

Grackle, Wood Thrush, Mourning Dove, and Starling (majority). Some unidentified birds contributed: Sparrow feathers other than English, small lemon-yellow feathers, and some possibly from a warbler. Conspicuous by their complete absence were the remains of insects and mammals. A notable feature was the finding of the exoskeletal parts of at least ten crayfish.

Other occupants of the same tree included a nest of Starlings eighteen inches below the owls and a nest of Flickers fifteen feet below (six feet from the ground).—  
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## RECENT LITERATURE

Reviews by Margaret M. Nice

### BANDING AND MIGRATION

1. **Banding in North America.** *Bird Banding Notes*. 1941. Vol. 3, No. 2: 25-55.—In 1939 436,648 birds were banded in North America, in 1940 428,185, the total since 1920 being 3,712,327, with total "returns" of 234,939. This comes to 7 per cent of the total up to 1939, but since the method of counting "returns" differs from that used in Europe, these figures cannot be compared with banding returns in other countries. Birds banded in largest numbers (in 5 figures both years) were Chimney Swifts, Juncos, White-throated Sparrows, Common Terns, Pintails, and Herring Gulls.

A Caspian Tern, "banded as a chick on July 14, 1927, on Shoe Island in northern Lake Michigan, by W. I. Lyon, was found dead near Whitby, York County, England, during August 1939. This is the first report received of a bird banded in America and recovered in England, and so far as known it is the first record of the American race of the Caspian Tern to be captured on the eastern side of the Atlantic." A Great Skua banded as a nestling July 3, 1939 in the Shetland Islands was found dead near Swampscott, Mass., Feb. 4, 1940. Two Atlantic Kittiwakes banded on Kharlov Island, near Murmansk, U.S.S.R. have been killed in Newfoundland when less than six months old.

2. **Bird Banding.** O. A. Stevens and Geoffrey Gill. 1941. *Turtax News*, 19(1). 2pp. A good, brief account for the layman.

3. **Bird Banding.**—James J. McDarra. 1941. *Emu*, 40: 290-304. A history of the movement, especially in North America, with recommendations for starting banding in Australia on a national basis.

4. **Planned Banding Gives Valuable Results.**—Miles D. Pirnie. 1941. *Inland Bird-Banding Notes*, 13 (1): 3. A plea for "continued, regular and long-time banding." From 1928 on the Michigan Department of Conservation has banded ducks at Munuscong State Park, and the author has done likewise at the W. K. Kellogg Bird Sanctuary for the past nine seasons. In 1928-30 with 3½ months of shooting 20 per cent of the Black Ducks marked at Munuscong were reported in the first season; now with a 30 day season, no baiting and no live decoys, the percentage has dropped to 12. At the same time "returns" in the second and third year are increasing. One Mallard lived at least nine years.

5. **The Dispersal of Wild Ducks from the W. K. Kellogg Bird Sanctuary, near Battle Creek, Michigan.**—M. D. Pirnie. 1940. *Michigan Acad. Sci., Arts, and Letters*, 26: 251-259. Of 4,113 Black Ducks (*Anas rubripes*) banded from 1931-9, 12.5 per cent were recovered; of 1,746 Mallards (*Anas platyrhynchos*)

10.4 per cent, of 237 other species 12.2 per cent. Maps are given showing that in "their fall dispersal from southern Michigan some Black Ducks and some Mallards travel as far as 200 or more miles west, north, or east." "Recovery of 22 banded Black Ducks in northern Ontario in spring and early summer strongly indicates that this is the nesting home of many of the individuals leg-banded in this study." "A Black Duck shot in Idaho and another on the west coast of Alaska confirm the western expansion of range . . . in recent years."

**6. About Starlings and Other Birds.**—Paul E. Downing. 1941. *Inland Bird-Banding News*, 13(1): 6. In three years 5,000 Starlings have been banded at a rate in Chicago; 600 (12%) have been taken as returns one or two years after banding. Two hundred (4%) have been recovered at a distance. One banded in Jan. 1938 and retaken in Chicago in Jan. 1939, was killed at Dallas, Texas in Jan. 1940.

**7. The Migration of the Spotted Flycatcher.** (Vom Zug des Grauen Fliegenschnäppers, *Muscicapa striata striata* (Pallas).)—G. Creutz. 1941. *Vogelzug*, 12: 1-14. A review of returns and recoveries of this species banded in Germany and other countries. The birds migrate in two directions—southwest and southeast; four have been taken in central Africa. Adults return to their homes with entire faithfulness, ten came back to the same spot, and one close by. As to the young, 24 returned to the birthplace, 22 others were found from 3-16 kilometers distant, and six others from 40-150 kilometers. Two birds reached the age of six years.

**8. Homing Instinct of the Red-winged Blackbird.**—R. D. Manwell 1941. *Auk*, 58: 184-187. One hundred and thirty-three male *Agelaius phoeniceus* were released at fifteen localities from 2-210 miles in all directions from the place of capture; there were some returns from every experiment but one—47 returns in all. Most of the territory was presumably unknown to the birds; they were often released next to bodies of water. There "was no particular difference on the proportion of returns whether the distances were great or small." p. 185.

Banding was employed in Numbers 9, 10, 12, 22, 48 and 52.

## LIFE HISTORY

**9. A Brief Summary of the History of the Yellow-eyed Penguin.**—L. E. Richdale. 1941. *Emu*, 40: 265-387. An excellent, detailed study for five years on *Megadyptes antipodes*; 700 visits were made to colonies on the Otago Peninsula, New Zealand. All the birds were marked with large bands and the numbers could be read with a telescope from the hide. There were 70 breeding birds and 30 "unemployed"—yearlings, two-year-olds and a few unmated adults. The birds are resident and spend the night on land. Sex was determined by examination of the birds at the nest "when the eggs were being laid"; the male was usually bigger and heavier than his mate, just as Geothe (1937) found with Herring Gulls. The nesting sites were inhabited by the males from August. "During this 'pre-egg' stage much fasting is indulged in." p. 271. The nests may be a half mile from the sea. Three pairs nested together for four seasons, one pair for three seasons, and 13 for two seasons. One male had a different mate during each of four seasons, while six birds had different ones during three seasons. Six deaths have occurred; there have been some desertions and reshufflings, while some birds remain unmated. They breed at just under three years. Both incubate, from one to five days at a time, while the mate goes to sea. Incubation lasts 40-50 days. Second sets are never laid if the first is lost. Of 98 pairs of eggs, in 73 cases both hatched, in 22 one hatched, in three neither hatched; in four nests with single eggs all hatched.

