

RECENT LITERATURE

(Reviews by Margaret M. Nice)

MIGRATION STUDIES

Schildmacher's Experiments on the Physiology of Migration.—The first report of H. Schildmacher¹⁻⁴ (reviewed in *Bird-Banding*, 1933, p. 163) on his experiments at Helgoland was criticized by G. Steinbacher³ and E. Stresemann,⁴ largely on the ground that there had been no controls. In the present paper² this defect has been remedied to some extent, since five birds were used as controls with ten as experimentals. The subjects—female Redstarts (*Phœnicurus phœnicurus*) were kept in cages that registered the activity of the inmates; after all had shown the "migration restlessness" (*Zugunruhe*) for several nights, the experimentals had various amounts of the female hormone—progynon—-injected into their breast muscles, while the controls (in the 1933 tests) were treated in the same way with normal salt solution. In the 1932 experiments, after a certain number of moderate doses of progynon the birds showed a marked reduction or complete loss of the restlessness, but large doses had no effect. Late in the season larger doses were needed in order to quiet the birds than early in the fall.

Schildmacher's theory is that "the variations in the inner secretions of the gonad constitute a link in the chain that starts the fall migration impulse" (2 : 88). He believes that fall migration is activated by a decreasing amount of sex-hormone secretion; when a moderate amount is injected, the bird is brought back to the resting stage of summer, but when a large amount is added, the bird is thrown into the condition of a spring migrant, the stimulus at this time coming from an increasing amount of sex hormone.

In the 1933 experiments eight young birds were caught between August 24th and 26th and injected from September 4th to 15th; the four controls showed no diminution of restlessness, nor did the experimentals. The author decides that the dosage of 20 mouse units must have been too high. Seven other young birds were caught September 6th and 7th; one was injected with salt solution from September 25th to October 5th, and showed no lessening of restlessness. The others were given from 5 to 30 mouse units of progynon from September 21st to October 4th; all reacted with a decrease or disappearance of restlessness, low doses bringing no results, but 15 mouse units having an effect after six days, and higher doses sometimes more quickly.

It appears to the reviewer that these studies give inconsistent results, and that many more experiments with both treated and untreated birds should be carried out.

Stresemann, in commenting upon Rowan's and Schildmacher's hypothesis of the relationship between the gonads and migration, points out that if this were true, no species should begin migration with fully developed sex glands. But very late migrating species like the Rose-colored Starling (*Pastor roseus*) and some Asiatic Plovers remain in winter quarters

¹ 1933. Zur Physiologie des Zugtriebes. I. Versuche mit weiblichem Sexualhormon. *Vogelzug*, 4, 21-24.

³ 1933. Weibliches Sexualhormon und Vogelzug. *Ornithologische Monatsberichte*, 41, 82-84.

⁴ 1933. Aves. In *Handbuch der Zoologie*, Bd. 7, 2. Hälfte, 697-698.

² 1934. Ibid. II. Weitere Versuche mit weiblichem Sexualhormon. *Vogelzug*, 5, 1-9.

until their testes are "almost to full breeding size," while with ducks the testes begin to enlarge in November, several months before the beginning of spring migration. On the other hand, the gonads of early migrants are still very small at the start of migration. "Finally Rowan leaves entirely out of account the behavior of *young birds of many species*, that in spite of gonads of minimal development and stationary condition, are particularly subject to the urge to wander" (4 : 698).

Migration and the Wind.⁵—The author distinguishes between birds that prefer to migrate against the wind and those that like to fly with it, calling the first positively anemotropic and the second negatively anemotropic. By a series of charts giving a "guide-line," *i.e.*, a coast-line which the birds are following, and six possible winds, he shows the resulting direction of migration in positively anemotropic birds, two of them proving to be *cursus retroversus*, for the birds are mistakenly migrating in exactly the wrong direction.

The "Homing Instinct," Winter Territory and Individual Flight Lines. E. L. Sumner, Sr. 1933. *News from the Bird-Banders*, 8, 40-43.—A résumé of several papers on this subject published in *The Condor*, and an account of some of the author's own experiments in transporting Golden-crowned Sparrows.

