

## RECENT LITERATURE

Reviews by Margaret M. Nice

## BANDING

1. **Report of the Vogelwarte at Sempach for 1939 and 1940.**—(Jahresbericht der Vogelwarte Sempach für die Jahre 1939 und 1940.) A. Schifferli, 1941. *Ornithologische Beobachter*, 38: 57-74. In the two years over 17,000 birds of 124 species were ringed; 4,000 of these were nestlings. Five Snow Finches (*Fringilla montifringilla*) trapped in Switzerland from January to March 1939 were taken the following winter in Jugoslavia, Rumania, Italy, Bohemia and Denmark!

2. **Unusual Behavior of a Banded Cardinal.**—J. B. Young. 1941. *Wilson Bulletin*, 53: 197-198. A male *Richmondia cardinalis* evinced such antipathy to his band that he appeared to spend all his time biting at it.

3. **(Bronzed Grackle 16 years old.)**—R. T. Gordon. 1941. *Conservation Volunteer*. St. Paul, Minnesota 2(9): 72. A *Quiscalus quiscula aeneus* banded in South Dakota August 17, 1924 was found in Minnesota in October, 1940.

For other studies in which banding was used see Nos. 7, 13, 17, 22, 25, 27, 30 and 53.

## MIGRATION

4. **The Spring Migration of Oldsquaws and Common Scoters near Helsingfors.**—(Der Frühlingszug von *Clangula hyemalis* (L.) und *Oidemia nigra* (L.) bei Helsingfors.) G. Bergman. 1941. *Ornis Fennica*, 18:1-26. A sudden migration of these ducks occurs in May against a northeast wind, perhaps correlated with electrical conditions in the atmosphere. Tables and diagrams are given, as well as a long bibliography.

5. **The Migration of the Common Scoter in the Interior of Finland.**—(Ueber den Zug der Trauerente, *Oidemia n. nigra* (L.) im Inneren Finlands.) A. Pynnönen. 1941. *Ornis Fennica*, 18:36-39. The spring migration takes place in May; in July the males start to return, while the females and young migrate in October and November.

6. **Animal Migration—Periodic-Response Theory.**—Angus M. Woodbury. 1941. *Auk*, 58:463-505. A long discussion of migration, citing many American and some English authors, but none in foreign languages. The author's "new" "periodic-response theory is based upon the idea that the periodic events of the environment have acted as initiators, moulders and regulators of the migration phenomena by first inducing migratory-habit patterns within the limits of the hereditary mechanism possessed by the animal, then by natural selection perpetuating any hereditary mechanism developed by independent agencies that tended to transform the habit into an hereditary pattern." pp. 291-292.

## LIFE HISTORY

7. **The Erect-crested Penguin (*Eudyptes sclateri*) Buller.**—L. E. Richdale. 1941. *Emu*, 41:25-53. Another notable Penguin study by Mr. Richdale. A pair were found nesting on Otago Peninsula, New Zealand, accompanied by a handsomer male—"No. 3"—that dominated the pair so severely that the second year the female could not go to the nest to relieve her male until the author caught No. 3. The first year the egg was stolen; the next year, after 9 weeks of incuba-

tion, the egg proved to be addled and was "attacked" by the parents. The following winter both males disappeared and the female remained alone. The birds "were the most affectionate pair of penguins I have ever known and, as long as I stayed three feet or more away, they took no notice of me and carried out their various ceremonies unperturbed." p. 36. The author banded the birds and for 8 weeks camped beside their nest and that of a pair of *Megadyptes antipodes* (1941). Excellent photographs are given of the 3 birds, of the pair molting, and of various behavior patterns, especially the "ecstatic ceremony." The parents stayed for long periods on shore without going to the sea to feed—18 to 25 days at a time. All three birds had brood patches, those of the males' being smaller than that of the female's. The pair changed places several times during the 24 hours. The molt took 24 days, during which time the birds were "quite lively", the male gathering sticks for the nest. All courtship activities took place at the nest site.

**8. The Gould Petrel of Cabbage Tree Island.**—K. A. Hindwood and D. L. Serventy. 1941. *Emu*, 41:1-20. The numbers of *Pterodroma l. leucoptera* on this island have been much reduced since 1910 when 40 eggs, 20 adults and some nestlings were collected. Eggs are laid in late November; incubation takes about six weeks, fledging at least two months. The gonads regress very rapidly "after pairing has been accomplished"; if the egg is taken, it is not replaced, but the pair may still frequent the colony. The Bird-Lime Tree (*Pisonia Brunoviana*) causes the death of a number of birds, for the sticky seeds fall to the ground and the petrels become hopelessly entangled in them.