The young weigh 3 oz. at hatching, 10½ oz. at the end of a week, gain a pound

a week for 13 weeks, then remain stationary. The young are fed once each day by each parent. They go to sea at 100-115 days, leaving sooner if the nest is in sight of the sea; they are not deserted beforehand by their parents. One hundred and eleven chicks were raised from the 170 eggs that hatched—55 per cent of the 200 eggs laid. The molt for non-parents starts in February, while parents molt after the chicks are reared—in late February and March. The molt takes 24 days. The average weight of 25 males in February and March was 17.5 lbs. at the start and 9.6 lbs. at the finish; of females 16.17 lbs. and 9.16 lbs. respectively, of juvenals 15 and 8.23 lbs.

An interesting chart is given illustrating the full cycle of a Penguin from egg to molt after breeding at three years of age. There are good photographs of family scenes, of "welcome after one bird has returned home," etc. The physical development of the nestling is described in detail. The course of life at one nest was studied intensively; some description is given of courtship, of the repulse of unwelcome suitors and of the behavior of the mates and their care of the young. An admirable study.

**10. Random Notes on the Genus *Eudyptula* on the Otago Peninsula, New Zealand.**—L. E. Richdale. 1941. *Emu*, 40: 180-217. The Little Blue Penguin (*Eudyptula m. minor*) was studied with the help of ringing. Incubation lasts 38 days or more. As soon as the second egg is laid, the female goes to the sea "for much-needed food", and her mate takes the nest. An account is given of the growth of the chicks, both in weight and feathering. Parents do not lose weight while feeding. The young are deserted when full grown and leave for the sea after a few days. Then the adults molt. Before molting "a bird is of an enormous size in comparison with a normal bird." One bird lost 43.4 per cent of its weight during its fourteen days of molt.

**11. Production of Pheasants in North Central Iowa in 1939.**—T. S. Baskett. 1941. *Journ. Wildlife Management*, 5: 168-174. On 1,520 acres 27 of 72 nests were successful—37.5 per cent; 236 of 807 eggs hatched—29.3 per cent. "It was estimated that 90 young were produced by 50 adult pheasants per section."

**12. Ring-billed Gulls of the Atlantic Coast.**—Harrison F. Lewis. 1941. *Wilson Bulletin*, 53: 22-30. Six groups of *Larus delawarensis* reached 3,538 in 1940. Each colony "crowd together in a compact group", while Herring, Great Black-backed Gulls and American Eiders nest all over the islands. They ordinarily feed the young on small fish; when these are lacking they give them berries, but the young soon die, many being killed by adults. In 1939 spring was exceptionally late; when the gulls arrived they found snow on their nesting grounds and ice on the sea. The birds stood around with much shrill crying; they built a few nests and laid a few eggs, all of which were eaten. They suddenly left about a week after their arrival. From 1923-39 2,122 young gulls have been banded; there have been 48 distant recoveries, some as far away as Florida and Mississippi.

**13. Nesting Behavior of the Atlantic Murre.**—R. A. Johnson. 1941. *Auk*, 58: 153-163. Since in previous studies *Uria a. aalge* in the Gulf of St. Lawrence was found to be greatly disturbed by banding or staining with oils, the author spent 60 consecutive hours watching a portion of a colony from a tent, the individuals being "identified by a combination of size, color, plumage condition and 'white-eyed' character." Colony organization consisted in "indefinite confederation of groups of birds." The first eggs to hatch are those in the center. There are three functional areas: breeding sites, loitering ground, and feeding area. "Courting birds often carry food fish to the nest site and there hold them in the beak from one to four hours." In contrast to gulls and terns, Murres know their own eggs. "Eggs out of place are returned by their owners to the old nest site, and are usually completely ignored by strange birds. Two different pairs of birds at different times incubated broken eggs and empty shells or pieces of shells.

This indicates that the birds may rapidly adjust to a change in the character of the egg", p. 163. One adult that was incubating a piped egg adopted a small young, but a fish as large as the baby was brought and it could not take it. Usually strange young are ignored; after "about four days of age, young do not approach strange adults." Adults "having lost a piped egg or small young have been observed to return to the old nest site and perform the food-offering ceremony for a period of two or three days following the loss", p. 163. Periods on the nest lasted from 16 to 24 hours. A very interesting study.

**14. Social Nesting Habits of *Crotophaga major*.**—David E. Davis. 1941. *Auk*, 58: 179–183. An excellent study carried on in British Guiana during June and July 1939. The birds live in small flocks, composed of pairs. "Each flock of *C. major* lives in a definite area and maintains a territory. This territory is protected by the good will of the neighbors; no severe fighting was ever recorded. . . . This maintenance of a territory by a group of pairs without any severe fighting is in great contrast to the behavior of *C. ani*", p. 181. The nest contains the eggs laid by several females. As to the bird's vocabulary, five notes were distinguished: flock call; alarm call ("when some unknown movement frightens the birds"); gurgling note—to maintain territory; danger note for hawks and other flying predators; a *kuk* that was "perhaps an indication of perplexity", p. 182.

**15. Three Years with the Ivory-billed Woodpecker, America's Rarest Bird.**—J. T. Tanner. 1941. *Audubon Magazine* [formerly *Bird-Lore*], 43: 5–14. The author believes there are only 24 individual *Campephilus principalis* in existence at present. On the Singer tract in Louisiana the relative abundance was one Ivory-bill to 36 Pileated Woodpeckers and to 126 Red-bellied Woodpeckers. The primary food is wood-boring insects in large trees dead for two years; if food is sufficient they remain in a tract three to four miles across. They live in pairs and keep constantly in touch with each other. They drive hawks away from their nests or young. They roost singly in holes dug for the purpose; and are almost the last bird to rise in the morning. No antagonism was shown when a strange pair came into the vicinity. They breed from January to May, laying one to four eggs. The male incubates and broods at night, as is the custom in woodpeckers; the female shares incubation during the daytime, the birds usually changing eight times a day. Fledging takes about five weeks; at first the young are fed about 30 times a day, later about 15. They are fed for two months or longer after leaving the nest. They usually stay until the following spring, but a young male remained through the next nesting season, although his mother tried to drive him off, but his father "paid little or no attention to him." Suggestions are made for management in hopes this magnificent bird may be saved from extinction.