Experiments on Distant Orientation in the Starling.⁶—W. Schein at the suggestion of the Vogelwarte Rossitten has carried out some very interesting experiments on homing with nesting Starlings, sending them by train to other towns. Of thirteen Starlings transported eleven miles, eight returned; a female Black Redstart (*Phoenicurus ochrurus gibraltariensis*) and a pair of Swallows (*Hirundo rustica*) all returned from the same distance. Of eleven Starlings sent sixty-eight miles seven returned; of six sent 123 miles two returned. The Starlings were watered and fed mealworms before the journeys. Some of the birds were given red bands, but if each had been distinctively marked with colored bands, identification would have been facilitated. When a female Starling was taken from a nest the male would care faithfully for the eggs for three to five hours, but after that leave for food and to sing outside. If his mate failed to return on the second or third day, he would throw out the eggs and carry green leaves each day into the nest.

Do Wandering Titmice have a Homing Instinct?⁷—Data are given on all German and Swiss recoveries of Great Tits (*Parus major*) and Blue Tits (*Parus caeruleus*) fifteen miles or more from the place of banding, and the results charted according to time of year banded and season recovered. A number have been found in the breeding season from 35 to 180 miles from where they had been ringed during a previous breeding season. The author

⁵ Koch, J. C. 1934. Vogelzug unter Einfluss von Leitlinie und Windrichtung. *Vogelzug*, 5, 45-52.

⁶ Rüppell, W. 1934. Versuche zur Ortstreue und Fernorientierung der Vögel. II. Verfrachtungsversuche am Star (*Sturnus vulgaris*) u. a. Arten von W. Schein—Winsen. *Vogelzug*, 5, 53-59.

⁷ Rüppell, W. 1934. Sind wandernde Meisen ortstreu? *Vogelzug*, 5, 60-66.

suggests that in species that are predominantly stationary those few individuals that "wander" do not make true migrations, for the homing instinct is probably undeveloped.

BANDING STATIONS IN FOREIGN COUNTRIES

Banding in Switzerland.—Herr A. Schifferli's⁸⁻¹² reports are always full of interest; he tells of the needs of the Station and the acquisitions of the visitors to Sempach, and of his own visits to Dr. Duse at the Osservatorio Ornitologico del Garda at Salò. For 1932 thirty-three coöperators are listed as banding from one hundred to two thousand birds each, the total for the year reaching 15,484. Returns and recoveries are reported briefly and clearly, the distance and direction from the place of banding being given. Particularly helpful are the comments, discussing the findings under each species and calling attention to the results of greatest importance. The Swiss are interested primarily in migration, rather than life-history studies. They use traps and also nets for capturing their subjects.

Starlings banded in the nest return to their birthplace, and the same is true of the Alpine Swift (*Micropus melba melba*). During a great snow in March, 1931, some Starlings made a return migration (11:75). A male Greenfinch (*Chloris chloris*) banded in Switzerland January 29, 1930, was taken the next winter, February 22, 1931, in southern France (11:77). A male Mallard (*Anas platyrhynchos*) banded on Lake Luzern December, 1928, was taken in June, 1931, in northern Russia two thousand miles north-east (12:107). The following records of longevity are of interest: a Marsh Titmouse (*Parus palustris communis*) (8:7) and a Great Tit of six years (12:104); a Sparrow Hawk (*Accipiter nisus*) of nearly seven years (12:107); and a Common Buzzard (*Buteo buteo buteo*) (12:106) and an Alpine Swift (11:80) of nine years.

Banding in Holland.—Ringing in Holland was started in 1911 under the leadership of Dr. E. D. van Oort, director of the National Museum of Natural History at Leiden; each year a handsome report¹³⁻¹⁸ is published on the returns and recoveries. By 1930 over one hundred thousand birds had been ringed, but the later pamphlets make no mention of numbers of birds ringed or recovered, nor is there any emphasis on especially significant results.

