

RECENT LITERATURE

Reviews by Margaret M. Nice and Thomas T. McCabe

BANDING

1. **Report of the Bird-Ringing Committee.**—A. Landsborough Thomson. 1939. *British Birds*, 32:382–389. During 1938 50,324 birds were ringed in Great Britain, of which 24,162 were trapped and 26,162 were nestlings. The species ringed in largest numbers since 1909 are: Song Thrush (*Turdus ericetorum*), Starling (*Sturnus vulgaris*), Blackbird (*Turdus merula*), Barn Swallow (*Hirundo rustica*), Lapwing, (*Vanellus vanellus*), Chaffinch (*Fringilla coelebs*), Greenfinch (*Chloris chloris*), Redbreast (*Erithacus rubecula*), Common Tern (*Sterna hirundo*), and Sandwich Tern (*Sterna sandvicensis*). Recovery percentages average from 5 to 21.3 with Falconiformes, from 11 to 18.6 with ducks, from 3.2 to 8.3 with Corvidae. With the Song Thrush it is 1.9%, with the Blackbird and Starling 4.4, while with two species that are readily trapped—Redbreast and Hedge Sparrow (*Prunella modularis*) recoveries reach 8.9 and 8.6%.

2. **Banding at the Ornithological Station at Paris.**—(Station Ornithologique de Paris. Muséum National d'Histoire Naturelle. Service Central de Recherches sur la Migration des Oiseaux.) E. Bourdelle and E. Dechambre. 1938. *L'Oiseau et la Revue française d'Ornithologie*, 8, Suppl. :9–68. From 1930 to 1936 18,356 birds have been banded. Of these 7,372 were Passeriformes, 3,979 Lariformes, 3,497 Ardeiformes, 2,109 Galliformes. Species banded in greatest numbers were: Common Tern 2,445, Barn Swallow 1,479, White Stork (*Ciconia ciconia*) 1,423, Black-headed Gull (*Larus ridibundus*) 1,036, Pheasant 1,001. Returns and recoveries (through 1936) amounted to 2.2%. The Falconiformes showed the highest rate—7.81%; others were Ralliformes 5.71, Anseriformes 3.14, Passeriformes, 2.97, Ardeiformes 2.69, Galliformes 0.9, Lariformes 0.78.

3. **Banding at the Ornithological Station at Versailles.**—(Station Ornithologique de Versailles. Centre National de Recherches Agronomiques, Versailles.) A. Chappelier. 1938. *L'Oiseau et la Revue française d'Ornithologie*, 8, Suppl. : 69–112. This station has specialized on Rooks (*Corvus frugilegus*) and Grey Herons (*Ardea cinerea*). The latter scatter to England, Germany, Belgium and over France for the winter, but some migrate south to Spain, Portugal and Morocco. Eleven per cent of the banded young have been killed, a third of these in the vicinity of the heronries. Rooks return to their birthplace to nest; a female, banded in the nest the previous year, was found incubating in her natal rookery. Migrants have been trapped on the same routes as in the previous year.

Banding was the basic technique used in the life history studies Nos. 12, 19, 21, 28, 30, 31, and 67, and was also employed in Nos. 15, 20 and 41.

MIGRATION

4. **The Flocking of Immature Herons.**—H. N. Southern. 1939. *British Birds*, 32 : 346–349. This short paper demonstrates a flocking habit for *Ardea c. cinerea*, previous to, during, and after, fall movement, largely independently of the adults, and apparently without other visible motive than a common choice of a loafing ground safe from disturbance. Previous to migration time the composition of the flock is probably constant, and the birds probably came from one or both of two heronries about eight miles away. Later, after the irregular migratory movements have begun, subtractions, and additions from more distant sources are probable, but the flock remained. The habit is most marked during fine weather and in the warmer seasons.—T. T. McC.

5. **Some Oceanic Records and Notes on the Winter Distribution of Phalaropes.**—P. F. Holmes. 1939. *Ibis*, 3 : 329–342. These are records of some twenty-two species seen during the voyages and inland travels of the author as a member of the Sladen expedition from England to Lake Titicaca and return. Extended and documented accounts of *Phalaropus fulicarius* and *Steganopus*

tricolor are the longest items. As to the former, Meinertzhagen's discovery of a spring concentration off northwest Africa is confirmed and extended for spring and fall. Observations of *Steganopus* on or near Lake Titicaca cannot be earmarked as to migratory or wintering status,—older records from further south suggest the former. A very complete tabulation of the records indicates a general flight, on or off shore, up or down the west coast, with an eastward turn over the mountains of a certain share of the population (there are records for eastern Argentina) at a rather southerly latitude, that of Peru or below. There is no record from the Atlantic coast between South Carolina and Argentina.—T. T. McC.

6. Migrations of the Skua Family.—Allan Brooks. 1939. *Ibis*, 3 : 324-328. Information on *Stercorarius* builds up slowly, and these records of locality, numbers, and direction, made at sea through fifty years of travel, will play a considerable part in the completion of the world-picture. The most valuable item in the paper,—the data on the inland migratory flight of *longicaudus* through British Columbia, are, and could only be, the fruit of a lifetime of highly-skilled watching, so rare and difficult is the bird, so wild the country it seems to choose.—T. T. McC.

7. Geographic Variability of the Gyrfalcons of the Eastern Hemisphere.—(Sur la Variabilité géographique des Faucons-gerfauts *Falco gyrfalco* L. de l'Hémisphère Oriental.) G. Dementieff. 1938. *Alauda*, 10 : 289-304. With the Siberian Gyrfalcon (*Falco gyrfalco intermedius*) only a part of the birds migrate, the others remaining throughout the winter in the north.

8. Zoological Results of the Second Dolan Expedition to Western China and Eastern Tibet, 1934-1936. Part II. Birds.—Ernst Schäfer and R. M. de Schauensee. 1939. *Proc. Academy Natural Sciences Philadelphia*, 90, 1938 : 185-260. Biological data of interest are given on several species. "The largest of the numerous Tibetan species of Redstarts" is *Phoenicurus erythrogaster maximus*; the "males are very hardy, remaining in winter in the cold Tibetan mountain districts, while the females migrate to the south." p. 223. As to a Rose Finch, (*Erythrura eos*), the "post-juvinal moult of the young males from the first brood occurs in September, the warmest month in High Tibetan territory. The young males from the second brood seem to remain gray for the first year." p. 250. The Snow Finch (*Montifringilla taczanowskii*) "lives in biocoenosis" with the Pikas (*Ochotona melanostoma*), "sleeping and eating in their burrows." p. 254.

9. Hurricane Aftermath. 1939.—The Editor and others. *Auk*, 56 : 176-179. Dr. Glover Allen has brought together a symposium of notes from some six sources on rare inland occurrences and observations on New England shores during or following the great storm of 1938. If the list is smaller than might have been expected, this is probably due to the late date of the hurricane, September 21, when much of the migration had passed. Degree of abundance during the coming summer may tell a more serious story of the inland forms. A Yellow-billed Tropic Bird (*Phaethon lepturus catesbyi*) was found in Vermont, a Cory's Shearwater (*Puffinus diomedea borealis*) in Berkshire County, Massachusetts, a Wilson's Petrel (*Oceanites oceanicus*) on the shores of Lake Ontario, a Red Phalarope (*Phalaropus fulicarius*) in Virginia, and a long list of Tropic Birds, Shearwaters, Petrels, and other rare or unseasonable species in the Connecticut Valley.—T. T. McC.

LIFE HISTORY

10. Observations on some East African Birds.—R. E. Moreau and W. M. Moreau. 1939. *Ibis*, 3 : 296-323. This rich material was selected to fill gaps in East African ornithological knowledge revealed by the publication of Jackson and Sclater's work on Kenya and Uganda. It presents variable amounts of information, largely in regard to nest and song, with some 40 species, and the matter is too scattered and heterogeneous to review in detail. There is less on the more active phases of behavior than in most of Moreau's papers, yet extraordinary

habits are often described,—a *Caprimulgus*, doubtless *fossii*, moves its eggs from place to place when disturbed, another case of close nesting association with wasps is established, (*Anthreptes o. orientalis*), and juvenile *Spermestes n. nigriceps* participate in communal nest-building. The contribution to our knowledge of the avifauna is invaluable, and, like all the writings of these authors, readable to the driest detail.—T. T. McC.