**16. The Nesting Biology of the Wryneck.** (Beitrag zur Kenntnis der Brutbiologie des Wendehalses (*Jynx torquilla torquilla* L.)). —Josef Bussmann. 1941. *Arch. suisses d'Ornith.*, 1 (11): 467–480. A study made with the author's improved terragraph; the females were marked with red on the tail for identification when the nests were watched. The female incubated at night, the male shared duties in the daytime, coming 8–10 times a day. There was much brooding on cold, rainy days, but no brooding after the twelfth day. Male and female fed equally; ant pupae were the chief food, but when on rainy days these were unobtainable, caterpillars and spiders were brought, but in insufficient quantities so that the young lost weight at such times. They left the nest at about 21 days and were cared for by the parents for eleven days longer. Many all-day feeding records were obtained with the terragraph. At the nest with eight young at 4, 6 and 7 days, these came to 70, 120, 136; from 8–22 days they ranged from 128–230 feedings per day, the median being 180. Six young were fed 40, 107 and 100

times at 4, 6 and 7 days, and from 128–200 times—median 168—when 8–20 days old.

**17. The Post Embryonic Development of the Wryneck.** (Beitrag zur Kenntnis der postembryonalen Entwicklung des Wendehalses (*Jynx t. torquilla* L.)) Ernst Sutter. 1941. *Arch. suisses d'Ornith.*, 1 (11): 481–508. A fine example of a study of real significance, rather than the usual mass of unrelated detail. Table 1 gives the weights of young and adults and body measurements of both with the relationship in size between the two stages. A summary is given of the chief changes in development from hatching to the attainment of adult weight at about eight weeks, and an illuminating chart showing rapid and slow growth of bill, wings, legs, feathers, etc. Increase in weight is rapid till the 12th–13th day, after which growth in feathers is intensive. Comparisons are made with nesting studies on two woodpeckers-Flicker (Sherman, 1910) and Great Spotted Woodpecker (Tracy, 1933). Stresemann says that young Picidae gape (*sperrren*), Heinroth says they do not. The Wrynecks open their bills, but gaping is oriented much earlier than with passerines, the three day nestling making searching movements for the parental bill and snapping at it in a way impossible for a passerine. The young begged when the shadow of a leaf fell over the entrance hole. Three to four young are fed at a time. Excellent pictures are given of the young birds from hatching to fledging.

**18. Courtship of the Lyrebird.**—A. G. Campbell. 1941. *Emu*, 40: 357–364. Observations on a very tame pair that took worms and crumbs from the author. The male and female each had a separate "territory." The male sang much and gave magnificent displays, but his mate was often out of sight. She sang to some extent. She built her nest 25 feet up in a tree; incubated her single egg for seven weeks, but was off 7–8 hours each day! The young left the nest at 45 days. (An egg placed under a fowl hatched in 4 weeks; John E. Ward, *Bull. N. Y. Zool. Soc.*, 43(5): 146.)

**19. Behavior of the Bewick Wren.**—Edwin V. Miller. 1941. *Condor*, 43: 81–99. Vigor's Wren (*Thryomanes bewicki spilurus*) on the campus at Berkeley, California, chased Wren-Tits, Spotted Towhees and Oregon Juncos and was chased by Wren-Tits and Song Sparrows. The male forages in trees, while the female keeps a foot or two off the ground. "The female followed the course set by the male and was even fed by him", p. 85. Males sang as often as eighteen times a minute. A variety of notes is used by both sexes; these assist in keeping the pair together. The female has a note that induces the male to feed her, given during building and incubation, and two other notes before copulation. The male shows territorial reactions toward other males; "they would stop foraging and give harsh vocal utterances, and follow each other along the edge of their territories", p. 90. "Territorial conflicts, which in *spilurus* are no more than vocal battles, occur frequently along boundaries . . . I never saw any males fight or invade a neighbor's territory", p. 91. "Bewick Wrens do not use posturing . . . as aids in the maintenance of territory", p. 92. They bathe both in dust and water.

In Oklahoma I recorded a display by *T. b. cryptus* on several occasions: Apr. 6, a male was courting a female by spreading his wings and tail to the utmost, but she chased him. May 22 and 29, a male, unmated, was guarding his nest box from a female English Sparrow by spreading out his wings and tail in turkey-cock attitude.

**20. The Nesting Biology of the Common Redstart.** (Beitrag zur Kenntnis der Brutbiologie des Gartenrötels (*Phoenicurus phoenicurus* L.))—Josef Bussmann. 1940. *Ornith. Beob.* 37: 51–59. Another of Herr Bussmann's admirable studies with the terragraph. Three broods were watched. Incubation lasts 13 days and is by the female. During 14 hours of direct observation the bird brooded 60 per cent of the time during the third day, 50 per cent on the fourth and 40 per cent

on the fifth. A graph gives the daily average weight of the young, the average number of feedings per day, and growth of first primary and middle tail feather; the highest weight and greatest numbers of feedings coincide—at 9 to 11 and 12 days. The number of feedings increase to the 11th day, then decrease (the exact figures are not given); weight reaches a peak at 9–12 days, then drops a little.

**21. Observations on the Reed Warbler in the Helsinki Region in the Summers of 1938–39.** (Beobachtungen über den Teichrohrsänger in der Gegend von Helsinki in den Sommern 1938–39.)—Olavi Leivo. 1940. *Ornis Fennica*, 17: 66–70. *Acrocephalus s. scirpaceus* is extending its range into southern Finland. The migration is prolonged, new pairs appearing between June 24 and July 4. In several localities the number of males has about doubled since 1937 and the proportion of unmated males has decreased. In 1937 only 50 per cent had mates, in 1938 50–65 per cent, in 1939 about 70.