⁸ 1928. 4. Bericht der Schweizerischen Vogelwarte Sempach (1927). *Der Ornithologische Beobachter*, 26, 1-10.

⁹ 1929. 5. Bericht über die Schweizerische Vogelwarte Sempach (1928). *Ibid.*, 27, 2-14.

¹⁰ 1932. 7. Bericht der Schweizerischen Vogelwarte Sempach (1930). *Ibid.*, 29, 66-84. For review see *Bird-Banding*, 4, 117, 1933.

¹¹ 1933. 8. Bericht der Schweizerischen Vogelwarte Sempach (1931). *Ibid.*, 30, 66-86.

¹² 1934. 9. Bericht der Schweizerischen Vogelwarte Sempach (1932). *Ibid.*, 31, 90-110.

¹³ E. D. van Oort. 1929. Resultaten van het Ringonderzoek betreffende den Vogeltrek, Ingesteld door 's Rijks Museum van Natuurlijke Historie te Leiden. XVI. *Zoologische Mededeelingen*, 12, 3-4, 217-247.

¹⁴ 1930. *Ibid.*, XVII. *Ibid.*, 13, 155-177.

¹⁵ 1931. *Ibid.*, XVIII. *Ibid.*, 14, 1-26.

¹⁶ 1932. *Ibid.*, XIX. *Ibid.*, 15, 17-75.

¹⁷ 1933. *Ibid.*, XX (Eerste Stuk). *Ibid.*, 16, 1-28.

¹⁸ A. J. Sleijser. 1933. *Ibid.*, XX (Tweede Stuk). *Ibid.*, 16, 206-262.

Considerable data on longevity are given: a Heron (*Ardea cinerea*) of almost seven years (14 : 158); Cormorants (*Phalacrocorax carbo subcormoranus*) of five, six (17 : 1), and nearly seven years (13 : 217); a Lapwing (*Vanellus vanellus*) of nearly seven years (16 : 31); a Kestrel (*Falco tinnunculus*) of six and a half years (13 : 226); Hen Harrier (*Circus cyaneus*) and Montagu's Harrier (*Circus pyargus*) of six years (16 : 30); a Starling nearly six years (18 : 248) and a Magpie (*Pica pica pica*) of seven years (16 : 15). Higher ages were attained by the following: Sandwich Terns (*Sterna sandwicensis*) of six, seven, and eight years (13 : 238); Herring Gulls (*Larus argentatus argentatus*) of five to twelve years (17 : 19) and Oystercatchers (*Haematopus ostralegus*) of ten and thirteen years.

Dr. H. N. Kluijver¹⁹ has continued his researches on the Starling (See *Bird-Banding*, 1933, 4, 209-210) and now gives us a paper on this bird's relation to the fruit industry in Holland. Although it is beneficial in its destruction of insects, its depredations in orchards constitute a serious problem. Banding has shown that many of the young Starlings that attack fruit in June and July are raised in Germany.

German Banding Stations.—In the 27th Report of the Vogelwarte Rossitten²⁰, Dr. E. Schüz tells of the meeting of the Deutsche Ornithologische Gesellschaft in October and of the celebration of Dr. Thienemann's seventieth birthday. He describes the many lines of research carried on, particularly in regard to the White Stork, and summarizes the banding activities. Despite shortage of funds, space, and assistants, a great deal of important work is being accomplished.

The Helgoland Bird Observatory.—W. B. Alexander, 1934, *British Birds*, 27, 284-289. This is an interesting account of present-day banding activities on the historic ground where Gätke did his pioneer work in the study of migration. Birds are caught on the gallery of the lighthouse, occasionally as many as one thousand in a night, and are also captured in the *Panggarten* by means of large traps into which the birds are driven. Mention is made of the various lines of research carried on, especially in problems of bird physiology, and the more important publications of Dr. Drost and Dr. Weigold are cited.

French Banding Papers.²¹⁻²⁸—Le Service des Vertébrés (Institut des Recherches Agronomiques) in Versailles, under the direction of M. A. Chappellier has confined its banding activities to two species—the Rook (*Corvus frugilegus*) and the Heron (*Ardea cinerea*)—both of economic importance.