**9. Studies of Waterfowl in British Columbia. Greater Scaup Duck, Lesser Scaup Duck.**—J. A. Munro. 1941. *Canadian Journal of Research*, 19: 113-138. *Nyroca marila* is an abundant migrant and winter resident; the sex ratio in winter is "predominantly male"; *Chara* is the chief food. *Nyroca affinis* nests commonly on shallow lakes. Females with young combine broods; at the approach of a canoe one female swims "rapidly towards the canoe, sometimes flat on the surface, again on her side so that the white underparts are exposed. She surges across the surface in one direction then in another and threshes the water with her wings." In the meantime, the "other female, or females, leads the broods to another part of the lake or into marsh coves." As to yearlings, the author states that "none are in breeding condition", p. 132, but later says, "because of the excess of males over females, some yearling females may breed," p. 134. Survival of the young is high due to late breeding when cover is good, to efficient care by the females, and to the habit of adolescents of mingling with the wary molting adults and yearlings. One of the chief losses comes through the entangling of small young in weeds or algae. "Amphipods are the chief food of all age groups on the nesting ground."

**10. Nesting of the Ruddy Duck in Iowa.**—Jessup B. Low. 1941. *Auk*, 58: 506-517. Of 71 nests of *Erismatra jamaicensis rubra* in 1938-40, 52 were successful—73 per cent. Of 546 eggs, 379 hatched—69 per cent. "Predation was negligible because of the selection of nest sites above water." "The most destructive factor to Ruddy Duck nesting was fluctuations in the water level." p. 517.

**11. The Mallard: Its Management in Western Montana.**—Geo. L. Girard. 1941. *Journal of Wildlife Management*, 5: 233-259. *Anas platyrhynchos* is responding to protection on two refuges in the Flathead Valley. Females leave nests in the early morning and late afternoon for about two hours at each period. Males stay near, doing sentinel duty, till about the third week of incubation. (Male Shovellers (*Spatula clypeata*) assist females with care of young for the first two to three weeks.) Eggs hatched even after being flooded for 22 hours. Crows, coyotes, skunks and weasels were "diligently controlled." Success was high—71.2 per cent of 1,797 eggs hatching. The average number of eggs per nest was

7.13; the average hatch was five; "an average of four young reached the flapper stage."

**12. Habits of the White-tailed Kite.**—Robt. T. Moore and Arthur Barr. 1941. *Auk*, 58: 453–462. A nest of *Elanus leucurus majusculus* was watched from a blind 40 feet up on a ladder. On May 9 when the young bird was about 3½ weeks old he was badly blown by wind; he had no "instinctive feeling of how to protect himself against the wind; indeed when a gust comes suddenly, he foolishly throws up a wing on the side toward the blow in an endeavor to maintain balance." The adults attacked Crows and Red-bellied Hawks, but allowed Sparrow Hawks, Bullock's Orioles and Western Kingbirds to nest in the same tree. On May 9 a whole mouse was left for the young; it took one half hour for him to dissect it.

**13. The Breeding of the Black Oyster-catcher.**—J. Dan Webster. 1941. *Wilson Bulletin*, 53: 141–156. *Haematopus bachmani* in the Sitka region is "bold in defense of its nest, intruding birds being attacked and struck until driven away." Crows and gulls were tolerated on feeding areas of the territory, but driven off when they came nearer than 25 yards from the nest. Bald Eagles, Hudsonian Curlews and Ravens were also chased off. Other Oyster-catchers were sometimes driven off, but more often "bowed off" in a piping ceremony." When a person intrudes, the birds give an alarm cry; they often "attempt to lead the intruder away, running along in a semi-crouching position," p. 146. When danger is over, birds give an 'all-clear' piping note. Parents call young to them to be brooded with "a clucking note, similar to that given by the incubating bird as it squats down on its eggs," p. 151. The pair change places both for incubation and care of the young at low tide, i.e. every twelve hours, the bird off duty standing guard and feeding itself. "Feeding begins on the second day, when food is brought by the parents to a point near the nest and offered in small fragments which are pointed out." Chicks follow the parents to the feeding grounds at the third to fifth week. By the fifth day the "chick picks insects off vegetation and rocks." One juvenile kept in captivity from the 35th to 60th day needed "120 large mussels per day." Incubation lasted 27 days. "The breeding territory of a pair of Oyster-catchers contains important feeding places; it is defended from April to August." Banded young were still with their parents when 57 days old. They do not breed until their third year.

**14.—Some Breeding-Habits of the Black-winged Stilt.** G. K. Yeates. 1941. *British Birds*, 35: 42–46. Two pairs of *Himantopus h. himantopus* in the Camargue were very excited at the observer's search for their nests ten days before the clutches were complete. Both parents were eager to incubate, relieving each other every five minutes or so!