**22. The Prothonotary Warbler, a Comparison of Nesting Conditions in Tennessee and Michigan.**—L. H. Walkinshaw. 1941. *Wilson Bulletin*, 53: 3–21. A very interesting paper based on a study of 121 nests of *Protonotaria citrea* in Michigan from 1930–1940 and 44 in Tennessee in 1939–40. "In Michigan at the northern edge of the range of the species, the birds are larger (Bergmann's Rule), nesting starts later, less time is spent in preparatory activities before laying, eggs and egg sets are larger (9 per cent during 1939), the species is typically single-brooded, only occasionally attempting second broods (providing that the first attempt is successful)." p. 19. In Tennessee "the species is typically double-brooded." Only 28 of the 121 Michigan nests were successful (23 per cent). "Out of 413 eggs, 159 (38.47 per cent) hatched and 100 young were fledged (.87 per total nest; 3.78 per successful nest). The fledging success was 25.66 per cent of eggs laid." Of 30 nests in Tennessee "19 were successful (63.33 per cent) while out of 139 eggs, 78 hatched and all the young lived to leave the nest or 56.11 per cent fledging success of eggs laid; 2.6 young were fledged per total nest; 4.1 per successful nest."

"The House Wren in Michigan is the most aggressive opponent of the warbler." In 1940, apparently due to the cold winter, House Wrens were much less common and the warblers had the best success of any year.

The return percentage of 66 for adult males compares well with results found for Song Sparrows and Ovenbirds; the percentage for females was 20, for 49 young 4. A very interesting table is given of nesting success in 10 studies by Americans of hole-nesting species—Bluebirds, Tree Swallows, House Wrens and Prothonotary Warblers: 2,993 young were fledged from 5,057 eggs or 58.8 per cent; without the Michigan warblers it came to 61.9 per cent, which is more typical of results with hole-nesting species in Europe—around 66 per cent.

**23. Development of Nestling Yellow-headed Blackbirds.**—Reed Fautin. 1941. *Auk*, 58: 215–232. There is marked difference in size when young *Xanthocephalus xanthocephalus* leave the nest at the age of ten days; male nestlings at this time averaged 54 grams, females 40; adults averaged 91 and 56 respectively. "The average number of feedings per hour for all ages and all times of the day was 9.6", p. 220, but we are not told how many hours were spent in observation. Only two males were seen assisting in the feeding.

From 443 eggs 314 nestlings hatched (71 per cent), but only 99 were fledged (22.4 per cent). This is low in comparison with six other studies of birds nesting in the open which averaged 43 per cent (Nice, 1937, *Trans. Linnaean Soc. N. Y.*, 4: 143). Kalmbach's figure of 52 per cent success cited by Fautin is supposedly based on *hatching*, not fledging, although two of the eleven cases actually are of fledging. In Fautin's Table 3 of "Nesting Success," Kalmbach's percentage is *hatching*, Perkins' is fledging, while McIlhenny's figure of 54 per cent is based on "seventy-four nests in which all the eggs hatched" (1937: 286), obviously a

very different matter from figures based on the number of eggs laid. A. A. Allen's 78 per cent success of 51 nests is a mystery; the only information I can find in his 1914 paper is: "of 51 nests of the Redwing observed in a limited area, the eggs of 14 were destroyed in this or a similar way", p. 108 [*i.e.* by Long-billed Marsh Wrens]; even if we make the entirely unwarranted assumption that the eggs of the 37 other nests all hatched and were fledged, that gives only 72.5 per cent. It is a pity for Mr. Kalmbach and Mr. Fautin to publish tables that are so misleading.

**24. Notes on Territory, Fighting and Display in the Chaffinch.**—David Lack. 1941. *British Birds*, 34: 216-219. For the "threat display" *Fringilla coelebs* sways forwards and downwards, exhibiting the white shoulder patch on extended wings and uttering "rapid, compressed, high-pitched song-phrases." Stuffed specimens elicited "great interest", but no attack. Trapped live birds were placed near a building pair; the male attacked the male, the female the female. But when they were feeding young, they did not attack trapped birds. Two pairs were kept in an aviary; the dominant pair nested, just as the Redbreasts did. "Possession of a territory is essential for breeding to occur", but "a territorial bird will come to tolerate another pair in its breeding territory."

**25. Some Michigan Notes on the Grasshopper Sparrow.**—L. H. Walkinshaw. 1940. *Jack-Pine Warbler*, 18: 50-59. Of eight nests of *Ammodramus savannarum australis* containing 33 eggs, twenty (60.6 per cent) hatched and eleven (33.3 per cent) were fledged. In one nest watched from a blind, small red ants started to attack the newly hatched and hatching young; the female arrived and ate them "one by one, somewhere between 50 and 60." Weights are given of eggs, young and adults. The female incubates and broods, both parents feed the young.

#### BIRD BEHAVIOR

**26. Hornbill Studies.**—R. E. and W. M. Moreau. 1940. *Ibis*: 639-656. An account of hand-rearing of young *Lophoceros melanoleucus* and *Bycanistes cristatus*. Three young of the former were taken when about 25 days old; they plastered up a slit in their box, just as they plaster up the hole after the mother breaks out. They used dung, vibrating their bills, when plastering. "B—but not A or C—would often accept a morsel of food he could not eat, shuffle about with it, proffer it to the others and, if they also refused it, would in the end add it to the plaster." p. 643. The young sat with their tails bent up, although not crowded in their box. They kept themselves and the box clean; they voided through the slit or picked up dung and waste food and put it outside. Flying came suddenly without any previous exercising of the wings.

A *Bycanistes*, completely naked, about ten days old was adopted; he tried to pull things over his naked body. He always evacuated in the same corner, taking no interest in the slit. "The young Hornbills were notably alert and responsive, comparable with corvines, but these qualities began to manifest themselves at a much earlier stage of physical development (probably unique among birds), while still unfeathered", p. 650.

**27. First Brood of Swallow Assisting to Feed Second Brood.**—Kenneth Williamson. 1941. *British Birds*, 34: 221-22. A first brood of *Hirundo r. rustica* helped sporadically to feed the second brood when the latter were four and eleven days old. "In view of the fact that sometimes food was brought to the young five and even six times in a single minute it is safe to assume that at least three and possibly four young of the first brood were occasionally engaged in helping to rear the young of the second."

**28. Enemy Recognition by the Song Sparrow.**—M. M. Nice and J. J. ter Pelkwyk. 1941. *Auk*, 58: 195-214. An account of reactions of *Melospiza*

*melodia* to enemies in the wild, and of hand-raised birds to mounted birds and cardboard models, particularly of owls.

