

RECENT LITERATURE

(Reviews by Margaret M. Nice)

The articles reviewed have been selected and arranged under subjects of importance to students of the living bird and also for the purpose of suggesting problems or aspects of problems to those banders who wish to make the most of their unique opportunities.

Headings in quotation-marks are the exact titles of books or articles or literal translations of such titles. Other headings refer to general subjects or are abbreviated from titles in foreign languages. References to periodicals are given in italics. Footnote references appear at the ends of topics instead of at the bottom of pages.

BIRD-BANDING

Banding in North America.¹—Since 1920, 1,745,514 birds have been banded in the United States and Canada, and 100,772 "returns" reported—a "return" meaning a recovery of a bird away from the station*, or at the same station if absent for three months or more, or at any time anywhere, if found dead. There are 1874 coöperators. During the past year 363,905 birds were banded.

Banding in Belgium.²—An interesting résumé of facts gleaned by ringing. M. Dupond says that returns with most small birds amount to only 2 to 3 per cent of those ringed, but with game-birds reach 20 to 30 per cent, and run highest of all with birds of prey. Again and again he gives instances of returns of nestlings to the place of birth, stating that "this rule of return to the birthplace is a principle that holds true for all birds" (p. 9).

Banding in England.—Three papers in *British Birds* discuss recent returns and recoveries. Considerable data is given in the first³ on the return of nestlings to the place of birth. The other articles^{4, 5}, illustrated by numerous maps, are full of information on movements of ringed birds to and from England. Among many interesting items there are nine recoveries listed of Sandwich Terns (*Sterna s. sandvicensis*) from West Africa.

¹ *Bird Banding Notes*. 1934, 2, No. 11, U. S. Biol. Surv., Washington, D. C.

² Dupond, Ch. 1934. Quatre Années de Baguage d'Oiseaux (1930-1933). *Ornithologie*, Nos. 77-82, 1-15.

³ Recovery of Marked Birds. 1934. *British Birds*, 28, 67-72.

⁴ Witherby, H. F. and E. P. Leach. 1934. Movements of Ringed Birds from Abroad to the British Isles and from the British Isles Abroad. Addenda III. *British Birds*, 28, 106-112.

⁵ *Ibid.* 1934. *Ibid.* *British Birds*, 28, 133-141.

HOMING STUDIES

Homing Experiments with Swallows.—In Poland 29 Swallows (*Hirundo rustica*) were taken from 6 to 72 miles from home; all but two returned.⁶ Particularly striking were the experiments reported by W. Rüppell,⁷ where 21 nesting Swallows and 3 Martins (*Delichon urbica*) were taken by night train from Berlin and released the following morning (July 28th) at stations from 236 to 330 miles to the west, the last two stations being in Holland. Birds returned from all the localities but the last, the greatest distance being 306 miles. Four reached home June 29th, seven June 30th, and one July 1st.

* In a letter dated July 11, 1933, Mr. F. C. Lincoln writes: "We [the Biological Survey] were [are] forced to make an arbitrary decision in the matter of station returns and have decided that five miles should be the minimum," this in order that the Survey may decide whether or not such captures (see below) shall be classified as "returns" or "repeats." This matter came up for a decision in the case of birds banded at J. V. Miller's and C. L. Whittle's stations in Peterboro, New Hampshire, which are only two and one half miles apart. These banders were reporting captures of each other's birds to the Survey, even when the captures were made a day or two apart, as returns. However, if the elapsed time between takes is over three months, they are still classified as genuine returns as the Survey uses the term.—Editor.

"Homing Pigeons."⁸—An interesting paper in which Prince Chigi emphasizes the fact that the ancestor of the Homing Pigeon—the Rock Dove (*Columba livia*), unlike all other European Pigeons, is non-migratory. This species makes long flights in flocks to feeding-grounds; it has a strong instinct to return to its home, but its powers of orientation are poor. If a bird loses its way, it acts "idiotically," its normal reactions of fear and hunger being inhibited. When pigeons are released over courses of one hundred and twenty miles, the loss of birds is only 5 per cent, but on one hundred and eighty mile courses it rises to 20 per cent and on longer distances to 50 and even 99 per cent.