The most complete report of methods and results (23) contains a vivid narrative of banding young in a rookery and an account of efforts to inform the public to send in the bands. Each person reporting a capture receives a

¹⁹ 1934. Het spreeuwenvraagstuk voor de fruitteelt. *Med. Plantenziektenkundigen Dienst te Wageningen*, No. 75. 1-15.

²⁰ 1934. XXVII. Bericht der Vogelwarte Rossitten der Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften. *Vogelzug*, 5, 74-86.

²¹ Chappellier, A. 1926. Notes sur le Freux (*Corvus frugilegus* Linné). *Verh. Inter. Ornith.-Kong.* pp. 437-464.

Diploma of Recovery and a record of the known history of the bird, including a map of France on which the points of banding and recovery are connected by an arrow.

By 1928, 2167 Rooks had been ringed and 2.16 per cent retaken, not counting young killed immediately after ringing near the rookery (23, p. 109). The author considers this a low percentage for a bird that is shot and poisoned in large numbers, and thinks that many rings are not reported. Ringing has distinguished two Rook populations in France; native birds that breed north of the Loire and remain sedentary throughout the year, and migrating birds that come from countries to the east and winter in France south of the Loire. One of the latter was found two winters after banding in southern Germany and another in Jugoslavia; so that although there seemed to be as many Rooks as usual in France, it is clear that these birds wintered in very different localities in different years—845 and 950 kilometers to the east (23, p. 120).

The birds banded in the nest were found to scatter out in all directions, but only one was found more than sixty-five kilometers from its birthplace. Several were taken in the home rookery during later breeding seasons, but one female was found nesting twenty-two kilometers from her birthplace.

The Carrion Crow (*Corvus corone*) is said never to breed in its second* year, but two of the year-old Rooks did so—both females. (How about our own Crows?) The loss of feathers around the bill in the Rook was found to be complete at about fifteen months (28).

From 1926 to 1928, 160 young Herons were banded in a famous herony in the Marne; at the end of May, 1929, 21, or, 7.60 per cent, had been recovered, all but one of the birds being under one year of age. A striking map (23, p. 123) shows recoveries of all four young of one brood; one had been killed in its birthplace, one had started southeast, another was taken in western France, and the last in Spain. There are two main directions of dispersal of these birds—Belgium and Holland on the one side and the Atlantic Coast of France on the other.

In one of his pamphlets (26) M. Chappellier reviews at length Professor Thienemann's book on *Rossitten* and in another (25) he lists the banding stations throughout Europe, giving the addresses of the directors of each station and showing their location on a map.

²² — 1928. Quatre Freux (*Corvus frugilegus* Linné), bagués jeunes au Nid, sont repris près de, ou sur la Corbeautière ou ils étaient nés. *Bull. Soc. Zoologique de France*, 53, pp. 328-330.

²³ — 1929. Le Service de Baguage du Ministère de l'Agriculture. *Ann. des Epiphytes*, 15 pp. 97-124.

²⁴ — 1930. Un Dépôt de Couleur Rouge sur des Bagues de Migration portées par des Hérons (*Ardea cinerea* Linné). *Revue d'Histoire Naturelle*, 11, pp. 1-4.

²⁵ — 1930. Stations de Baguage. *Revue d'Histoire Naturelle*, 11, No. 6, pp. 1-10.

²⁶ — 1930. Station Ornithologique et Organisation du Baguage en France. *Revue d'Histoire Naturelle*, 11, No. 7, pp. 1-25.

²⁷ — 1931. Les Baguages de Freux (*Corvus frugilegus* Linné) du Service des Vertébrés, du centre national de Recherches Agronomiques de Versailles, et leurs premiers résultats. *Proc. VII Int. Ornith. Congress at Amsterdam*, 1930, pp. 320-323.