**29. Birds Alarmed at Flying Bats.** (Vögel warnen vor fliegenden Fledermausen.)—Rudolf Berndt. 1940. *Orn. Monatsb.*, 48: 192–193. The author routed a bat from a nesting box in broad daylight; as it flew to another box, Pied Flycatchers (*Muscicapa hypoleuca*), Redstarts (*Ph. phoenicurus*) and Great and Blue Tits (*Parus major* and *caeruleus*) gave alarm notes and flew after it. At another time the same happened with a bat and Coal Titmouse (*Parus ater*). The suggestion is made that in these cases and also in the mobbing of owls that the birds respond to the “unusual and unknown.”

**30. [Mobbing a Teddy Bear]** Birds of the Rockingham District. Eric Sedgwick. 1940. *Emu*, 40: 237–245. Magpies (*Gymnorhina dorsalis*) were swooping in pairs at a toy teddy bear with glass eyes; Magpie Larks (*Grallina cyanoleuca*) on the ground within a few feet of the toy were calling excitedly, Miners (*Myzantha obscura*) scolded from the treetops, while a Butcher-bird (*Craticus torquatus*) added to the clamor, p. 245.

**31. On the “drawing-water ability” of the Great and Blue Tit.** (Ueber das “Putten” der Kohl- und Blaumeise.)—Ludwig Schuster. 1940. *Orn. Monatsb.*, 48: 192. At feeding stations where food is hung on strings a few *Parus major* and *caeruleus* will pull it up. Other birds do not learn the trick from those who do it.

**32. A Red Figwort as the Ideal Nearctic Bird-Flower.**—A. L. Pickens. 1941. *Condor*, 43: 100–102. The third installment of the *Condor* list of orniphilous flowers. “Scrophulariaceae continue to lead all plant families, and red, all colors among bird-visited native or introduced flowers found in the Nearctic region.”

**33. Nest Sanitation.**—R. H. Blair and B. W. Tucker. *British Birds*, 34: 206–215, 226–236. Nest sanitation prevents contamination of young birds and the betrayal of the nest site. It was described for the House Martin by Gilbert White in 1775, an article was devoted to it by Herrick in 1900 (*Auk*, 17: 100–103); Jourdain tabulated references and Groebbels (1937) gives 50 references. As a rule the excreta are first eaten, and later removed; in some instances there is a third stage in which the young evacuate on or over the edge of the nest. The active cooperation of the young is emphasized. It is the custom of half-fledged Willow-Warblers to defecate in a definite spot at the opening of the nest; once the dropping fell inside the entrance. “Without hesitation the nearest chick picked it up in its beak and laid it down in the proper spot”, p. 209. “Spring cleaning” is reported as occasionally happening with the Pied Flycatcher (*Muscicapa hypoleuca*) and Wryneck (*Jynx torquilla*): “on the day after the nestlings flew the parent birds returned and cleaned up every particle of excrement, leaving the nest-box clean”, p. 214.

A species list is given with details as to behavior of parents and young. Strangely enough with the Corn, Yellow and Cirl Buntings (*Emberiza calandra*, *citrinella* and *cirlus*) and Redbreast (*Eritacus rubecula*) it is stated that no faeces are “produced the first two to three days,” p. 229, 235; “the bulging of the posterior of very young nestlings suggested that no faeces might pass until some days after hatching,” p. 209.

**34. ‘Anting’; termites.**—Charles H. Blake. 1941. *Auk*, 58: 271. The two species of American ants recorded as used by birds in ‘anting’ are biting, not stinging ants. The author will identify any ants used by birds or termites attacked by birds, if they are sent to him at Lincoln, Mass., with data, “in 70–80% alcohol (‘rubbing alcohol’ will serve).”

See Nos. 48 and 49 for further data on behavior.

## EXPERIMENTS ON SEXUAL DIMORPHISM

35. **Sexual Dimorphism in the Cowbird, *Molothrus ater*.**—Allen J. Stanley. 1941. *Wilson Bulletin*, 53: 33–36. One hundred and fifty Cowbirds were trapped and kept in captivity on a balanced chick-mash diet; six or eight were kept together, sometimes the sexes together, sometimes not. "They soon became adjusted to captivity, as evidenced by their song and quiet behavior," in contrast to English Sparrows and Red-winged Blackbirds "which in our experience never become tractable." The males weighed 42–65 grams, averaging 50; the females 35–45, averaging 40. Males and females were castrated, deplumed and swabbed with theelin and testosterone propionate. The castrated birds did not sing. No effect was found on the plumage nor color of the iris. "Sexual dimorphism in the Cowbird is considered to be determined genetically."

## ECOLOGY

36. **Ecological Problems of Ornithology.** (Ökologische Probleme der Ornithologie).—Pontus Palmgren. 1941. *Journ. f. Ornith.* 89: 103–123. A discussion of Finnish studies of bird numbers and of daily activity. A great variety of factors influence the abundance of birds; for instance, food—insects are more abundant in birch woods than in conifers. Or nesting sites—Kinglets can use only spruce branches with hanging twigs, whereas the Chaffinch can use a multitude of sites, p. 113. Charts are given from Pynnönen (1939) on the roosting time of the Black and Great Spotted Woodpeckers (*Dryocopus martius*, *Dryobates major*) throughout the year, and two samples of all day records of incubation rhythm of each species; the larger species incubated in much longer spells than the smaller and in both the male was more devoted than the female. In spring birds came too early to bed in comparison with sunset and in fall too late, i.e. the days lengthened and shortened too rapidly for perfect adjustment to light values on the part of the birds.

37. **Distribution of Birds in Relation to Major Biotic Communities.**—Frank Pitelka. 1941. *Am. Midland Naturalist*, 25: 113–137. An examination of Merriam's life-zone theory; "in no way does it clarify, but rather misrepresents the relations of biotic communities", p. 135. "The fundamental and largest unit of plant-animal communities is the biome. A diagram and map of the major communities of North America show the relationship and relative size of the climaxes together with broad ecotones and extensive subclimaxes", p. 135. The chief biomes east of the Rockies are tundra, coniferous forest, deciduous forest and grassland. Maps are given showing the distribution of the Tetraonidae and a number of other birds. "Distribution of birds confined to a biome may be controlled more by availability of the niche, while species characteristic of seral stages in more than one biome may be limited more directly in distribution by physical factors." An important paper.