⁸ Wodzicki, K. and R. J. Wojtusiak. Untersuchungen über die Orientation und Geschwindigkeit des Fluges bei Vögeln. I. Experimente an Schwalben (*Hirundo rustica* Linn). *Vorläufige Mitteilung; Acta Ornithologica Musei Zoologici Polonici* 1, 8, 253-274.

⁹ Versuche zur Ortstreue und Fernorientierung der Vögel III. Heimfinde-Versuche mit Rauchschwalben (*Hirundo rustica*) und Mehlschwalben (*Delichon urbica*), von H. Warnat. 1934. *Vogelzug*, 5, 161-166.

⁸ Chigi, F. 1934. Colombi Viaggiatori. *Rassegna Faunistica*, 1, No. 2, 4-32.

MIGRATION STUDIES

"Migration and Solar Cycles."—L. W. Wing, 1934. *The Auk*, 51, 302-304.—The author believes that "the variations in the times of arrivals and departures are ultimately traceable to the sun," and gives charts showing the correlation between the migration of two species and sun-spots. It seems to the reviewer that both this and a second paper⁹ are too much in the nature of preliminary reports; that both theory and facts should be stated far more fully and the literature of the subject presented.

Schildmacher's Experiments Again.—These experiments where the female sex hormone was injected into migrating Redstarts (see *Bird-Banding*, 1934, p. 137) are criticized by H. Desselberger and G. Steinbacher,¹⁰ who find them contradictory. In answer to this paper, H. Schildmacher¹¹ explains the significance of his results more fully.

Further experiments with the female sex hormone were undertaken at Breslau following Schildmacher's lead.¹² A number of male Passerines were injected during the winter with folliculin, and two of them showed migration restlessness. A male Lesser White-throat (*Sylvia c. curruca*), captured at the end of May and injected for twelve days, also began to exhibit migration restlessness. The authors explain their findings thus: all the males presumably had enlarged gonads (the first two because of being kept in a room lighted until late in the evening) and a reduction of the gonads was effected "through the antimasculine effect of the female sex hormone and thereby the migration drive released."

¹⁰ Cyles of Migration. 1934. *Wilson Bulletin*, 46, 150-156.

¹¹ *Vogelzug*, 5, 169-170. 1934.

¹² *Vogelzug*, 5, 171-172. 1934.

¹⁰ Giersberg, H. and R. Stadie. 1934. Ueber Experimentelle Auslösung des Zugtriebes durch Weibliches Sexualhormon. *Vogelzug*, 5, 173-176.

LONGEVITY

Lapwings (*Vanellus vanellus*) of six and one half³ and seven and one half⁵ years, a Woodcock (*Scolopax r. rusticola*) of six and one half³ years, a Kestrel (*Falco tinnunculus*) of eight and one half years,³ and a Starling (*Sturnus v. vulgaris*) of at least nine years⁴ are reported in *British Birds*.

A Harris's Sparrow (*Zonotrichia querula*) banded December 23, 1925, has returned to an Iowa banding station every year but one since then until April, 1933.¹³

A female Evening Grosbeak (*Hesperiphona v. vespertina*) has reached at least nine years of age, while a Louisiana Heron (*Hydranassa tricolor ruficollis*), banded as a nestling in 1920, was captured and released in its natal colony in 1934.¹

¹³ Calloway, S. 1933. Local Bird-Banding. *Nebraska Bird Review*, 1, 59-60.

ECOLOGY

"The Rôle of Environment in the Life of Birds."—S. C. Kendeigh. 1934. *Ecological Monographs* 4, 299-417.—In this comprehensive survey of environmental factors, the section on temperature is by far the most significant, as might have been expected from the author's previous notable work on the Physiology of the Temperature of Birds. Extended experiments on the resistance of House Sparrows and House Wrens to starvation at different temperatures showed the former more resistant to heat and cold than the latter; the author correlates these findings with the facts that the Sparrow is resident in Ohio, while the Wren is only a summer resident, and also that the breeding-range of *Passer domesticus* extends much farther south than that of *Troglodytes a. aëdon*. Heavier birds survived longer at low temperatures, and lighter birds at high ones. Birds in winter showed much greater resistance at all temperatures except very high ones. Table 14, giving weights of plumages of 131 birds of 21 species during the different seasons, shows that plumage is "heavier in the autumn, both actually and relative to the body weight, than at any other season of the year" (p. 334).