²⁸ — 1932. A quel age le Freux (*Corvus frugilegus* L.) a-t-il terminé le Dénudation de la Base de son Bec? *L'Oiseau et la Revue Française d'Ornithologie*, No. 3, pp. 537-542.

*"Second" must be meant, i.e., year-old birds.

WEIGHT

Variability in Weight in the Golden-crowned Sparrow.—J. M. Linsdale and E. L. Sumner, Sr., 1934. Univ. California Pub. Zool. 40, 5, 309-320. An important paper for those who are making studies of bird weights. The captive *Zonotrichia coronata* tended to weigh most in late afternoon, but often did so about midday. The variation in daily weight averaged about four per cent. Hot days caused a loss in weight. Wild birds of this species gained in weight during the spring of 1932 in the vicinity of Berkeley. The authors suggest "that weight measurement offers a means of gauging response of birds to heat and of determining possible relation of this factor to limitation of range or to initiation of migration in spring."

Studies on the Physiology of Reproduction in Birds. XXXIII.—Body Size Changes in Doves and Pigeons Incident to Stages of the Reproductive Cycle. O. Riddle and P. F. Braucher. 1934. *Am. Jour. Physiology*, 107, 343-347. "The body weight of adult doves and pigeons undergoes a cyclic increase of about 8 per cent in weight during the 15 or 18 days spent in the incubation of their eggs. Maximum weight is attained at the end of incubation. Nearly one-third of this increase occurs in the crop-glands . . ." Yet about half the birds ate less during incubation than before. Doves with an average weight of 160 grams ate about 7.7 per cent of their body weight at this period in contrast to 8.6 per cent before; pigeons with an average weight of 360 grams ate 5.6 per cent of their weight while incubating, and 6.5 per cent before. The authors suggest that this "increase of weight on a diminished ration" may be due to the relative inactivity of the incubating bird.

LONGEVITY

A Starling nearly sixteen years old is reported by J. Jirsík²⁹; ringed June 28, 1915, in Tupadly, Czechoslovakia, it was taken March 28, 1931, at Rimini, Italy. The late date gives support to the view that old birds make a leisurely spring migration. The author calls attention to the record of a Garden Warbler (*Sylvia borin*) that lived twenty-four years in captivity.³⁰

Bird Banding Notes (2, No. 10, May 1934, U. S. Biol. Survey) mentions several notable records: a nine-year-old Bronzed Grackle (*Quiscalus quiscula aeneus*) in Indiana; a nine-year-old Purple Finch (*Carpodacus p. purpureus*) in Maine, and a twelve and one-half-year-old Blue Jay (*Cyanocitta c. cristata*) in Michigan. Other records of longevity will be found under Banding in Switzerland and in Holland.

EFFECTS OF LIGHT

An interesting experiment was carried out by L. J. Cole³¹ on subjecting several doves to artificially lengthened light-periods from December 11th to February 26th. One of these—a Mourning Dove—had bred in captivity for five years, the average date of her first egg having been April 3d; under the new conditions she started laying February 4th, but died March 16th.

²⁹ Der Zug des fau dem Gebiet der czechoslovakischen Republik nistenden Stares *Sturnus v. vulgaris* L. Deutsche Übersetzung der gleichnamigen Arbeit, die im Mai 1933 der Massarykova Akademie Práce eingereicht wurde. 1-17.

³⁰ Haarhans. 1920. Mitteilungen aus dem Zoologischen Garten zu Halle, No. 1.

³¹ 1933. The Relation of Light Periodicity to the Reproductive Cycle, Migration and Distribution of the Mourning Dove (*Zenaidura macroura carolinensis*). *Auk*, 50, 284-296.

The author suggests that "there may be a specific genetic difference in the day lengths to which the reproductive organization of different species respond," and that this "may serve to explain some of the outstanding features" of bird migration and distribution.