11. Number of Nest and Young Reared in an Essex Locality.—I. Steuart. 1939. *British Birds*, 32 : 336. In a garden of 14 acres in 1938 119 nests of six species were found—ten of Chaffinch, five of Meadow Pipit (*Anthus pratensis*), 26 of Song Thrush, 64 of Blackbird, eight of Hedge Sparrow and six of Barn Swallow; 454 eggs were laid, 321 hatched, and 271 were fledged—59.7 per cent of success, a very high figure for open nests.

12. Permanent Mating with the Great Titmouse and Annual Mating with the Common Redstart.—(Dauer-Ehen bei *Parus m. major* und Jahres Ehen bei *Phoenicurus ph. phoenicurus*.) Koloman Wurga. 1939. *Journal für Ornithologie*, 87 : 54–60. This excellent study is based on fourteen years of banding birds nesting in the boxes put up in and near the grounds of the Royal Hungarian Institute at Budapest. Great Tits in winter go in flocks of twenty to thirty, yet often return to the same boxes to nest. No example was found of change of mates between broods, nor of change of mates the following season when both birds survived. One pair was mated two seasons, raising 4 broods together; two pairs were mated for three seasons, and a third for five seasons, raising nine broods. The female of this pair had been present the year before with another mate, so nested for six years. One male was present six years, having four different mates; one for three years. The number of eggs per set varied between six and fifteen; there seemed to be no correlation between age of the female and size of set. One nestling returned to its birthplace.

With the Redstarts three nestlings returned. In three cases pairs stayed together for two broods in one season; in two cases pairs remated a second year. Once male and female were both present a second year, but mated with other birds. There were four instances of bigamy, but it may have been that these males merely helped care for young of females that had lost their mates.

13. Notes on Cormorants.—D. L. Serventy. *Emu*, 38 : 357–371. Four species are common in southwest Australia. Weights are given of some 400 birds; males are markedly heavier than females; there is some increase in winter. The males appear to be "more attached to the nesting territories than are the females and do not wander so far from them as do the females, even in the non-breeding season." The Pied Cormorant (*Phalacrocorax varius*) breeds in the *spring* (November) on Abrolhos Island, but in the *autumn* on the mainland 30–40 miles distant.

The Little Black Cormorant (*Phalacrocorax sulcirostris*) has "a community method of fishing for pelagic prey." They fly in a long column low over the water. "When a shoal of fish is encountered the leading birds wheel round and settle on the water, probably concentrating the shoal." "The birds aggregate to a dense mass, harrying the fish." Somewhat similar behavior has been reported for Cormorants in Africa and Europe (G. de Guirtechitch, 1937, *L'Oiseau et la Rev. franç. d'Ornith.* 7 : 438.)

14. Social Behavior of Eider Ducks.—(Die Brutvögel der Eismeerinsel Heinäsaaret.) Paul Ruthke. 1939. *Beiträge Fortpflanzungsbiologie der Vögel*, 15 : 41–50. *Somateria m. mollissima* is very abundant on the Finnish island sanctuary Heinäsaaret. After the young hatch, families join forces and all sorts of combinations from three females with eighteen young, two with six young, six with five young, thirteen with six young up to twenty leading females are seen. Sometimes a few males join such companies. The adults defend the young from the Great Black-backed Gulls (*Larus marinus*) by coming close together, hissing, kicking up the water and biting at the Gulls. It is only when young are with a single mother that the Gulls are able to capture any.

15. Observations on Raptorial Birds in the Lava Beds—Tule Lake Region of Northern California.—Richard M. Bond. 1939. *Condor*, 41 : 54-61. Many fewer Hawks and Owls were present in 1937 and '38, than there had been in 1936 and the same was true of meadow mice; instead of eight pairs of Red-tailed Hawks there were only two (one pair did not lay, the other raised one young); there were no Prairie Falcons where there had been two, and only one pair of Sparrow Hawks instead of a dozen. Botulism became epidemic on the Tule Lake Refuge and some 7,000 Ducks died; Turkey Vultures, Bald Eagles and Marsh Hawks fed on the carcasses, but were not affected; but the young of a family of Duck Hawks died.

Two young Prairie Falcons (*Falco mexicanus*) were banded June 6; August 26 one was killed in Saskatchewan, and two weeks later another picked up 100 miles further; they had traveled more than 900 miles northeast.

There is a detailed report on the food of the raptorial birds and a discussion of predation problems. The author contemplates "with much spiritual pleasure the continuing process of a large number of noble hawks and owls (to which I am greatly attached) busily consuming an even larger number of meadow mice (to which I am relatively indifferent), on and about the Lava Beds National Monument."

16. The Mississippi Kite in Spring.—George M. Sutton. 1939. *Condor*, 41 : 41-53. *Ictinia mississippiensis* returns to western Oklahoma from May 7-10; the birds "appear to be mated when they arrive." Both sexes incubate, but the male of a pair with eggs had no brood patch. Two and three other species were found nesting in the same tree with Kites. "When not disturbed, these several species got on admirably. When disturbed the Scissor-tails and Mockers gave vent to their anger or excitement in attacks upon the Kites." The author was sometimes scolded "by a veritable flock of Kites" when examining nests with eggs.

17. Observations on a Cliff Nest of a Peregrine Falcon.—(Brutbiologische Beobachtungen an einem Felsenhorst des Wander-Falken) C. Demandt. 1939. *Beiträge Fortpflanzungsbiologie der Vögel*, 15 : 89-101. A pair of *Falco peregrinus* stayed together all year. The young left the nest June 12; on the 19th one was seen to pursue a Swift, but the brood were still fed by the parents July 10. They were able to tell at incredible distances whether or not the parents were bringing prey. On July 15 they were hunting with the parents.

18. Nesting Habits of the Western Red-tailed Hawk.—Ross Hardy. 1939. *Condor*, 41 : 79-80. A pair of *Buteo borealis calurus* nested on a pinnacle near Price, Utah. Incubation lasted 34-35 days; fledging nearly 7 weeks. Soon after the young left the nest they were seen taking dust baths.

19. Seasonal Movements of a Low-Density Valley Quail Population.—John T. Emlen, Jr., 1939. *Journ. Wildlife Management*, 3 : 118-130. This very fine study was based on the use of colored bands for individual identification and colored tail feathers for flock identification. A population of *Lophortyx californica vallicola* on 760 acres of farmland in Central Valley of California decreased from 113 birds on January 1, 1937 to 78 on December 31, 1937, only 12% of the marked birds being present at the end of the year. On January 1 males constituted 59% of the population, on December 31 61%. At the beginning of the year the percentage of young birds was 60, at the end it was 86. In spring 33 of 67 marked quail disappeared; one was shot 4 miles away, three returned in the fall.

In January there were four covies of 21, 23, 23, and 46 birds on territories 22, 17, 19 and 45 acres in extent, "roughly one acre for each bird." These winter territories were separated "by distances from 350 yards to half a mile." There was no interchange between the flocks. Once two covies mingled peaceably for a short while, but later the intruders were driven off by the males of the resident group. On February 16 "covey C wandered as a group onto the northern edge of territory D. Although the two groups were repeatedly seen within a hundred feet of each other during the last ten days of February, they were never observed to combine or intermingle in any way." Covey C broke up and moved off leaving

only a yearling male that tried repeatedly, but unsuccessfully, to join Covey D; even when the latter was reduced to two unmated females and one unmated male, the lone bird was still driven off.