In these findings lies one explanation for the limits of breeding and wintering ranges. "The critical factor involved in the resistance or tolerance of small passerine birds to cold is average night temperature combined with number of hours of darkness. The critical factor involved in the tolerance of birds to heat is the daily maximum air temperature" (pp. 341-342).

Less happy is the attempt to correlate wind-velocity, precipitation, monthly night temperature, etc., with the amount of reproduction among the House Wrens on fifteen acres at Gates Mills, Ohio (Fig. 18). One cannot average temperatures for three months in the breeding season and expect any significant relationship with success in nesting; a cold May and hot July might give the same figure as a warm May and mild July. Each nesting-season must be analyzed in detail—day by day in many cases—if one is to get a clue to the influence of weather. In Fig. 19, however, there seems to be some correlation between survival in winter and average night temperature during winter in the Wren's wintering range.

It is a disappointment that definite figures on survival and reproduction of the Wren population are not given; we need to know how many banded adult males and females returned each year, how many young were fledged each year, and how many returned. The discussion of number of broods per female in relation to the total population is unsatisfactory. Too few pairs are involved each year—six to fourteen—for statistical treatment to be significant.

As to migration, the author believes that a number of factors play a part. "The regulation of migration as to time is controlled in the Spring by rising daily maximum and night temperatures and changing relative proportions daily of light and darkness. In the autumn, decreasing temperatures particularly at night, longer nights and shorter days, and, for some species, decreasing food supply are most important. The conditioning factor that may act directly or indirectly as a stimulus for initiating migration is an excessive change in the metabolic or physiological state of the body" (p. 408).

Dr. Kendeigh shows a wide acquaintance with the literature of his subject. He has done an important piece of work which merits careful study from every one interested in the relation of birds to the environment.

TERRITORY

"The Influence of Territory on the Life of Birds."¹⁴—A restatement of Howard's thesis as given in "Territory in Bird Life;" no new observations are offered, nor any criticisms.

"Birds and Territory."¹⁵—An appraisalment of the territory theory as follows: historical sketch concerned chiefly with Altum, Moffat, and Howard; criticisms of the theory, especially those of Nicholson and the Lacks; the author's observations on the Song Sparrow and territory; discussion of the aforementioned criticisms; necessity for limiting the theory; suggestions for further study.

"Some Aspects of the Territory Theory."—D. Nethersole-Thompson, 1934. *Oölogists' Record*, 14, 15-23.—The author believes that territory "is not an end in itself, but a means to success in reproduction. And, if such success is more likely to be attained by exclusiveness, the tendency is for territorial boundaries to be maintained, but when food becomes abundant and natural enemies disappear or become uninfluential, such boundaries often tend to disappear until stress of circumstance urge their re-adoption."

Observations on Territory in Finland.—Dr. Palmgren's first paper¹⁶ it largely a review of the work of Howard, Meise, Nicholson, Mousley, and Burkits on territory. In his later paper¹⁷ he discusses Territory Reviewed by D. and L. Lack (see *Bird-Banding*, 1934, 97) in the light of his experiences with a number of species in spruce and birch woods. Chaffinches (*Fringilla caelebs*) and Golden-crested Wrens (*Regulus regulus*) had distinct territories in part of the area, but where the birds were more abundant territories were not so clearly defined. He agrees with the Lacks that "theorizing over territory has been carried much further than the facts warrant," but believes that "territory is something more than the mere 'Song-center' of the male."

¹⁴ Mountfort, G. R. 1934. De l'Influence du Territoire sur la Vie des Oiseaux. *L'Oiseau et la Revue Française d'Ornithologie*, 4, 335-349.

¹⁵ Nice, M. M. 1934. Les Oiseaux et le "Cantonnement." Translated by G. de Vogüé and H. Jourard. *Alauda*, 6, 275-297.

¹⁶ Palmgren, P. 1932. Der Vogel und sein Brutrevier. *Ornis Fennica*, 9, 23-25.