It has long been believed that birds in regions of heavy rainfall have dark plumage, but Colonel R. Meinertzhagen³² shows that rainfall has nothing to do with pigmentation, but that it is due to the lack of ultra-violet rays in cloudy and foggy regions. It is of interest to learn that much the same relationship has been found with insects.³³

TERRITORY

A great deal of excitement has been stirred up by "Territory Reviewed" by the Lacks (see April *Bird-Banding*). Several letters to *British Birds* have called attention to very early appearances of the territory theory, from Oliver Goldsmith in 1774 to Altum in 1868. C. B. Moffat (*British Birds*, 27, 235-236) refers to his article on "The Spring Rivalry of Birds" in "The Irish Naturalist," 1903, pp. 152-166, in which he contended "that the battles of the male birds, each claiming a territory, resulted in such a parcelling out of the land as must limit the number of breeding pairs to a fairly constant figure, and prevent indefinite increase in the case of any species—at the same time condemning the less powerful individuals to unproductiveness rather than to death." In the 1903 paper Moffat emphasized the fact that fighting is for territory and not for mates, that song is a matter of advertisement, while bright plumage is "a sort of 'warning colouration' to rival males."

Julian Huxley³⁴ describes the territorial behavior of Coots (*Fulica a. atra*) and Mute Swans (*Cygnus olor*) on a pool during the past winter. He writes: "In their paper the Lacks state that 'there is no real evidence' that 'the pugnacity of the male sets a definite limit to the number of pairs in a given area.' In the case of these Swans it would certainly appear that it was doing so. The pugnacity of the male (and to a lesser extent that of the female) is clearly seeing to it that one pair of Swans shall grow where two pairs grew before."

T. T. McCabe³⁵ concludes an excellent review of the Lacks' paper by saying: "It is an open question today whether research which consists of mere collation, of picking out brief fragments from scattered records, can build a picture of behavior which is of much value. The order of the day is completeness in detail and sequence in time, the concept of the pattern, of which the parts alone defy interpretation."

"Is the poor bird demented." Another case of "Shadow Boxing."
—Wm. Ritter and S. B. Benson. 1934. *Auk*, 51, 169-179. A male Brown

³² 1934. The relation between plumage and environment, with especial reference to the Outer Hebrides. *Ibis*, 13th ser. 4, 52-61.

³³ In Schröder's *Handbuch der Entomologie*, Vol. II, 1926, see O. Prochnow's chapter on Die Färbung der Insekten, pp. 430-572.

³⁴ A natural experiment on the territorial instinct. 1934. *Brit. Birds*, 27, 270-277.

³⁵ 1934. *News from the Bird-Banders*, 9, 11.

Towhee (*Pipilo fuscus petularis*) fought its image in a window every day from May 1st to July 4th, and again from September 23d "occasionally for some weeks." Statistics are given showing the astonishing amount of energy expended by this bird in defense of his territory. The authors state, "It is now certain that several species of resident birds in California keep, and defend to some extent, their territories throughout the year and for several years."

Song Sparrows and Territory.—M. M. Nice. 1934. *Condor*, 36, 49-57. An account of territory behavior in *Melospiza melodia beata*, describing the technique of territory-establishment and the relations of male and female to territory throughout the years. Maps give the history of four families, showing the nesting places of all known relatives.

Sex Rhythm in the Ruffed Grouse (*Bonasa umbellus* Linn.) and Other Birds. A. A. Allen. 1934. *Auk*, 51, 180-199.—A new theory of the purpose of territory is proposed here, as will be seen from the following quotations:

"Birds are not sex conscious, that is, they do not discriminate between the sexes as such" (p. 198).

"Male birds have a similar" (to females) "short mating period during which they are able to fertilize eggs" (p. 199).

"Bird behavior, . . . selection of territory, song, fighting, and display of plumage are explainable on the basis of the necessity for synchronizing the mating cycles of male and female" (p. 199).