Unmated males busied themselves crowing; this "crowing was almost always directed toward the female of an established pair, much to the annoyance of her mate." Four of the banded "crowers" "lived a nomadic existence" while four others took up and defended territories. Many of the nesting adults "suffered accidents of one kind or another." A "widowed female, if not nesting, acquired a new mate from amongst the unmated crowers of the vicinity within less than two days . . . or else attached herself to a local brood of chicks." "Males which had lost their mates during the nesting season, unless they had chicks to guard, assumed the crowing habit within a day." One male took over incubation duties. "The development of broods into subcoveys by the incorporation of unsuccessful local adults and of other broods" is discussed. "Immediately after hatching a definite social barrier was thrown around each brood by its parents. This was gradually lowered as the chicks grew older." Broodless "adults, particularly the males, showed great interest in young chicks, and, when admitted, made as good guardians as the true parents. . . . Crowing cocks showed an insatiable interest in young broods, but were rigidly excluded as long as they persisted in the crowing habit." In September fights were observed between two broods that apparently were unacquainted with each other. "Of the twelve marked adults still surviving on the University Farm on December 1, 1937, eight were back on the same territories they had occupied during the previous winter and four were located in other territories."

20. The Nesting of the Moorhen.—(Zur Brutbiologie des Grünfüßigen Teichhuhns (*Gallinula chloropus* L.)) Georg Steinbacher. 1939. *Journal für Ornithologie*, 87 : 115–135. In most places this Gallinule is shy, but in some towns it has become a park bird, nesting on very small bodies of water and even eating out of people's hands; nests are placed within a few meters of pathways and young are led near visitors in hopes of food. In Berlin it is just starting to become a park bird, as have the Blackbird, Green Finch, Wood Pigeon and recently Song Thrush. Nine pairs nest in the Tiergarten in Frankfurt am Main; they feed with the ducks and cranes. If disturbed, they twitch their tails, showing the white. The notes are described and sketches given of different attitudes taken by the birds. During courtship symbolic nest-molding takes place, the white in the tail being conspicuous. When threatening an intruder, the bird makes itself long and thin; fighting is done with the wings. The feeding and breeding territories are described and mapped; the latter are energetically defended. Nest building is carried on by both sexes and throughout incubation and care of the young; extra sleeping nests are sometimes made for the young. Both sexes incubate, one caring for the first hatched chicks, while the other stays with the eggs. The parents feed the young. These grow very slowly and have a strong bond between them, peeping to keep in touch with one another.

Six pairs raised one brood, the following numbers coming to maturity: 2, 2, 3, 4, 4; two pairs had two broods, raising five and eight young. Naumann tells of the tender care of older young for the younger, but this was not true in Frankfurt; parents cared for both sets together, but the older young, far from feeding the little ones, snatched food from their bills, the parent paying no attention. Earl Grey in "The Charm of Birds", 1927, tells of a pair of Moorhens with two broods, "A parent bird would pick up bread, put it into the beak of one of the May young, which would in turn feed one of the tiny July young." Here there was a greater difference in age than between the Frankfurt birds, where in one case two weeks elapsed between the hatching of the first brood and start of laying of the second set, in the other six weeks. Earl Grey gives another similar instance, while McIlhenny in "Bird City" mentions a like instance with the Florida Gallinule (*Gallinula chloropus cachinnans*) in Louisiana. Dr. Steinbacher has given us an excellent study of the behavior and sociology of this bird.

21. Notes on the Life History of the Piping Plover.—LeRoy Wilcox.

1939. *Birds of Long Island*, No. 1 : 3-13. *Charadrius melodus* has markedly increased of late years and is now a common nester on some of the beaches. Nests are lined with bits of white shells. Females have "smaller and duller black markings." Both sexes incubate. "No brooding patch as commonly found on nesting Passerine birds could be found. . . . The incubation period varies from twenty-six to thirty days according to situation of nest [in relation to amount of disturbance] and temperament of nesting adults." The weights of Robins and Piping Plovers are compared, each weighing 6.8 grams at hatching; at fourteen days the Robin weighed 61.5 grams, the Plover 16-17. The adult Robin weighs some 80 grams, the Plover 56.

A two-day old Plover ran 81 feet in twelve seconds, which is at the rate of 4.6 miles per hour.

In 1937 eleven adults and twenty-one young were banded; six adults (55%) returned, and one young (4.8%). The latter was a female; she nested 1300 feet from where she had been banded. Adults returned to their territories; one pair remated.

22. Territorial Behavior of the Flammulated Screech Owl.—Joe T. Marshall, Jr. 1939. *Condor*, 41 : 71-78. Observations on *Otus flammeolus* in the Sequoia National Forest, California. "A mild and unaggressive territorial behavior is evidenced by the males. Each advertises his territory by incessant hooting from 'song perches' established in tall, densely foliated conifers. Adjacent territories overlap to a certain extent. . . . A male utters the 'protest call' only when an intruding male alights in the same tree or group of trees where he is perched. Even at that time, no actual conflict arises." This trespassing occurred when the birds were aroused by the hoots of the author.

23. The Cuckoo, (*Cuculus canorus*).—Edgar P. Chance. 1939. Harrison and Sons, London. 12p. 6d. A resumé of the Cuckoo's habits by the author of "The Cuckoo's Secret", 1922, describing the technique by which an experimenter can make a Cuckoo lay where he wishes. In "normal circumstances . . . Cuckoos may lay up to a dozen eggs in a season", although one bird in her fifth year was induced by him to lay twenty-five eggs in seven weeks. "Cuckoos are inveterate egg thieves, especially preying upon species that are not their 'natural' foster birds."

"Assuming as correct the theory that a Cuckoo tends to lay in the nest of that species by which she herself was reared", methods are discussed for investigating whether this tendency comes about through "inherited instinct" or acquaintance with the fosterer. "Such an inquiry must be necessity be left to egg collectors." What about a little banding to help out?

24. More Observations on the Nesting of the Allen Hummingbird.—Ernest I. Dyer. 1939. *Condor*, 41 : 62-67. A charming account of nest building by *Selasphorus alleni*. "The tongue was fully extended and was used in a manner which suggested irresistibly that the bird was applying saliva, or perhaps some adhesive secretion, to the exterior as a binder or cementing material." The eggs were laid June 13 and 15, but material was added until the 25th. Incubation lasted seventeen days. The eggs hatched July 1 and 2, one bird soon died, the other dying on the 5th. The mother continued to brood and reached down as if to feed her young.

25. Hovering Flight of the Hummingbird in Slow Motion Film.—(Der Schwirflug des Kolibri im Zeitlupenfilm.) M. Stolpe and K. Zimmer. 1939. *Journal für Ornithologie*, 87 : 136-155. Movies of Hummingbirds were taken at the Berlin zoo at 1,500 exposures a second. Charts are given analyzing the flight, with 38 frames of the film shown. From 27 to 29 wing movements occurred per second; this agrees with Dr. Stresemann's results with the stroboscope. The anatomy of the wing bones is carefully worked out. An admirable study.

26. Duration of Colonies of the Cliff Swallow.—Harrison F. Lewis. *Condor*, 41 : 79. Two colonies of *Petrochelidon albifrons* on barns in Nova Scotia have lasted 60 and 90-100 years.

27. The Rook as Egg Robber.—(Die Sattkrähe als Eierräuber.) H. Grote. 1939. *Beiträge Fortpflanzungsbiologie der Vögel*, 15 : 76-77. In the Wolga Sanctuary *Corvus frugilegus* has recently started to suck the eggs of Herons; the author believes it has learned this pernicious trick from the Hooded Crow (*Corvus cornix*).

28. Observations on the Titmouse Population in the Revierförsterei Braach.—(Beobachtungen an dem Meisenbestand der Revierförsterei Braach. 1934-1938.) Karl Mogall. 1939. *Vogelring*, 11 (1) : 10-40. A detailed report on the banding of 245 Titmouse (mostly *Parus major* and *caeruleus*) in nest boxes and at feeding stations; 9% were retaken. Many were caught in nest boxes at night during the winter; they always roost singly, while the Tree Sparrows (*Passer montanus*) may sleep in groups as many as seven together. Two Great Tits slept in the same boxes in which they nested. Forty-two per cent of the forty-three nesting females were retaken in the nesting region.