¹⁷ 1933. Die Vogelbestände zweier Wäldchen, nebst Bemerkungen über die Brutreviertheorie und zur Quantitativen Methodik bei Vogelbestandaufnahmen. *Ornis Fennica*, 10, 61-94.

COLOR AND SONG

"The Meaning of Animal Colour and Adornment." R. W. Hingston. 1933. London, Arnold. 411 p.—The thesis of this book is in brief: hostility is the key note of the animal world; color (when not concealing and thus expressing fear) is threatening; and all conspicuous color and song are expressions of anger. With birds "the demonstration before the rival is hostile, the display before the female is hostile, the sex act itself is hostile. And if this is true, then how appallingly great must be the importance of the hostile spirit in creation" (p. 357).

Indeed Major Hingston paints a most unpleasant world, where hate reigns supreme. Of course it is fortunate (for us) that this all-pervading anger has found expression in music and color. Hingston is not an ornithologist, but something of an entomologist. Strangely enough, although he devotes much space to the "fightings" of butterflies, telling how they "fight altogether with their colors," he does not once mention the fact that insects are more or less color-blind.¹⁸ We wonder the author did not write a final chapter showing us that if flowers "did not fight there would be no bright-colored species."

"The Role of Anger in Evolution." F. H. Allen, 1934. *The Auk*, 51, 454-469.—This paper discusses at length and criticizes both Hingston's book and A. A. Allen's article "Sex Rhythm in the Ruffed Grouse and Other Birds" (*The Auk*, 51, 180-199; reviewed in *Bird-Banding*, 1934, 144). "To ascribe to anger the leading role in the life of the individual or the race seems to imply the ignoring of two much more important factors," i.e. the instincts for self-preservation and reproduction. "The reactions that accompany the emotion of anger can in turn serve any one of the three appetites—hunger, thirst, and sex—or the fear reaction."

F. H. Allen is a staunch believer in Darwin's sexual selection theory which is more inclusive than usually realized. On p. 456 he says, "It may be admitted that there is less in the nature of active selection on the part of the female than Darwin supposed, but the theory does not demand that. All that is necessary to make it valid is to show that males better equipped in any way than their rivals—in

weapons, courage, strength, attractiveness of coloration, or the power and beauty of their vocal utterances—get mates more readily and hence leave more offspring.”

Now does not “better equipped in weapons, courage, strength” agree fairly well with Hingston’s and A. A. Allen’s ideas? Proponents of both theories believe that superior males are more successful in getting mates than their rivals; the difference of opinion consists in whether this is effected through frightening off other males or attracting females.

On p. 469 F. H. Allen concludes “that sexual selection by means of the conscious or unconscious preferences of the female has played a much more important part [than anger] in the evolution of color, song, and display.”

In the sixty-four years since Darwin promulgated his sexual selection theory, there has been a welter of argument, but almost no evidence presented one way or another. I know of only two studies on birds which support the idea of sexual selection: Edmund Selous¹⁹ saw some indication of preference of the handsomer males in the Ruffs (*Philomachus pugnax*), and Hilda Cinat-Tomson²⁰ found that male Shell Parrakeets (*Melospittacus undulatus*) with artificially lengthened collars procured mates more quickly than did normal birds.

In my study of the Song Sparrow (*Melospiza melodia beata*) there has been an excellent opportunity to watch this matter with forty to seventy males distinguished with colored bands, all singing for mates that join them from February to April. The males differ slightly in size, and notably in belligerency, in zeal of singing, in beauty of song, and in coloration, since residents are dingy with coal soot and summer residents are bright-colored. After four years’ experience, I have no evidence that the female pays the slightest attention to the appearance, character, or singing ability of her mate, nor even to the number of legs he possesses. And it is not that her judgment is prejudiced by the attractions of a superior territory, for she is equally uncritical in this matter also. Old females try to come back to their former territories; otherwise their “choice” of husbands appears to be perfectly haphazard.

Other birds may behave differently, especially where there is marked sexual dimorphism. We need observations and experiments on many, many species.