The evidence brought forward to show that birds are not sex conscious consists first in a description of the behavior of Ruffed Grouse in captivity where males at times attempt to mate with males; secondly, a case of a homosexual union between two female Canada Geese in captivity; and thirdly, instances of males of various species attempting copulation with dead birds of their own species. There are, of course, many records of homosexual unions between captive birds of many species, both males and females, *but does this ever take place in the wild?*

I cannot imagine a domineering female Song Sparrow proclaiming territory for herself with her cracked and squeaky songs, nor a weak, humble male becoming the mate of a belligerent male, for the voices and behavior patterns are strikingly different in the two sexes, although the plumage is identical. Song Sparrows not only make no mistakes in the matter of getting the right sex for mates; they also know perfectly well which is male and which female among their Song Sparrow neighbors and behave accordingly.

As to the male's rhythm, Allen does not tell us on what this depends. In doves and other birds where the male incubates, perhaps he is not able to fertilize eggs during incubation. Riddle³⁶ has found that a hormone—prolactin—released by the anterior pituitary gland during incubation induces "rapid involution in the mature testes of ring doves." But also, with males that do not incubate, copulation usually ceases when incubation begins. Howard considers this due to the female's behavior, for he believes

³⁶ O. Riddle and R. W. Bates. 1933. Concerning Anterior Pituitary Hormones. *Endocrinology*, 17, 689-698.

that, "Throughout the cycle the male is physiologically prepared to conjugate."³⁷ The canary does not seem to have been much changed by domestication, for it does not nest except in the normal breeding season; yet one male of this supposedly monogamous species can be made to serve 80 females in a season³⁸—a fact which corroborates Howard's theory rather than Allen's. C.R. Carpenter (Jour. Comp. Psych. 16, 1933, p. 75) "suggests that the cyclic character of the reproductive activities of the male pigeon is determined, to a large degree, by the changing behavior of his female mate to which he responds, and to the resultants of the male's and female's social behavior, *i.e.* nest, eggs, and young.

With Song Sparrows the start of nesting depends primarily on the weather and both birds "synchronize" perfectly during mild days in April. The next "mating period" may start the day the young leave the nest, or perhaps not till ten days later, or it will come whenever a nest is broken up. Ruffed Grouse may have short mating periods, but two-to-three-brooded Passerines appear to be capable of coming into a mating period whenever the occasion arises.

Allen's account of the behavior of the Ruffed Grouse is full of interest and should be read in full. He has also done a service in pointing out that domination of the male over the female is in many cases one step in the reproductive cycle. But conclusions based on observations on normally solitary birds kept together in flocks in cages should be drawn with caution. Moreover, in this species association of the sexes in nature is reduced to a minimum, hence the situation differs radically from that in which both birds raise their broods together. I cannot believe that "synchronizing the mating cycles" is the explanation of territory.

LIFE-HISTORY

Permanent Mates. A very interesting case of a pair of Carrion Crows (*Corvus corone*) that have remained together for at least ten years and perhaps sixteen is reported by Robert Poncey³⁹⁻⁴⁰, who has observed the birds since 1918 in the *Jardin des Anglais* at Geneva, where they stay throughout the year. In 1922 the female was injured in the left foot, and in 1924 the male in the right foot, both being thus permanently marked. Nest-building lasts over two weeks, the male constructing the outside, the female adding the lining. The female incubates, being fed to some extent by her mate. Fledging takes thirty-three to thirty-five days, after which the young stay another month with the parents. M. Poncey writes me that the pair nested again in 1933, but for some reason raised no young.

Bird Children of the Waika Reefs.⁴¹ Great Black-backed, Herring, and Black-headed Gulls, Kittiwakes, Terns, Oyster-catchers, and Turnstones, the handsome Sheld-ducks, Scoters and motherly Eiders—all these with their eggs and babies are shown to us in the fine pictures and graphic, vivid text of this fascinating book. This is the record of a summer spent

³⁷ 1929. *Introduction to the Study of Bird Behaviour*, p. 74.

³⁸ H. Duncker. 1928. Genetik der Kanarienvögel, *Bibliographia Genetica*, 4, 37-140.

³⁹ 1931. Les Corneilles Noires à la Station ornithologique du Port de Genève. *Alauda* Ser. II, No. 4, 1-4.

⁴⁰ 1932. La Nidification des Corneilles Noires à la Station ornithologique du Port de Genève en 1932. *Alauda*, Ser. II, No. 4, 398-406.