38. **The Question of the Recent Enriching of the Breeding Avifauna in Finland and Scandinavia, with Special Attention to Dessication in the Earlier Living Quarters of the Species.** (Zur Frage der neuzeitlichen Anreicherung der Brutvogelfauna in Fennoskandien mit besonderer Berücksichtigung der Austrocknung in den früheren Wohngebieten der Arten).—Olavi Kalela. 1940. *Ornis Fennica*, 17: 41–59. Southern species have come into Finland and Scandinavia during the last half of the 19th century. The author discusses the general drying of the climates of the earth, the terrible menace of soil erosion in the steppes and prairies of North and South America, Australia, South Africa and Russia. Half the new species are water birds, especially marsh birds. The new population trend of European species is from southwest to northeast. An example is the Black-necked Grebe (*Colymbus nigricollis*). Changes of water level have a great effect on bird life. A long bibliography is given.

**39. Some Remarks on Non-breeding in the Arctic, especially in North-east Greenland.**—C. G. and E. G. Bird. 1940. *Ibis*: 671-678. The Long-tailed Skua or Long-tailed Jaeger (*Stercorarius longicaudus*), Snowy Owl (*Nyctea nyctea*) and Greenland Falcon (*Falco rusticolus*) or White Gyrfalcon are almost entirely dependent on the lemming for food; this has a 3-6 year cycle, synchronous all over the Arctic; the correlation between the numbers of these birds and the lemming is complete. In 1936 and 1937, lemmings were abundant and the skuas and owls bred freely; in 1938 lemmings were absent, only one skua's nest was found and no owls seen, while falcons were scarce. The Arctic Tern (*Sterna paradisaea*), Sabine's Gull (*Xema sabini*) which is parasitic on the tern, and Common Eider (*Somateria molissima*) are dependent on ice conditions; "in bad ice years their nesting sites do not become available at the appropriate times," p. 673. 1936 was a fine breeding year; 1937 was a good lemming year, but the summer was cold and it is probable that few young survived due to the weather and bad ice conditions. In 1938 practically no birds but passerines bred; there were no lemmings; foxes and ermines ate eggs, while the sea ducks arrived late and did not attempt to breed. When adverse weather (a blizzard occurred on June 15, 1938) prevents display flights, shore birds may not breed. Sea-ducks and Divers (Loons) "exhibit the most complete non-breeding." The authors cannot explain the non-breeding of these species in 1938; they tentatively suggest that light conditions "affecting birds prior to the time they arrive on their breeding grounds" might have something to do with it.

**40. The Feeding Habits of *Larus f. fuscus* and *Larus a. argentatus* with especial attention to their Relationship to Gamebirds.** (Eine vorläufige Untersuchungen über die Nahrungsbiologie von *Larus f. fuscus* L. and *Larus a. argentatus* Pontopp., mit besonderer Berücksichtigung ihrer Bedeutung für die Pflege der jagdbaren Seevögel.)—G. Bergman, E. Fabricius and L. V. Hartman. 1940. *Ornis Fennica*, 17: 40-41. Lesser Black-backed and Herring Gulls have been accused of eating the downy young of ducks; the authors investigated over 1,500 pellets from a population of 575 *L. fuscus* and 147 *L. argentatus* that were nesting with 1,100 ducks of six species. In only 3 per cent of the pellets of *fuscus* and 1 per cent of *argentatus* were remains of birds found; almost all the food was fish. The gulls in this region near Helsingfors are not egg robbers; on the contrary ducks are more successful with their broods on islands with gulls than on those without them, apparently because the gulls keep off the crows.

**41. On the Relation of the Short-eared Owl to the Common Vole.**—J. M. McWilliam. 1941. *British Birds*, 34: 203-204. It is well known that when the field mouse (*Microtus agrestis*) becomes abundant *Asio flammeus* lays larger sets than otherwise. The author suggests that "to enable the Short-eared Owl to breed, some element obtained from the vole is essential, though the Owl can exist perfectly well without it."

**42. Hatchability of Pheasant Eggs in Relation to Some Known Temperatures.**—P. F. English. 1941. *Journ. Wildlife Management*, 5: 213-215. Eggs exposed to temperatures of 10° F. for five hours, to 16° for three hours, to 31° for three hours and to 85° for nine hours, then incubated, all hatched at about the same rate—79-93 per cent of the fertile eggs.

**43. The Recovery of Birds from Disaster.**—Ludlow Griscom. 1941. *Audubon Magazine* [formerly *Bird-Lore*], 43: 191-196. Killdeer, Phoebe and Myrtle Warblers suffered greatly in the winter of 1940; Woodcock, Tree Swallows, Brown Creepers, Golden-crowned Kinglets suffered also, while the numbers of Winter and Short-billed Marsh Wrens, Hermit Thrushes, Blue-headed Vireos and Savannah Sparrows were depleted. Killdeer and Woodcock had good breeding seasons in 1940 and have recovered to quite an extent; but Tree Swallows had a bad season and their numbers are still low. Purple Martins were almost extir-

pated from northern New Jersey to southern New Hampshire by "protracted cold rains in June 1903"; they have never recaptured any of this territory.

**44. The Season. Nashville Area.**—Harry C. Monk. 1941. *The Migrant*, 12: 16-17. During the present winter the total bird population around Nashville, Tennessee, is about 50 per cent of normal; one third of the species are at their lowest level in eight years. The following causes are suggested: the severe weather of January 1940, from which the Carolina Wrens, Killdeer, Kinglets, Winter Wrens and Hermit Thrushes particularly suffered; freezes of March and April, 1940 that destroyed all of the hackberry crop and other crops; "the near-drought now prevailing."

#### BIRD NUMBERS

**45. Tenth Annual Black Brant Census in California.**—James Moffitt. 1940. *California Fish and Game*, 26 (4): 381-389. In February 1940, 75,412 wintering *Branta bernicla nigricans* were counted, the second largest of nine consecutive counts, "exceeded only by that of 1935 when 125,153 brant were reported." The lowest count—13,819—was that of 1933. The birds "appear to be increasing in numbers."