Arguments against sexual selection in the matter of song and color in birds were well stated by C. B. Moffat thirty years ago.²¹ Proof against it has been furnished by Noble in the case of many species of lizards²² for he found that male lizards “endowed with handsome liveries displayed these adornments to good effect not to attract females, but to intimidate rival males”²³ and concludes, “Since females are not attracted while males are definitely repulsed by color displays, it follows that female choice has played no part in the genesis of male adornment.”²²

So Hingston is not far wrong in so far as lizards are concerned. But the whole world—fortunately—is not made up of lizards. Hingston has a germ of truth in his theories, but he carries them to fantastic lengths. In conclusion, may I suggest that we are suffering from a maximum of theory to a minimum of fact, and that we cannot extricate our thinking processes until we reverse the proportions.

¹⁹ Lutz, F. E. 1933. “Invisible” Colors of Flowers and Butterflies. *Natural History*, 33, 565–576.

²⁰ 1906. *Zoologist*, 10, 201–219, 285–294, 419–428.

²¹ 1926. Die Geschlechtliche Zuchtwahl beim Wellensittich (*Melospittacus undulatus* Shaw). *Biolog. Zentralblatt*, 46, 543–552.

²² 1903. The Spring Rivalry of Birds. *Irish Naturalist*, 12, 152–166.

²³ Noble, G. K. and H. T. Bradley, 1933. The Mating Behavior of Lizards; its Bearing on the Theory of Sexual Selection. *Ann. N.Y. Acad. Sci.* 35, 25–100.

²⁴ Noble, G. K. 1934. Experimenting with the Courtship of Lizards. *Natural History*, 34, 3–15.

LIFE-HISTORY

More on the Corn-Bunting.²⁴—Col. and Mrs. Ryves spent another season on *Emberiza c. calandra* (see *Bird-Banding*, 1934, 202) and found an even more astonishing situation in regard to polygamy than before. Each of the fifteen males

studied proved to be polygamous, having from two to seven mates apiece—a total of fifty-one. On July 14th on the territory of the male with seven mates “four hens were watched building at the same time. . . . Each had her special hunting ground for materials, and none ever clashed. The male was beside himself with excitement, and seemed quite bewildered upon which of them to lavish his attentions!” The last “five (practically) contemporaneous nests were placed within a circle of a radius of about fifteen yards.” All the eggs but one hatched. The young of the nests of the first two hens left July 19th and 20th, while those of the later nests left August 10th to 13th, at which time they were being fed not only by their mothers, but by a number of full-grown young birds. “Throughout our observations of this territory, from start to finish, never once was the male seen to help any of his hens except the one owning the first nest found.”

Terns Remating.²⁵—Two pairs of Common Terns (*Sterna h. hirundo*) that had been banded as mates in 1932 on an island near Helgoland were found to be again mates in 1934.

Same Mates for Six Years.²⁶—The same pair of Welcome Swallows nested thirteen times from March, 1928, to September, 1933, on the roof of the Mission House in Vuatom, New Guinea, usually building in February or March, and again in July or August. Thirty-two eggs were laid from which twenty-three young were fledged, from one to eight young being raised each year. Father Meyer writes me that this bird holds territory from which it drives off all others of its species; that he was sure of the identity of his pair through their tameness and idiosyncracies, and that after the eggs were laid in January, 1934, one of the pair was killed by a cat, the other getting a new and timid mate.

²⁵ 1934. Supplementary Notes on the Breeding-habits of the Corn-Bunting as Observed in North Cornwall in 1934. *British Birds*, 28, 154-164.

²⁶ Albertsen, W., 1934. Gattentreue bei der Flusseeeschwalbe, *Sterna h. hirundo* L. *Vogelzug*, 5, 192.

²⁷ Meyer, O. 1934. Bruten von *Hirundo tahitica frontalis* Q.u.G. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 10, 141-143.

NESTING SUCCESS

“Nest Mortality.”—S. Baron, 1934. *British Birds*, 28, 77.—In Lincolnshire during April, 1934, under “fairly favorable weather” conditions, in 71 nests of 11 species (all Passerine but Wood-pigeons and two species of Owls) 265 eggs were laid, 160 young hatched, and 124 fledged—46.7 per cent of success. This figure agrees well with what I found with Song Sparrows,^{27, 28} and also with six other studies of birds most of which nest in the open (cited in 27 and 28), the percentage of fledged young ranging from 40.5 to 45.1 of the number of eggs laid.