⁴¹ Franz Xaver, Graf Zedwitz. Vogelkinder der Waikariffe. 1933. Berlin. Scherl, RM 4.50

by Graf Zedwitz and his wife studying in a bird preserve of the University of Dorpat on the rocky reefs near the Island of Osel in the Baltic. The author is a keen observer and sympathetic interpreter of the rich life in this bird paradise, and his photographs are superb.

COÖPERATIVE ORNITHOLOGY

In connection with the reviewer's article in the April number of *Bird-Banding*, urging a coöperative attack on problems in bird-study, the plans of the British Trust for Ornithology (Report on Progress, *British Birds*, 1934, 27, 335-336) are of extraordinary interest. The whole basis of their work appears to be coöperation. At least six enterprises are under way—each with a leader and well-defined plans of action. These include investigating the status of the Woodcock, its distribution and fluctuations in numbers; the breeding biology of the Swallow; "the connexion between vole plagues and the breeding of Short-eared Owls"; a count of heronries; the Fulmar Petrel Investigation, and "a bird population inquiry" undertaken under David Lack "with a view to ascertaining the connexion, if any, between territorial habits, food supply and bird population."

Why cannot we adopt similar tactics?

A Field Guide to the Birds by Roger Tory Peterson. Published by Houghton Mifflin Company, Boston, 1934 (Reviewed by John B. May).—At last the real "field book" on birds has been published. For many years I have been wanting a book which would show clearly the important field characteristics of our birds, so that he who runs might read, and this little volume fills that long-felt want, and fills it well. The only book which approached this desideratum was Ralph Hoffmann's "Guide to the Birds of New England and Eastern New York," published in 1904, which is still an extremely valuable book because of its terse paragraphs on field characteristics, but which was very inadequately illustrated, and which covered only the commoner birds of a limited area.

The present volume, which the publishers call "a bird book on a new plan," and which the author says was planned "to complement the standard ornithological works, a guide to the field-marks of Eastern birds, wherein live birds may be run down by impressions, patterns, and distinctive marks, rather than by the anatomical differences and measurements that the collector would find useful," is designed primarily for actual field use, and is of a size to slip conveniently into one's pocket, the pages being only $4\frac{1}{2}$ by $7\frac{1}{4}$ inches. The illustrations, however, like the plates in Forbush's "Birds of Massachusetts," are without margins, so that the individual figures are considerably larger than would be possible if the plates were printed with the usual white borders. The book consists of about two hundred pages of letter-press, terse and pithy paragraphs which emphasize distinguishing characteristics of each species, and a unique series of full-page plates, four in color and thirty-two in black and white. No attempt has been made to make "pretty pictures" but instead the figures on a single plate are all drawn in a slightly conventionalized manner, so that the distinguishing field marks of each species represented on that plate may be more easily recognized and comparisons made more readily. For example, the two plates of shore-birds show some thirty-three figures of birds in flight as they would appear if flying past the observer, exhibiting their diagnostic wing and tail patterns; the figures on each plate agree in scale of size, and their color-values are carefully rendered so that the

absence of color is not important. In this way attention is centered upon the important distinguishing characteristics instead of being confused by similarities and unimportant details. An idea of the lavishness of the illustrative material may be obtained by referring to the section on the ducks and geese; this includes six plates with sixty-three figures of birds as seen when swimming, and two plates with forty-six figures of ducks in flight, or one hundred and nine figures to illustrate forty species. Similarly the two colored plates of warblers show sixty-five figures illustrating forty-two species.

All in all, this book is a real contribution to the equipment of the bird-student, be he beginner or veteran. Mr. Peterson has been known for some time as one of the keenest and most reliable field men in the north-eastern district, and his unusual ability as a bird-painter is rapidly becoming recognized. Louisa May Alcott is said to have expressed her ambition to have her books "the most worn out" on her friends' tables, and this fate I believe is in store for Mr. Peterson's little volume, except that it will seldom leave its owner's pockets to decorate a study table.