**46. The Index of Heron Population, 1940.**—W. B. Alexander. 1941. *British Birds*, 34: 189-194. A decrease of 23 per cent was found, largely due, in all probability, "to the severity of the weather at the beginning of the year." "It seems probable that the principal cause of mortality among Herons and other fish-eating birds in a severe winter is starvation due to the freezing of pools, lakes, streams and rivers." Large heronries suffered more than small ones; 24 coastal heronries suffered 13 per cent decrease; 38 inland heronries 31 per cent.

#### BOOKS

**47. Adaptive Coloration in Animals.**—Hugh B. Cott. 1940. N. Y. Oxford University Press. 508 pp. \$8.50. A remarkable book presenting a convincing array of examples from the whole animal kingdom with a splendid array of photographs. The author has confined himself to "a special study of the various manifestations and functions of coloration in the interspecific relations of animals—that is to say, in the relations between predator and prey." "Security and sustenance" are the "two primary claims of life", p. XI. An animal "must eat, and avoid being eaten." "The modification of outward appearance by visual characters, directed towards a seeing public, and serving either to facilitate recognition or to frustrate it, has been one of the main results attained in the evolution of the higher animals; and such characters comprise some of the most astounding examples of adaptation in the whole field of biology", p. XII.

The book is divided into three parts—Concealment, Advertisement and Disguise. The methods by which concealment is attained are discussed scientifically and convincingly, particularly in regard to "colour resemblance", "Obliterative shading", "disruptive coloration", and "concealment of the shadow." Local races among mammals, birds and insects are considered: "The facts, then point unmistakably towards adaptation, and it is difficult to avoid the conclusion that the coloration of these mammals is to be explained in terms of concealment from predators." The same holds true for birds and insects.

Dr. Cott does not believe with Abbot Thayer that all coloration is concealing; in fact much of it is warning—aposematic. "The efficient reception of red light by the eye of diurnal birds is linked up with the extensive use, by utterly unlike organisms and structures, of orange, vermilion, crimson, and scarlet in typical bird-advertisements: and this, although their functions may be diametrically opposed—in the one case being attractive, in the form of flowers or fruit; in the other repellent, in the shape of dangerous or distasteful prey," p. 191. The same

is true of man. "Simplicity of colour-scheme—achieved by use of a few colours and bold patterns" is important in advertising inedible qualities, p. 194. "The fact is that over and over again, in group after group of animals belonging to widely separate families and orders, the same hues—black, red, orange, and yellow—are employed as the outward and visible sign of dangerous and distasteful properties", p. 195.

"Among birds expansion displays . . . are common. Although in general they are correlated with rivalry or courtship or signalling, they are in many cases also used to intimidate enemies", p. 213. The device of "opening fans" is common—Herons, Turkeys, Frogmouths, Parrots, Owls, etc. "Where concealment satisfies a vital need in the lives of animals, associated with cryptic coloration we almost invariably find cryptic habits," p. 224. But with "aposematic animals, where the colour-scheme has precisely the opposite function, and where observation is courted" movement is used. Warning sounds are not loud, since the enemy is near, witness the hissing of snakes and of birds.

"In the field of sound we find once again this intricate relationship between a transmitter and a receiver of particular stimuli. It is only necessary to recall here the evolution of soundless flight in owls, or the rustling machinery of rattlesnakes—each of which is related in a particular way to the hearing of enemies. The fact is, that all such characters—the long-range stimuli on the one hand, and the sensory equipment on the other—may be regarded as special manifestations of the age-long armament race in which animals (like men) are involved", p. 429.

"Concealing coloration and special cryptic resemblances are features commonly associated with defencelessness, or with aggression . . . it is impossible to disregard the implication—that concealment is an outward and visible sign of an inward ecological need, and that its function is directly concerned with the problem of survival in a dangerous world." "Warning colours are exhibited by members of different groups possessing qualities which render them more or less unsatisfactory as prey to many, if not to most or all, of their potential enemies", p. 434. "Batesian mimics and other bluffers, on the other hand, are typically defenceless. Here reliance is placed upon deception. These are the sheep in wolves' coloring."

The book is provided with indices of scientific names, of subjects and authors' names and a bibliography with 685 titles. A few important references were missed, however, among them Heller, 1928, and Steiniger, 1937. One feels dubious over the bee-alluring qualities of the Kingbird's crown-patch, quoted from Keeler's fantastic book, 1893. Under concealment in relation to nesting habits the well known "correlation between a concealed site and a conspicuous egg" is mentioned; a somewhat far-fetched suggestion is made in regard to the white eggs of doves in open nests, namely their supposed unpalatability; as a matter of fact doves never normally leave their eggs uncovered.

"Adaptive Coloration in Animals" is a notable book, a convincing presentation of a subject on which there has been much controversy. It is a classic contribution.

**48. The Bird Island of Mellum.** (Die Vogelinsel Mellum.)—Friedrich Goethe. 1939. Abhandlungen aus dem Gebiet der Vogelkunde Nr. 4: 1-110. A history of the birds on the island from 1903-1934; gathering of eggs was stopped in 1909; a *Vogelwarte* was stationed there from 1912 on. High tides cause much destruction on this 40 hectare island. Herring Gulls are the worst problem; they are long-lived, adaptable in the matter of nesting sites and food, possess great vitality, and arrive in the spring before the Terns that can only fish for food. In 30 years the Gulls have increased 24 times their former numbers in the southern part of the North Sea. The best methods of control are shaking the slightly incubated eggs; catching adults that nest near Tern colonies; and shooting the egg-robbers.

Interesting data are given on many of the species that nest on the island; I quote something on the three species of terns. The Sandwich Tern (*Sterna S. sandvicensis*) does not know its own eggs; the nest and especially the nest-site

with Laro-Limicolae play a much greater role than do the eggs. Social flights in the evening are described, p. 36. Ages attained—9, 10, 10, 12, 12, 14, 16, 19 years.

The Common Tern (*Sterna h. hirundo*) is much more territorial and less social than the Sandwich Tern; they often kill neighbor chicks. The female does most of the incubating and the male most of the fishing. Sometimes young choke to death on too large fish. Parents coax their young to a certain place by holding the red bill before them and drawing back. They attack Harriers, Falcons, Short-eared Owls, Herons, Storks and human beings. In the evenings if the *Vogelwarte* approached a great swarm of non-nesting Terns they swooped upon him silently and tried to drive him off with a strange noise made with their wings, much as Starling flocks behave towards a Sparrow Hawk (*Accipiter nisus*). Young and old birds have been shown by banding to return to Mellum; ages of 16 and 20 years have been reached.