In various hole-nesting species, however, the percentage is consistently higher. This is true of the House Wren at Gates Mill, Ohio, where 68 per cent of 133 nests “were successful in rearing young” (Kendeigh, *Role of the Environment*) and of Tree Swallows (*Iridoprocne bicolor*) on Cape Cod, where the percentage of success for 278 eggs in 1931 was 56.5 per cent,²⁹ and for 671 eggs in 1932, 60 per cent.³⁰ The publications of the Phytopathological Service at Wageningen, Holland, offer a wealth of data on hole-nesting birds,^{31, 32} chiefly Titmice, but also Starlings and Redstarts (*Phœnicurus phœnicurus*); the percentages of success ranging from 55 to 76, but the great majority of cases falling near 65.

It is evident that birds nesting in the open suffer from many more disasters than those nesting in holes; how do the former keep up their numbers? In many cases they raise more broods than the hole-nesters, although this is not universally true.

The Corn-Buntings studied by the Ryveses show a very high percentage of success for ground-nesting birds—61 per cent in 1933 (Colonel Ryves has called my attention to an error in arithmetic in the previous review) and 67.3 per cent for 214 eggs and young in 1934.²⁴ However, as Colonel Ryves has pointed out in

his letter, this figure is a little too high, for the nests found with young may originally have held more eggs. These birds are typically single-brooded; their late nesting-date—chiefly July—is evidently more favorable than one early in the season.

²⁷ 1933. *Bird-Banding*, 4, p. 124.

²⁸ 1934. *Journal für Ornithologie*, 82, p. 68.

²⁹ Austin, O. L., Jr., and S. H. Low. 1932. Notes on the Breeding of the Tree Swallow. *Bird-Banding*, 3, 39-44.

³⁰ Low, S. H. 1933. Further Notes on the Nesting of the Tree Swallow. *Bird-Banding*, 4, 76-87.

³¹ Wolda, G. 1929. Verslag van de Ornithologische Afdeling over het Jaar 1928. 27 p.

³² Ten Dutch papers reviewed by M. M. Nice. 1934. *Wilson Bulletin*, 46, 130-132.

BIRD BEHAVIOR

"The Instinctive Emotional Life of Birds." Friedmann. 1934. *Psychoanalytic Review*, 21, Nos. 3 & 4, 1-57.—Two classes of emotions are distinguished: "permanent emotions"—fear, greed, gregariousness or the lack of it, and sometimes cruelty; and "cyclical emotions" that "have to do with courtship, mating, and care of the young." For quite a different view of emotions and instincts the reader should consult E. C. Tolman's "Purposive Behavior in Animals and Men," 1932, New York, Century Co., especially pp. 208-306 (with ample reference to the glossary).

"Flock Organization of the Shell Parakeet (*Melopsittacus undulatus* Shaw)" R. H. Masure and W. C. Allee, 1934. *Ecology*, 15, 388-398.—Peck-dominance rather than peck-right exists with these birds in captivity. "In non-breeding hetero-sexual flocks, the females are dominant over the males. In breeding and nesting birds, the males are dominant." The same condition obtains with many Parrots and Parakeets. The authors speculate on the question as to the "survival value of high social position in periods of food shortage or other forms of environmental stress."

The Egg as a Brood-Object.³³—Experiments were made with the Arctic Tern (*Sterna macrura* = *paradisæa*) in Greenland by exchanging eggs with those of other species and placing eggs ten centimeters (about four inches) from the nest-rim. The author found somewhat differing behavior with different birds, but concludes that the nest-site has a strong attraction; that eggs exert both visual and tactual stimuli on the incubating bird; and that eggs of unlike size and color serve as brood-objects, but do not exert as strong a stimulus as eggs of the same species.

³³ Tinbergen, E. 1934. Enkele Proeven over het ei als Broedobject. *Ardea*, 23, 82-89.