Of 2,296 nestlings ringed, 2.1% (49) were recaptured from 300-3,300 meters from their birthplace. Adults are sedentary, but some young may wander as far as France. The Great and Blue Titmice averaged nine eggs in a set; sometimes two eggs were laid in one day. Incubation period—13-14 days; the young are fed 300-400 times a day. From 49 to 114 boxes were used during the four years; from 48 to 106 sets laid per year. Of 322 sets laid, 231 broods left the nest; this is 71.8% of success (for the nests, not the eggs).

29. Nesting Observations on the Thrush Nightingale.—(Brutbeobachtungen beim Sprosser, *Luscinia luscinia*.) Otto Steinfatt. 1939. *Ornithologische Monatsberichte*, 47 : 38-46. In East Prussia. The female builds the nest, incubates and broods. When the five young were three and four days old the nest was watched from 7 A.M. to 8.15 P.M.; the female brooded half the time, her periods on the nest lasting from 1-39 minutes, averaging 10.4 minutes; her 36 periods off the nest lasting from 1-24 minutes, averaging ten minutes. The female fed 34 times, the male 45; excreta were removed 29 times. Five days later the nest was watched all day (from 3 A.M. to 8 P.M.); there was no brooding; the female fed 87 times, the male 81, a total of 168. During the first day two young were often fed at one trip, but during the second only one. Excreta were taken 42 times. The number of feedings per hour were 6.6 the first day, ten the second; removals of excreta showed almost no change in frequency—2.4 and 2.5 respectively per hour. The young were silent. They left at the age of nine and ten days.

30. Experiences with Ringed Starlings in the Nesting Season.—(Aus dem Leben beringter Stare zur Fortpflanzungszeit.) Fritz Freitag. 1939. *Vogelring*, 11 : 1-9. A continuation of the observations on color-banded Starlings and their domestic complications. (See *Bird Banding*, April '36, April '38.) In 1936 two females spent the nights in box 3 till the middle of March; they quarrelled at the entrance and sang inside. Late in March another female (16A) banded as a nestling in 1934 450 meters distant—adopted box 2 and raised two broods there, the first young leaving May 22, and the first egg of the second set being laid June 1. This female and an unbanded male were caught in this box November 1; the former sang loudly and tried to drive off the male. She slept there through the winter.

In 1937 this female and a banded mate (No. 59) started to build in box 2, March 29; the first egg was laid April 15; both parents incubated and fed the young. The male also tried to feed young at a neighboring box, but was driven off, he then deserted his family, chased a neighboring male from the nest under the roof and courted a young wife. The young in box 2 flew May 21; male 59 adopted it again, acting like a bachelor, although he had a wife in the nest under the roof. An unbanded female came and cleaned out box 2, but was driven off by female 16A. She started laying again on May 30, but male 59 did not help incubate. He fed his roof children for five days, then stopped; the female continued, but the young died. He fed his children in box 2 for several days; 16A finished the task alone. She was not seen again. Male 59 sang in October in his nesting region, but was later killed in a "sparrow hunt."

In 1938 warm weather hastened the start of building, but cold weather in April delayed egg laying, the first egg appearing April 27 and the young leaving June 1-3. *There were no second broods.*

Both males and females choose the nesting place. Holes are sometimes taken in autumn and the pair "betrothed" at that early date. Males are continuously in breeding condition throughout the nesting season and often get second mates. Females breed at one year of age, males not till two years. The first egg of the second set is laid on the eighth day after the young fly, the same interval as when a brood is destroyed.

31. Observations on the Second Brood with the Starling in Brunswick.—(Untersuchungen über die zweite Brut beim Star (*Sturnus v. vulgaris* L.) im Braunschweiger Hügelland.) Rudolf Berndt. 1939. *Vogelzug*, 10 : 7-16. In only four years from 1926-1935 were there second broods—one each in 1926, 1927 and 1935, and 9 in 1930. The numbers of nesting pairs for the first brood in the ten years were 2, 2, 4, 6, 12, 18, 20, 22, 23, 18. Nesting was earliest in 1930; in 1934 it was nearly as early, but a severe drought followed. Most young of the first brood hatch at about the same date; some hatch 8-14 days later; these are broods of year-old females. The earliest broods are the largest, averaging 4.8 young fledged, later broods averaging 3.5. The average of all first broods was 4.4 young, of second broods 3.8.

Nowhere does the author correlate the start of nesting with temperature. Kluijver, "Bijdrage tot de Biologie en de Ecologie van den Spreeuw", 1933 (See *Bird-Banding*, October '33) gives the temperature of April in Holland as higher in 1930 than any other year from 1927 to 1932, although 1926 was a little higher; his Starlings started to lay earliest in 1926 and second earliest in 1930. Other Dutch writers, Wolda and Tolenaar (See *Wilson Bulletin*, 1934 : 130-134), have pointed out that with Titmice and Starlings second broods occur when first broods are started early.

32. Life History Studies of the Eastern Goldfinch.—L. H. Walkinshaw. 1938, '39. *Jack-Pine Warbler*, 16 (4) : 3-11, 14-15; 17 (1) : 3-12. Interesting observations on a large number of nests of *Spinus t. tristis* in Michigan. The height of 76 nests averaged 120 cm. Seven nests were found in "a small triangular area, the sides of which were 370, 150 and 240 feet distant." The author "never observed any conflict" between nesting Goldfinches. The birds are paired in late April, although they do not nest before July. The female constructs the nest so well that it is water-tight and occasionally the young are drowned. The size of sets before August 10 averaged 4.74, from August 11-31, 4.31 eggs. From three to six eggs were laid, most sets containing five. The incubation period was twelve to fourteen days; fledging eleven to fifteen, the average being 12.88 days.

Weights of young and adults are given, as well as notes on feather development. During incubation 345 minutes were spent in blinds; females were on the nest 85.8% of the time. The male feeds his mate and the young; the female fed more than the male. Feeding is by regurgitation and takes place about once a half hour. Young were raised in 59% of 66 nests. Of 248 eggs laid, 176 hatched (71%) and 145 were fledged (58%).

33. Nesting of the Scarlet Finch by the Drausensee.—(Beiträge zum Vorkommen und zur Fortpflanzungsbiologie des Karmingimpels am Drausensee.) Gerhard Haas. 1939. *Beiträge Fortpflanzungsbiologie der Vögel*, 15 : 52-62. The female of *Carpodacus erythrinus* incubates, while the male sings; incubation lasts twelve days; feeding is by regurgitation. The young showed no fear at seven and eight days; they left at ten to thirteen days. Most of the females were bolder in nest protection than the males, but there was one exception. When the author was banding one brood, he was attacked by the mother that pecked his hat and his hand and then settled herself on the young!

The birds are territorial, males driving other males from their territories that extend 30-60 by 50-70 m. When the author approached a nest, the parents scolded and several other males would appear; these the nest owner drove off,

singing as he did so. Feeding was on neutral ground outside the territories; it lay 100–500 m. distant and in one case 1,000 m.

34. Notes on the Nesting Cycle of the Clay-colored Sparrow.—Lawrence H. Walkinshaw. 1939. *Wilson Bulletin*, 51 : 17–21. This is a brief and straightforward aggregation of facts on nests, nest-sites, eggs, nestlings, song, and behavior at or near the nest of *Spizella pallida*, based on ten occupied and several abandoned nests found in the Crawford County prairies in Michigan. They are usually well up in a small shrub or tree, rarely close to the ground. The female broods and incubates regularly, but the male was twice found brooding young. When disturbed the female departs silently from a clutch of eggs, but scolds after the young are hatched. Once a parent feigned injury. The males' principal function seems to be persistent song, from near the nest, although he also feeds the young. He does not scold a disturber, and was not seen to show further concern over territory. The young left at eight to nine days.—T. T. McC.

BIRD BEHAVIOR

35. On the Analysis of Social Organization among Vertebrates, with Special Reference to Birds.—N. Tinbergen, 1939. *The American Midland Naturalist*, 21 (1) : 210–234. \$1.00. Reprinted in "Plant and Animal Communities", edited by Theodor Just, The University Press, Notre Dame, Ind. \$2.50. An exceedingly valuable paper for all those interested in bird (and mammal) behavior. It is a pity for bird students that it should appear in a non-ornithological journal.

