

The three state periodicals just mentioned now seem to be firmly established and the repositories of much valuable information on the bird life in their respective states. They are well edited and deserve the support which they are receiving. Their organizations should encourage the preservation of complete files in many public institutions.

The *Florida Naturalist* for January (VIII, No. 2, 1935) presents a portrait of Dr. T. G. Pearson, with an account of his work for the Audubon Association. Mr. S. A. Grimes gives an instructive account of the habits of the Hooded Warbler, with two very good photographs. The April number contains the report of the annual meeting and other business matters.

The *Redstart* is published by the Brooks Bird Club, of Wheeling, W. Va. The issue for October (II, No. 1, 1934) has notes on the Bewick's Wren, the Broad-winged Hawks, etc. This society is becoming interested in establishing a library. A good account of the W. O. C. meeting at Pittsburgh is found in the January number. In the February issue (II, No. 5, 1935) Prof. Maurice Brooks offers comments on the status of fifteen species as given in the A. O. U. Check-List.

The *Flicker* for October, 1934 (VI, No. 3) is devoted mainly to an annotated list of breeding birds of Minnesota for the season of 1934. The list includes 146 species. In the December issue the Blue-gray Gnatcatcher is reported nesting near St. Cloud; and an interesting experience is related of watching the drumming of the grouse by flashlight.

News from the Bird Banders for November, 1934 (IX, No. 4, issued at the Museum of Vertebrate Zoology, Berkeley, California) gives a discussion of inferiorism, based on Dr. Allen's work on the Ruffed Grouse. It is a useful summary. Numerous local notes complete the number. The April number (X, No. 1) contains a numerical summary of the birds banded in the Western Province during 1934. The total is 37,146.

Inland Bird Banding News. In the issue for September, 1934, Mr. W. I. Lyon again gives the narrative of his banding expedition to the islands of the Great Lakes, this one being his eleventh annual trip. The December number reports the Annual Meeting, and gives many notes from various states. The

March issue reports about a dozen instances of banded ducks which were shipped from Louisiana to both the Atlantic and Pacific coasts, and later re-trapped at Avery Island, La. This remarkable case of homing instinct recalls the experiments on Noddy and Sooty Terns by Dr. J. B. Watson nearly thirty years ago. In the same number Mr. Lyon mentions several cases of Cowbirds released at short distances from the trapping station, with subsequent return.

The St. Louis Bird Club Bulletin in a recent issue gives a recipe for Starling pie, with facetious remarks, and includes the statement that the result "compares fairly well with one made of blackbirds or English Sparrows ('so would shoe leather')". This may be all right for a Starling pie, but it insinuates about the sparrow pie. We come to the defense of the latter. The one we ate was more tender and more delicate in flavor than the best chicken. It was fit for an epicure. But we can not tell you how it was prepared. Later issues, through May, have been received.

The *Raven* is published by the Virginia Society of Ornithology at Lynchburg, Va., and is issued monthly. Dr. J. J. Murray is the editor. To all outward appearances this periodical got along nicely during the editor's absence of a few months, but no doubt his energy and enthusiasm were missed in the inner circles.

The *Chickadee* is the publication of the Forbush Bird Club, at Worcester, Mass. The issue at hand is for October and December, 1934 (IV, Nos. 3-4). It contains a number of local lists and records of the varied activities of the Club.

The *Night Heron* in a recent number lists seven kinds of bird baths, but not all birds are known to indulge in all forms of the bath.

The TFNA Annual Bulletin for 1934 consists of thirty-one pages of mimeographed sheets, published by the Toledo (Ohio) Field Naturalists' Association. The plan of this record is to review and summarize the activities of the Society for the year. Mr. L. D. Hiatt has an interesting discussion of photography for bird study.