The Little Tern (*Sterna albigrons*) nests on the sandy beach; it is able to dig its eggs out from under sand; the young soon leave the nest and hide nearby. Parents lure young by going backwards holding out a fish. Sometimes they return without food, then they go to the begging young and go through the motions of feeding. "A beautiful example of an instinctive act that is stimulated by begging movements and sounds, even though in this instance it has no sense", p. 154. The young develop rapidly and can fly at 15-17 days. A set of Kentish Plover (*Charadrius a. alexandrinus*) eggs was given to a pair of Little Terns; the young were hovered and called by the Terns, but not fed, since the specific begging behavior was lacking. The young hunted sand fleas for themselves from the age of four hours.

A very interesting volume dealing with life history and migration of the nesting birds.

**49. The Orientation of Animals.**—G. S. Fraenkel and D. L. Gunn. 1940. Oxford University Press. 352 pp. \$6.00. Based on Kühn's book, 1919, this volume gives the latest ideas on kineses, taxes and compass reactions, discussing various laboratory experiments, chiefly on invertebrates. Two sentences are devoted to the subjects of homing and migration in birds.

**50. The Audubon Guide to Attracting Birds.** Edited by John H. Baker. 1941. Garden City, N. Y. Doubleday, Doran. 268 pp. \$2.50. An excellent book, as anything largely written by Roger Peterson (seven of the dozen chapters) is bound to be. These chapters cover in clear, succinct style the essential points of: How, When and Where to Look and Listen; Bird Photography and Banding; Attracting by Planting, by Artificial Feeding, by Providing Nesting Boxes (no mention made of the dangerous potentialities of the House Wren), by Providing Water, the Creation of Watered Areas. Richard Pough contributes good, simple exposition of "Our Attitude Toward Predators. The Balance of Nature Concept"; and also a detailed chapter on "Trespass and Your Rights" in which it is disconcerting to read of the outrageous privileges accorded to Enemy No. 1—the cat. Two chapters on Sanctuaries, one on the accomplishments of the National Audubon Society, an admirable table of plants attractive to birds with details as to their characters and care, a long and well-chosen list of Useful References and an index complete this guide. It can be heartily recommended to the beginner in bird study and to all those interested in attracting birds to their grounds.

**51. Bird Houses, Baths and Feeding Shelters; how to make and where to place them.**—Edmund J. Sawyer. Cranbrook Institute of Science, Bull. no. 1, ed. 3, Dec. 1940 (review copy received 5 May, 1941) 35 pp. 20c. Practically a new publication since the original text has been entirely rewritten and added to. A useful little brochure whose scope is explained in its long title. Those who feel that the bird houses and feeders so extensively advertised nowadays are too elaborate, not always practical but invariably overpriced will welcome the plans

and suggestions for simple homemade devices appearing in this booklet.—J. L. P.

**52. Bird Islands Down East.**—Helen Gere Cruikshank. 1941. New York. Macmillan. 123 pp. \$2.50. An entertaining account of the bird islands off the Maine Coast, describing experiences in photographing and banding Puffins, Black Guillemots, Arctic Terns, Laughing Gulls and Double-crested Cormorants. Written for the layman in simple, conversational style, the book tells of adventures in landing on the incredibly dreary Old Man Island, of climbing up to the high swaying blind to study an Osprey family, and of the hard and dirty work of banding Herring Gulls. The 50 photographs by Allen Cruikshank are splendid. A book that should do much to arouse interest in birds and their protection; a fine gift for a friend—old or young—interested in the outdoors.

**53. Trail of an Artist Naturalist.** The Autobiography of Ernest Thompson Seton. 1940. New York. Scribners. 412 pp. \$3.75. A tale of eighty years of adventure—in England, Canada, France and the United States—of a man gifted with a passion for watching and understanding wild animals and with great skill in depicting his subjects with the pencil. Despite difficulties and discouragement he ultimately succeeded as nature-story writer, artist, lecturer and authority on the lives of wild animals. Birds play their part throughout the book; particularly striking is the description of the wealth of wild life—bird, beast and mosquito—in the Canadian Northwest 50 years ago and the present impoverishment, due in large part to the drying up of the country. The book is furnished with an index and is illustrated with many of the author's most engaging sketches.

**54. American Wild Life, Illustrated.** Compiled by the Writers' Program of the Work Projects Administration in the City of New York. 1940. New York. Wise. 749 pp. \$3.50. One wishes that the Writers' Project of the W.P.A. had busied itself in some other field than zoology. This volume is advertised as "5 Books in One—at the Price of One." The "books" on Mammals, Fishes, Reptiles and Amphibia are nothing to boast of, but that on Birds makes one shudder. Errors are rampant on every page and the pictures—photographs of badly stuffed specimens—are atrocious. The best one can say for the writers is that their hearts were in the right place as regards conservation, but their facts are so garbled that the book is apt to do more harm than good.

**55. Nature Smiles in Verse. A Collection of Bi-Illogical Poems.** Compiled by Bernal R. Weimer. 1940. Baltimore. Waverly Press. 99 pp. \$1.50. Many amusing rhymes on "biological" subjects, including Thornton Burgess on how the field mice flourish when hawks and owls are killed, and a choice revised version of "Baby Bye, Here's a Fly," by the compiler. A good antidote to the too solemn attitude of too many biologists, very cleverly done.

**56. Nature Recreation.**—William Gould Vinal. 1940. New York. McGraw-Hill. 322 pp. \$3.00. "The nature program should be one of experiencing and enjoying rather than memorizing and reciting." This is the keynote of a text which makes innumerable concise, practical suggestions for nature activities in the community and summer camp, for nature trips and trails, conservation education, camping and camp cookery, nature club leadership and so on. It will be an invaluable tool for leaders in nature recreation. **CONSTANCE NICE.**

**57. Village Year. A Sac Prairie Journal**—August Derleth. 1941. New York. Howard-McCann. 314 pp. \$3.00. These are sensitive, original observations and poems on wild life and village doings—the stories and superstitions, the skunk cabbage and spring peepers—all the things that make the outdoors and people always new and fascinating and amusing. An intelligent, warm-hearted journal, very pleasant to dip into. **CONSTANCE NICE.**