"The interindividual relations which form the primary aim of sociological research are always processes of one individual or group of individuals (for the sake of convenience called the *Actor*, or *A*) influencing another individual or group (the *Reactor*, or *R*). This influence rarely is a direct one; often it is a highly complicated chain of processes: some activity of *A* is received by *R*, then, through *R*'s sense organs, nervous system and effector system a special response of *R* results. As a consequence, the causal analysis of social organization has to be based on the study of individual behavior." p. 211.

A summary is given of experiments analyzing the recognition marks that directed the gaping movements of young Song Thrushes to the head of the adult.

Much behavior depends on innate patterns, but much is also learned. "Perhaps the simplest instance of a learned reaction can be observed in places where birds of several species are breeding in close proximity to each other, as for instance in mixed colonies of Terns and Gulls. The Gulls learn to flee at the alarm-call of the Terns. In much the same way, birds of one species can learn to 'understand' the threatening behavior of individuals of the other species. Black-headed Gulls, for instance, learn to avoid threatening Sandwich Terns." . . . "Every Herring Gull reacts to the alarm call of other individuals, but the pattern and the intensity of the reaction depends on which neighbors are calling. The call of neighbor *P* always causes sudden flight, whereas a similar call uttered by neighbor *Q* may result in only a slight increase in attentiveness. The animal 'knows' by experience that *P* warns only when danger is near, and that *Q* often warns because of a distant disturbance," p. 215.

"Lorenz (1935) called all movements and structures producing a response in the social companion 'Auslöser' ('releasers'). The more general term *signal* is perhaps preferable since the activities and structures may have releasive or directive influences, or both simultaneously." p. 221.

"The results of the available studies justify the assumption, as a working hypothesis, that conspicuous and highly specialized structures, whose participation in non-social processes cannot be found, have a social, communicative function." p. 223.

"Signal movements have evolved from 'preparatory movements', 'symbolic actions' or 'substitute actions'. Substitute activities appear when the reaction evoked by external and internal stimuli is blocked, either by antagonistic reaction,

or by lack of stimulation for the next reaction of the chain, or by exhaustion of the normal reaction." p. 231.

These quotations will give an idea of the wealth of important material in this article. Indeed, it is a brief text on the fundamentals of bird psychology, and it should be most carefully studied by all those interested in bird behavior.

36. Taxis and Instinctive Action in the Egg Rolling Reaction of the Greylag.—(Taxis und Instinkthandlung in der Eirollreaktion der Graugans. I.) K. Lorenz and N. Tinbergen. 1938. *Zeitschrift für Tierpsychologie*, 2: 1-29. The act of retrieving an egg from outside the nest was analyzed into its component parts of instinctive action and spatially directed component through experiment and by means of motion pictures. Tinbergen summarizes the findings in No. 35, p. 212: "The movement of the head toward the breast in the sagittal plane is the instinctive movement. Its principal properties are: (1) that it, when once released, runs its full course without requiring renewed stimulation, and (2) that its pattern cannot be changed by changing the external situation, e.g., by substituting a larger or a much heavier egg. The sideward balancing movements are spatially directed, and their pattern is continuously influenced by stimuli from the rolling egg." If the egg is removed after the reaction has been released, "the head will be moved toward the breast, but the balancing movements are now absent."

37. Learning or Maturation? A Study of the Various Relationships between Instinctive Action and Experience.—(Modifikation oder Funktionsreifung? Ein Beitrag zur Klärung der wechselseitigen Beziehungen zwischen Instinkthandlung und Erfahrung.) Josef Grohmann. 1938. *Zeitschrift für Tierpsychologie*, 2: 132-144. Lloyd Morgan considered the fanning of wings of young birds as exercise to perfect the flying ability. Lorenz considers it the maturation of an instinctive act, *i.e.* the instinct appears before the organ is ready. The author experimented with 14 nestling pigeons, putting one of two nest-mates in a box where it was impossible for it to spread its wings. The free birds started fanning their wings from the age of 16-32 days, flew ten cm. from 22 to 39 days, forty m. from 36-47 days, flying being fully established at 40-49 days. The four confined birds were left three to six weeks in their boxes; on the day of their release at 37, 55, 65, and 66 days they fanned their wings vigorously and flew, the two oldest flying forty m. There was a difference of 50% in the ages at which the first wing fanning was shown in the free birds, but of only 20% in that at which flight was fully established. The flight of the bird kept three weeks in confinement matched that of its nest-mate *the day after it was released, i.e.* at 48 days, but the others showed muscle atrophy, for it was not until 65, 70 and 90 days respectively that flying was fully established.

Another experiment was tried with two nestlings; they were taken from the nest from the 10th day on and held a few centimeters from the nest. At 18 days they jumped 10 centimeters giving one flap, and later longer distances, but this "flapping" had little to do with real flying. Their first spontaneous efforts came at 32 days; flight was established at 49 days.

38. Nesting Behavior of Wilson's Snipe and Spotted Sandpiper.—Henry Mousley. 1939. *Auk*, 56: 129-133. The author approached two nests of *Cupella delicata* and one of *Actitis macularia* almost daily from before completion of the clutch to hatching time. When the bird flushed he "froze" and watched, without following up. Thus to discover the history of the "injury feigning" reaction instead of merely describing isolated phases of it, was what the rising generation would call a keen idea. While the data are not very rich, the author feels that the reaction correlates with "the most excitable and nervous periods", or the time of completing the clutch and of hatching. One might perhaps question his right so to characterize the former stage, and there is always the possibility that the failure to demonstrate during the interval might be due to usage, *i.e.*, that the full reaction might have occurred at any time of *first* approach. Whether or not the observations really contribute substance to the hypothesis that "injury-

feigning" is the physical resultant of the instinct of self-preservation and that of solicitude for the nest, a constructive approach to the subject is at least indicated.

The author also feels the fact that the second snipe could be heard to continue the demonstration after dropping to earth *out of sight* of the watcher to militate against any purpose of luring him away.

In these discussions it must be remembered that a reaction originating in nervous conflict may have value, and may have evolved a form, in respect to nest-protection, without conscious purpose on the part of the bird at any stage. The investigator, at least, need not fall fluttering to the ground, paralyzed by conflicting hypotheses.—T. T. McC.

39. Injury Feigning in the Piping Plover.—Allan D. Cruikshank. 1939. *Birds of Long Island*. No. 1 : 14–18. "I have seen this act performed by birds in seven different orders." . . . "There are those like W. H. Hudson who support the view that the bird is not feigning injury at all but 'is deliriously excited and has a fit'; there are those who like Doctor Friedmann feel that injury feigning is a struggle between fear and the reproductive emotions: 'Fear impels the bird to leave its nest; the bond to the nest and eggs or young prevents the bird from doing so; the result is a crippled departure'; and there are those like Julian Huxley who claim 'that all evidence is against the bird having any conscious purpose or knowledge of what it is doing; the shamming wounded is an inborn pattern of behavior like sneezing in ourselves.' After scores of critical observations of birds going through the performance, seeing them intently watch the intruder, stop in the middle of the so-called fit if the intruder paid no attention and fly back to repeat the performance, and similar calculated acts of alertness I find it extremely difficult to accept any contention based on the premise that the bird does not appreciate what it is doing."

The reviewer agrees with Huxley that injury feigning is "an inborn pattern of behavior", but would not liken it to sneezing which is a reflex act. Injury feigning is an instinctive action, and I do not think we need to attribute "any conscious purpose or knowledge" to the bird.

The situation—enemy-near-young—releases the nest protective display, the function of which is to call attention to the parent and away from the young. If the enemy follows the bird, the stimulus continues until the enemy no longer is near the nest. If the enemy stays by the nest, the stimulus is increased, and the bird returns to display near the enemy.

40. Observations on the Breeding Season of 1938 on Schleimünde. (Allerlei aus der Brutperiode 1938 auf Schleimünde.) Hans v. Töne. 1939. *Beiträge Fortpflanzungsbiologie der Vögel*, 15 : 102–105. Red-breasted Merganser (*Mergus serrator*) eggs were given to Herring Gulls (*Larus argentatus*); on July 1 three ducklings waddled to the water followed by a Gull, while another Gull screamed above; all went into the water. The Gulls regurgitated food, which the ducklings took or for which they dived. They were seen until July 6; on the 7th there were only three ducklings and after that they were not seen again.