BOOKS

"Aves." E. Stresemann. 1934. Kuckenthal-Krumbach, Handbuch der Zoologie, Bd. VII, 2. Hälfte, 899 p.—Ornithologists will welcome the completion of this classic work on birds, the first volume of which appeared in 1927. The present and eighth volume continues the discussion of the classification of birds, giving a summarized account of the characteristics of the different orders and families. Twenty-seven pages are devoted to a bibliography of the most important books and articles in the whole field of ornithology arranged by topics, while an index and table of contents complete the volume.

Too often there have been two mutually exclusive fields in the study of birds—the museum and out-of-doors; many a museum man knows little about birds in nature, while many a field man knows little of what any other person has discovered. Dr. Stresemann is both a scholar and a naturalist; he is a great systematist, he has an astonishing grasp of the literature, and he knows birds in life. Moreover, he has a keenly discriminating appreciation of the significant in research. In "Aves" he treats in a masterly way of the multifarious phases of ornithology—atomy, physiology, systematics, migration, life-history, etc., etc. This comprehensive work is an essential reference book for the serious student.

"**The Life of the Rook.**" G. K. Yeates. 1934. London, Allan. 10s 6d.—An interesting study of a most interesting bird, *Corvus frugilegus*, concerned chiefly with observations from a blind in a nesting-tree. Although an expert photographer Mr. Yeates is primarily a bird-student, for he states, "Gradually my method became to set my attention upon one particular point, watch for it, take notes upon it, and then try to illustrate it with the camera when next it occurred." A chapter on Tree-top Photography gives practical advice including plans for a "Permanent Tree Hide." The Life of the Rook is handsomely got up, well written, and furnished with excellent photographs.

"**Quest for Birds.**" W. K. Richmond. 1934. London, Witherby. 10s 6d net.—Mr. Richmond is happy in his chapters on seeing birds—on a common, in an Essex estuary, and other places; he is a field naturalist *par excellence*, and his terse, vivid descriptions inspire the reader with a keen desire to go out and see for himself these delightful and wonderful birds. This, I suppose, is the aim of most books on nature, but how few attain it!

Practically all species of birds, the author believes, have decreased in England, and a strong plea is made for protection. His words apply equally to our country: "By this process of continual impoverishment England has become a land of small birds." "Even if the actual bird-population of our country is not much smaller than it was five hundred years ago—even if it were greater, we have no consolation for the fact that it has become immeasurably less balanced, less rich and varied than it was in the days gone by."

It is a pity that a book of such charm should be marred by belligerent theorizing; Mr. Richmond is distinctly out of his depth in this field.

"**Bird City.**" E. A. McIlhenny. 1934. Boston, Christopher. \$3.00.—This is the tale of a splendid achievement of practical bird-protection from a start in 1893 with eight young Snowy Egrets to a "city" containing multitudes of Herons of six species besides countless other water-birds. The story is told in didactic style, evidently to appeal to children and beginners in nature study. Let us hope that the book will stimulate others to follow Mr. McIlhenny's example and provide more such superb refuges for wild life.

"**Eskimo Year: a Naturalist's Adventures in the Far North.**" G. M. Sutton. 1934. New York, Macmillan. \$3.00.—In informal style with many humorous touches, the author tells us of the sixty ptarmigan that roosted in his tracks in the snow; of the hardships and thrills of a husky's life; of the excitements of playing Five Hundred and Snap with Eskimo companions; of his attack of *Dementia Tundra* when spring came at last; of the confiding ways of a pet lemming, of the sanctuary given to the gentle Snow Buntings, and many, many other things. Dr. Sutton is an artist with his pen as well as his pencil. He is also one of that best type of naturalist who feel a deep and true friendship for nature, including primitive man, as well as beasts and birds.

"**Perdix the Partridge.**" Leslie Sprake. 1934. London, Witherby. 6s. net. (Reviewed by L. E. Hicks).—The Hungarian Partridge has been the second most successful of all the game-birds introduced into America. The present book is well written and gives an authoritative treatment of life-history, propagation, management, and harvest in the annual shoots. Americans will be interested in contrasting *Perdix perdix* as found in Europe with the introduced bird in this country. This book should have particular appeal to sportsmen who hunt grouse, game-propagators, game-managers, and students interested in the life-histories of gallinaceous birds.