Social behavior was shown by the Common Gull (*Larus cauus*): when young 2–3 weeks old are frightened they take to the sea; if the water is calm, the adults pay no attention, but if it is rough 20–30 adults settle on the water in a semicircle around the young, swim towards them, some splashing the water with their wings and all driving them back to land. When the young are Herring or Black-headed Gulls, the Common Gulls often attack them.

Ospreys (*Pandion haliaetus*) preyed on the young Common Gulls; a bird alighted on a thickly settled spot and hopped around on one foot gathering six to seven young with the other claw, indifferent to the mad attacks of the adults.

41. Further Observations on a Mixed Colony of Lesser Black-backed and Herring Gulls. (Weitere Beobachtungen an einer gemischter Kolonie von *Larus fuscus graellsii* Brehm und *Larus argentatus* Pontopp.) Roland Richter. 1939. *Journal für Ornithologie*, 87 : 75–86. Interesting account of behavior of these two species at the common meeting ground; before nesting began all the

Larine inhabitants of this island off Scotland gathered there in pairs in the evening. Courtship behavior, changing places, preening and sleeping were the occupations indulged in; no feeding was done there and little rabbits played with impunity among their enemies. A female that begged from her mate was attacked by the others; such behavior seemed to be against etiquette. Sex display and copulation stimulated like behavior in the same species, not in the other. Alarm, place-changing, preening and sleeping worked suggestively from one species to the other.

Occasionally these species cross; the author exchanged eggs between a number of pairs, banding the chicks, in hopes of seeing whether this might induce cross-mating, as Craig has shown happens with Doves.

42. Comparative Observations on Behavior of Corvidae.—Erich Strauss. 1938. *Zeitschrift für Tierpsychologie*, 2 : 144–172. Valuable observations on the development in captivity of young Jackdaws (*Coleus monedula*), a Rook (*Corvus frugilegus*) and Hooded Crow (*Corvus cornix*.) The little Jackdaws at first were very much afraid in the light; nine days later there was a sudden change and they sought the light. The three wandered around together and whatever one did, the others did the same. They begged from one another and from the other birds; the substitute parent sometimes responded by feeding pebbles, leaves or paper. A young Jackdaw, one month in captivity, fed its brothers. The Jackdaw and Rook started to “sing” at five to six months. The Hooded Crow started to hide food at six weeks; the activity was complete in 2½ weeks. The first signs of bathing (*in vacuo*) came at five weeks; this activity was fully established at eight to nine weeks. Notes of the three species are given with their significance: ten for the Rook, eleven for the Hooded Crow, fifteen for the Jackdaw. There are many photographs of the different birds in different activities.

43. Experiments with Captive Corvidae. (Versuche an gefangenen Rabenvögeln.) Erich Strauss. 1938. *Zeitschrift für Tierpsychologie*, 2 : 172–197. Many experiments carried out on hiding, recognition of the experimenter, etc. The Hooded Crow had an excellent memory for hiding places, knowing them by small details. Jackdaws reacted to their reflections in the mirror as to a member of the species until they looked behind! The Jackdaws and Hooded Crow were very much afraid of a mounted Owl and Goshawk. They recognized members of the species, Crows, Owl and Goshawk when all they could see was plaster heads of these birds.

44. The Behavior of Some Corvidae.—Allan D. Cruikshank. 1939. *Bird-Lore*, 41 : 78–81. A Crow (*Corvus b. brachyrhynchos*) taken from the nest at about two weeks became conditioned to Mr. and Mrs. Cruikshank as to its parents. It was “allowed to roam at will”; it “paid no attention to local wild Crows that lit in the vicinity”, nor to people in general, but “would single out either my wife or me, its parent *kumpans*”. It adopted Herring Gulls as social *kumpans*, feeding, resting, “yelling” and flying with them. It would be interesting to know how it became conditioned to them rather than to its own kind.

A young Blue Jay (*Cyanocitta c. cristata*) injured by a cat, and persecuted by its own parents, became devoted to the author. It imitated the Robin song, whistled by its master.

45. Behavior of a Dipper Feeding in Still Water.—P. F. Holmes. 1939. *British Birds*, 32 : 350–351. Description of *Cinclus c. gularis* behaving somewhat abnormally by feeding in still water, on mud bottom, swimming on the surface a great deal, diving while swimming, rather than from shore or a rock, and staying under for unusually short periods.—T. T. McC.

46. Song of the Western Wood Pewee.—Loye Miller. 1939. *Auk*, 56 : 188–189. A description with notation of the twilight song of *Myiochanes r. richardsoni*. “Twilight songs have been recognized in the following western flycatchers: Western and Cassin’s Kingbirds, Arizona Flycatcher, Ash-throated Flycatcher, Olivaceous Flycatcher, Coues’ Flycatcher, Western Wood Pewee, Vermilion Flycatcher.”

47. Auditory Responses of Starlings, English Sparrows, and Domestic Pigeons.—Albert R. Brand and P. Paul Kellogg. 1939. *Wilson Bulletin*, 51 : 38–41. One more of the remarkable sound studies of the Cornell school, the possibilities of which are more amazing and more concrete than those of any other corner of avian research today. This time hearing, rather than voice, is under investigation by means of conditioned reflexes to a range of sound which, during the conditioning of the experimental birds, had been followed by a mild electric shock from the feeding table. Fortunately, all three birds appear to be able to hear the full range of their own songs,—let us hope the same may prove true for birds of more extreme vocal ranges! The outstanding fact ascertained is the limited range of hearing. Normal human range runs from sound of about 20 to about 16,000 cycles per second. Starlings hear only from 700 to 15,000, English Sparrows from 675 to 11,500, and Pigeons from 200 to 7,500 c. p. s. That is, Starlings cannot hear sounds below the second octave above middle C of the piano, about the centre or average of human tones. Pigeons cannot hear a full octave below man's usual upper limit of hearing.—T. T. McC.

For other references on social behavior see Nos. 13, 14, 19, 20, and 27. For references on territory see Nos. 13, 19, 20, 21, 22, 32, 33, 34.

ECOLOGY

48. Climatically Conditioned Differences in the Size of Sets within the Same Race of Birds.—(Klimatisch bedingte Schwankungen der Gelegegrösse innerhalb derselben Vogelrasse.) Hermann Grote. 1939. *Ornithologische Monatsberichte*, 47 : 52–54. The author has examined the normal size of set of 13 species in different European countries; for instance the Blackbird (*Turdus merula*) in Russia lays 5–7 eggs, in Germany 5–6, in Spain 3–4, Canary Islands 1–3; the Wren (*Troglodytes troglodytes*) lays 6–8 eggs in Russia, 6 in Germany, 5–6 in England, 3 in Sicily; the Magpie (*Pica pica*) lays 6–8 eggs in Russia, 5–7 in Germany, 5–6 in Switzerland and 3–6 in France. Extending Rensch's theory (see *Bird-Banding*, April '39, No. 38) that within a *Rassenkreis* birds of cooler regions usually lay larger sets than those in warmer regions, Grote finds this may hold within a race.

49. The Problem of Wildlife Destruction by Automobile Traffic.—L. M. Dickerson. 1939. *Journal Wildlife Management*, 3 : 104–116. A report on 5,505 miles of travel east of the Mississippi and 6,723 west; in the former region one bird was found killed each 250 miles, in the latter one each 80 miles. Findings of all animals are listed by months. Results of other authors are discussed and an appeal made for an intelligent study of roadside planning so as to lessen danger to wildlife.

50. The Comparative Ability of the Bob-White and the Ring-necked Pheasant to withstand Cold and Hunger.—Paul L. Errington. 1939. *Wilson Bulletin*, 51 : 22–37. The burden of this paper is the superior ability of *Phasianus colchicus torquatus*, as compared to *Colinus virginianus*, first, to "rustle" under severe conditions and avoid reduction into the danger zones of body-weight, and second, to survive under cold at lower percentages of mean normal body-weight. No attempt is made, however, to contrast mortality in quail from the factors under discussion, *i. e.* starvation plus cold, with potential mortality in pheasants from other aspects of climatic severity such as snow "balling", plumage icing, and head-fluid freezing. This is proper enough as long as the paper remains a physiological study of weight, temperature, and mortality, but in the concluding paragraphs the economic aspect is broached and a decision given to the effect that "the pheasant is better adapted to forage for a living when the ground is covered with snow." This should not have been said without reference to the pheasant's different and peculiar limits of toleration of snow. These are mentioned elsewhere in the paper for the regions in question and are at least commonly alleged as reasons for the failure of pheasants in more northern zones.

The strictly physiological and environmental material is well and carefully

handled, both as to data on "wild" birds collected or picked up dead and as to experimental birds starved under observed conditions. The numbers of data, however, are not great, and the potential accessory circumstances in any such study are legion. The critical zone as to cold resistance for Bob-white works out as between 55% and 68% of mean full weight, that for pheasants as between 55% and 60%. The margin is hardly great enough to be fully convincing without richer and more precise data and more controlled conditions. It would have been interesting to know the ratio between radiating surface area and mass in the two bodies.—T. T. McC.

51. Food of some Uncommon American Birds.—Clarence Cottam and Phoebe Knappen. 1939. *Auk*, 56 : 139-169. It is difficult to write an interesting treatise on stomach contents, yet this one, because it deals with so many large or aquatic birds whose habits, apt to be as obscure as their appearances are splendid, can only be reached through their stomachs, is of the most vivid interest, if not from beginning to end, at least through three quarters of its length. Perhaps in despair of doing more with the colossal amounts of material in the possession of the Food Habits Section, the authors have published all that can be ascertained from the stomachs of 47 obscure, very rare, or extinct species. Needless to say, the accounts are isolated and unrelated, and it is not possible to review them all. Many upset preconceived notions or less well-grounded published accounts. The Emperor Goose, (*Phalacrocorax canagica*) is a vegetable feeder, not a consumer of invertebrates, and the "fishy" taste, if it exists, has its origin in marine algae, not animal oils. The paradox that the Everglade Kite (*Rostrhamus sociabilis plumbeus*) feeds very specifically on the Everglade Snail is substantiated. Settlement and drainage have greatly reduced the range and abundance of the snail, and the numbers of the birds must, and do, follow. One of the most interesting items to the reviewer, was the series of stomachs of the Slender-billed Shearwater (*Puffinus tenuirostris*) from Alaskan waters in July, with no fish, but with meals of pelagic invertebrates, showing that this species, and doubtless *griseus* as well, can be independent of the small fish which usually fill their gullets.—T. T. McC.

52. Food of Bob-white in Wisconsin.—Paul L. Errington. 1939. *Auk*, 56 : 170-173. Most studies of the annual cycle have necessarily shied off from one important cyclic phenomenon—the change to and from animal food in the spring and summer. This brief paper gives a very substantial picture of this change for *Colinus virginianus*. Adults taken between April 4 and May 10 show only 4% animal food by bulk, a series between May 22 and June 24, 29%, adults from July 5 to July 29 only 14%, but young between July 18 and August 5, 83%, six specimens of unstated age between August 1 and October 5, 15%, and ten specimens in November (unknown age) only 2%. Winter food habits have been covered in another report (Errington and Hammerstrom, Research Bull. Iowa Agric. Exp. Sta. 1936). A large amount of detail on the cycle of vegetable food in spring, summer, and fall, is also presented in the present publication.—T. T. McC.

53. Food of Game Ducks in the United States and Canada.—A. C. Martin and F. M. Uhler. 1939. *U. S. Dept. Agr. Tech. Bull. No. 634*. 156 pp. 40 cents. An excellent handbook, 90 pages being devoted to "principal duck foods: their identification, value, and range"; and 37 to "propagation of waterfowl food plants and development of feeding grounds." Problems with introduced pests are discussed, as well as the disastrous effects of drainage. This valuable book is provided with an index and a bibliography of 91 titles, while water plants are pictured in a series of 153 fine plates.

ANIMAL NUMBERS

54. Annual Report 1937-1938. Bureau of Animal Population.—1938. University of Oxford : 1-36. An interesting discussion of "relation between numbers, reproduction and mortality" with suggested classifications of eight "points at which censuses of a population should be made" and nine categories of "causes of death in a population."

55. On Three Bird Censuses in Woodland in Northern Rhodesia.—J. M. Winterbottom. 1938. *Journal Animal Ecology*, 7 : 266-271. Censuses following Forbes' and Gross' method of counting every bird seen on "a front of 20 yards." Three censuses over woodland covering 110 acres "gave 287 birds of 51 species, an average of 2.6 per acre."

56. The Bird Population of Lake Shore Site on Lake Nyasa, August, 1937.—J. M. Winterbottom. 1938. *The Ostrich*, 9 (1) : 27-34. The author compares his results with Raunkaier's formula and finds them atypical.

57. Winter Bird Populations of the Cleveland Region—1938-1939.—Edited by John Aldrich. 1939. *Bird Calendar of the Cleveland Bird Club*. Interesting results from winter censuses of the same areas as studied for Bird-Lore's Breeding Bird censuses. The greatest concentrations are "in shrubby areas, particularly swamp shrub; and the lowest concentrations are in the grassland, particularly of the more barren sand-dune type." A table is given showing "ecological succession of winter resident birds", 10 species occurring in only one habitat, while 10 others were found in from two to seven habitats.

58. The Irish Gannet Colonies, 1938.—S. Marchant. 1939. *British Birds*, 32 : 320-325. This is the ninth in a series of counts of the Gannet Colonies of the British Isles. It deals with two rocks off the shores of Cork and Kerry, the Little Skellig, with some 9-10,000 pairs, which had to be estimated from a boat, and Bull Rock, with between 442 and 500 pairs, where landing and a relatively precise count was possible. There is little room to believe that the numbers in either case have undergone much recent change.—T. T. McC.

WILDLIFE AND CONSERVATION

59. Eleven Years' Birding in Massachusetts.—Ludlow Griscom. 1939. *Bulletin Massachusetts Audubon Society*, 23 (4) : 2-6. "Persecution or no persecution, there can never be a larger supply of any bird than the maximum population that can be cared for in the required breeding habitat remaining." Speaking of the increasing poverty of the bird life in and near our towns, he insists that "some unspoiled and undisturbed habitats must be preserved in every State of the Union."

60. Wildlife of the Atlantic Coast Salt Marshes.—W. L. McAtee. 1939. *U. S. Dept. Agriculture, Cir. No. 520*. 28 p. 10 cents. A fine account of the plants, birds and other wildlife of this interesting region. "That wildlife enjoys living in general as much as man, and probably in many ways even more, is a thought that should never be entirely out of mind. Man assumes dominion over wildlife and exercises it as he can, but in so doing he should as far as possible respect its right to existence, to its chosen home, and to undisturbed enjoyment of its way of life."

Other references: Suggestions on Attracting Birds, with References to Available Literature. U. S. Dept. Agr. Bur. Biol. Survey, Wildlife Research leaflet BS-131.

Our Nation's Forests, Rosalie Edge, Pub. 73. Emergency Conservation Committee, 734 Lexington Avenue, New York.

Conservation—Come and Get it! Rosalie Edge. Pub. 75.

Range Restoration. Ira N. Gabrielson, *Bird-Lore*, April '39.

Game Policy—Model 1930. Aldo Leopold, *Bird-Lore*, April '39.

BOOKS

61. A Field Guide to the Birds.—Revised and Enlarged. Roger T. Peterson. 1939. Boston. Houghton. 180 pp. \$2.75. This book has been of inestimable value to bird students in the last five years; the new edition will be of even greater value. The area covered has been extended from the 90th to the 100th meridian; information is given as to size of the birds, songs, and range, while a most useful addition consists in cross-references between the text and plates. A number of line cuts have been added and four new plates. Peterson's Guide is a masterpiece

for the identification of birds east of the Rockies and indispensable to all bird students in this region.

62. The Junior Book of Birds.—Roger T. Peterson. 1939. Boston. Houghton. 92 pp. \$2.00. Mr. Peterson has a happy gift of writing interestingly and sympathetically for children, with no hint of condescending juvenile twang, nature faking nor sentimentality. Twenty-three species from the Loon to the Towhee are treated in lively, stimulating fashion with border sketches that are utterly fascinating. The color plates, however, are not up to the high standard of Mr. Peterson's writings and pictures; they show the effects of a long and useful life.

63. Nature Photography Around the Year.—Percy A. Morris. 1938. New York. Appleton-Century. 251 pp. \$4.00. This book, written for "the great army of nature lovers who have had little or no experience with a camera", and "the experienced photographer who has had little training in natural history", should serve its purpose well. After an introductory chapter on photography (which the reviewer wishes had been longer), the year is taken up month by month with descriptions of the natural objects suitable to photograph and methods for so doing. The range of interest and information is amazing—clouds, butterflies, mushrooms, baby birds, snails, flowers, mammals, snakes, etc. Illustrations are given with notations on exposure and other details. There is an index and a bibliography which might well have been extended. This fascinating book will open new fields to those of us who tend to specialize in our nature interests.

64. Birds.—Gayle Pickwell. 1939. New York. McGraw-Hill Book Co. Qto. 252 pp. \$3.50. Dr. Pickwell of Horned Lark fame gives us here an entertaining popular account of "bird homes and home life, bird foods and feeding habits, bird travels, and bird feathers", illustrated with a wealth of photographs and with information drawn from New York, Illinois, Nebraska and California. He tells us: "Birds cannot be labeled 'good' or 'bad' because they do, or do not, eat insects. . . . Like a bird because it is a bird, a creature of sheer fascination. . . . Birds are sufficient in themselves. They are their own reward." In an interesting chapter on "How birds are Protected from their Enemies", the author leans heavily on Thayer and believes that white patches are "distractive" to enemies, rather than "directive" to members of the species. Lorenz' theory of releasers is not mentioned. His treatment of injury feigning is sane.

There are instructive chapters on the "Kinds of Birds," giving the characteristics of each order and many families. The accounts of territory in the Horned Lark and of the home life of the American Pipit on Mt. Rainier are full of interest. The Cowbird chapter is disappointing. "Cowbirds, male and female, usually have but one mate, and establish regular territories like other birds, as Dr. Friedmann has shown." He reiterates the ten day incubation myth. Apparently he is not acquainted with recent studies on this species by Dr. Hann and the reviewer.

Under "Further aids in Knowing Birds" a short bibliography is given, but no mention is made of the bird societies nor bird magazines. To sum up, the book has many admirable qualities, but it is a pity that before publishing such an ambitious, handsomely got up volume, the author should not have acquainted himself thoroughly with the current literature.

65. Wildfowling with a Camera.—Lorene Squire. 1938. Philadelphia. Lippincott. Qto. 217 pp. and 100 plates. \$7.50. A gorgeous book with breathtaking pictures of ducks and geese, Willets and Dowitchers. Difficulties and discouragements are inherent in Miss Squire's wildfowling. "If, out of forty negatives, there is one that can be made into a print that expresses something of the beauty and motion and fascinating pattern of wild duck flight I am entirely satisfied." In vivid, intimate words she describes her subjects—the ducks that come to the Kansas slough in the fall, the flocks of shorebirds "busily intent on their feeding", the majestic flight of wild geese, the baby Canvasbacks, "bright jonquil yellow, marked with brown", eagerly pattering after their mother in northern Canada. Few of the photographs are sharp. The effect is often like an

etching, and the pictures bring the feeling and mystery of the marshes. A splendid book for a gift.

66. Animal Neighbors of the Countryside.—Joseph W. Lippincott. Philadelphia. Lippincott. 272 pp. \$2.50. This is a pleasant book about the lives of many of the common vertebrates. Besides the interesting facts and amusing stories about life histories, the charming illustrations by Lynn Bogue Hunt should ensure its wide circulation among younger readers.—Constance Nice.

67. The Watcher at the Nest. Margaret Morse Nice. 1939. New York. Macmillan. 154 pp. \$2.00—A generation or two ago Bradford Torrey, Frank Bolles and a dozen others found a public and a market for simple and sincere account of the lives and surroundings of obscure birds and mammals. It has been a long time since such volumes have been able to make their way without being atrociously nature-faked or reduced to the sickening accents of pseudo-juvenility.

In the meanwhile a great deal of increasingly turgid water has flowed under the bridges of these quiet streams. The naive delight in the revelation of the minor secrets of nature has been replaced by the consuming ambition to bring it all under the formulas of the latest psychological fad. While Torrey wrote for a quiet audience of rural naturalists in still-Victorian New England, Mrs. Nice's every word must pass under the hor-rimms of a thousand graduates of Junior Colleges, whose memories of their biology course are a trifle vague but for an aggressive conviction that it's all easily susceptible to a mechanistic explanation and that, above all, you mustn't be sentimental or, (luscious verbal plum!),—anthropomorphic. Can Mrs. Nice get away with it? If so, she is doing, if not a worthier, at least a more difficult, thing than all the worthies did half a century ago, and, she acquires merit in proportion.

Whether in the first half-dozen essays, which are retellings of the epic of the Song Sparrows, and in which the author bodies forth in "real life" the whole range of modern bird psychology, or in the later numbers,—earlier memories which must depend in greater degree on sheer description and the charm of the simple and enthusiastic style, the book is *good work*, whether as zoology or as literature. If it fails, the reasons will be social, because the literary type is dead, not because the exponent is not a master.

It is as foreign to the nature of the author as it is to the character of her material to represent birds as anything else than purposeful individuals adapting themselves to circumstances. The pattern Mrs. Nice has advocated so long and played so large a part in building up is shot with increasing degrees of flexibility and variation as the intimacy and continuity of the account increases. Sometimes the reviewer wishes more accent were layed on the flexibility, less on the pattern. The rose-hedge imbroglio came at a time when song was in abeyance, but it called for song, and Uno and 4 M could and did use it copiously. When Una was moved to violate the territorial code unsupported by Uno, she took over many of his functions, then, her object gained, fell back into her prescribed rôle. Uno transformed his behavior in response to the vagaries of three successive wives in matters as basic as feeding or not feeding the young. Dandelion adapted herself perfectly to changeling young born a week ahead. The pattern has become as rigid as an india-rubber band.

If anyone is laboring under the manic-depressive conviction (perhaps specific in reviewers) that all the dullness in the world is finding its way into the ornithological magazines, this is the best medicine that has been distilled these many years.—T. T. McC.

68. A Gathering of Birds.—Donald Culross Peattie. April, 1939, pp. i-xii+379. Illustrated by Edward Shenton, New York, Dodd, Mead and Co. \$3.00. For this anthology of ornithological prose, Mr. Peattie has selected extracts from the writings of nineteen naturalists who have written on the subject of birds from 1753 to the present day. The first selections are from the pen of William Henry Hudson, the last gleaned from John James Audubon; in between and in the order named, come John Muir, Gilbert White, Cherry Kearton, Gustav

Eckstein, Peter Kalm, Comte de Buffon, Robert Cushman Murphy, Richard Jefferies, Thomas Nuttall, William Beebe, Philip Henry Gosse, Alexander Wilson, Alfred Russell Wallace, Elliot Coues, Frank M. Chapman, Sir Edward Grey, and Henry David Thoreau. Mr. Peattie introduces each of his authors with a brief, sympathetic outline of life and career, and as the reader peruses the book he is often aware that the beautifully written biographical sketch by Mr. Peattie is superior both in workmanship and expression to the selection from the author who is being thus eloquently introduced.

While the reviewer has no serious criticism of the choice of naturalists and the selection from their writings, it is difficult to follow the reasons for the hap-hazard sequence in which they are arranged, and he also wonders why some were selected at all. It is an easy matter to choose off-hand an additional half dozen, who could have more than held their own in the company that Mr. Peattie has brought together. The omission of William Brewster is most conspicuous.—J. L. P.