**15.—A Contribution to the Breeding Biology of the Palm-Swift, *Cypselus parvus*.** R. E. Moreau. 1941. *Journ. East Africa and Uganda Nat. Hist. Soc.*, 15: 68–69, 154–170. An extensive study made by closely supervised African observers; at "one nest continuous dawn-to-dusk records were obtained for fourteen consecutive days. Nearly six hundred more hours of observations in continuous spells of six hours and upwards have been made at fifteen other nests." The birds paid no attention to observers within five to fifteen yards. They build almost exclusively on palm fronds—live or dead. They are highly sociable in the air and may be sociable in nesting. Feathers are collected in the air. The eggs are stuck on with saliva. Two eggs are laid on the continent and three in Madagascar where nests are larger. Incubation lasts 20 days and fledging 29–33 days, whereas with *Micropus caffer struebellii*, *M. a. apus* and *M. melba* the incubation period is the same, but fledging lasts 42 days. Of 35 eggs, 23 hatched and 6 young were fledged. The Fiscal Shrike (*Lanius collaris humeralis*) is probably responsible for much of the loss. The pair spend much time close together on

the nest pad, copulating there. The fastening of the egg to the pad is described. Both parents incubate, pressing tightly against the eggs; at night either may incubate, the other roosting alongside. The eggs were covered on an average 70 per cent of the hours of daylight. Sometimes they were left uncovered for three or even five hours, with no relation to weather or temperature. Seventy-five of the periods on lasted "over 20 minutes, nearly 30% of all spells over an hour." The brooding for the first week shows the "same curious admixture of assiduity and neglect" as with the eggs. Feeding is by regurgitation.

The number of feedings given during the first five days after hatching were 17, 16, 16, 27, 24. There was no special difference in rate except during the last hour of the day when feedings came to about four. At four nests with one young each the birds were fed on an average about 16 to 21 times a day; at three nests with two young about 22 to 32 times a day. This is about half as often as with *Psalidoprocne holomelaena* and about one-twelfth as often as with *Hirundo smithii*. An exceptionally interesting study.

**16. Observations of *Lophoceros melanoleucos melanoleucos* (Lichtenstein) in South Africa.** Gordon Ranger. 1941. *Ibis*, 14th ser., 5: 402-407. Two young Crowned Hornbills at leaving the nest did not differ in size nor plumage from their parents. The family had a territory about two miles square including a forested valley; this includes the nesting tree and several roosting sites which are well adapted for safety. When two families meet, there are special displays, loud cries and chasings.

**17. Annual Cycle of the Black-capped Chickadee.** 2. Eugene P. Odum. 1941. *Auk*, 58: 518-535. Both male and female *Penthestes a. atricapillus* excavate the nesting hole; the female carries material, mostly rabbit fur, accompanied by her mate. Six to eight eggs are laid. The female incubates, averaging 24 minutes on the nest and 7.8 off. The male feeds her, calling her off with a signal song. The incubation period is 13 days. The young were fed 6.5 times an hour when one day old and 14.4 times an hour when thirteen days old. They leave at sixteen days. At nine days heat production is well developed, but feathers are poorly developed. The weight at hatching is 1.13 grams, at 16 days 10-12 grams, as much as or more than the parents; there is little gain between 12 and 16 days. The first flights were as far as 20 to 30 yards from the nest; the parents flew about excitedly calling *phoebe* softly. At this time they showed "injury-feigning", flapping their wings back and forth, and moving their heads slowly from side to side. Banded young were seen with their parents 11 and 26 (second brood) days after leaving the nest; marked young separated from parents were seen 22, 23, and 34 days after leaving the nest. Fifty-three nestlings were fledged from 74 eggs—70 per cent success.

**18. Technics in Life History Study.** Eugene P. Odum. 1941. *Oriole*, 6: 1-7. Excellent outline of "Life History Topics" for study and a list of selected references.

**19. Preparation of Nesting Data.**—Frank Pitelka. 1941. *Auk*, 58: 608-612. Excellent suggestions as to subjects to be studied with a basic tabular form suggested for presentation of data.

## TERRITORY

**20. Psychological Observations on the Peck-order of the Domestic Pigeon.**—(Psychologische Beobachtungen über die Rangordnung bei der Haus-taube.) E. Diebschlag. 1941. *Zeitschr. f. Tierpsychologie*, 4: 173-188. Very interesting valuable work, analyzing the basis of the "peck dominance" found by Masure and Allee, 1934, in the Domestic Pigeon. This peck-order comes from the endeavor of each bird to defend a certain area from all other members

of the flock. "Lorenz (1935) rightly sees in this territory-delimitation a primitive behavior pattern of birds." Each male pigeon has a resting-place (center of action, Huxley) where he suffers no other male; he also has a more or less large "sphere of influence" where he dominates other males but allows them to stay. He dominates by display—impressive behavior (*Imponiergehaben*). This display is strongly "place-conditioned" (*ortsgebunden*), just as all territorial dominance is. Hens and Jackdaws have a more rigid peck-order, depending on individuality and largely independent of place.

In heterosexual flocks, one male pigeon is usually the top bird; this despot shows the greatest display and the largest sphere of influence, but his resting-place is no larger than that of his companions. He has to continually assert his dominance. Females have resting-places, but no spheres of influence. By decreasing or increasing experimentally the display behavior of a bird (scaring him or allowing him to intimidate stuffed birds), changes followed at once in the peck order. The despot was removed, the others were disturbed, quarrelled and drove the lowest one in the peck order out of his resting-place; he took refuge in the despot's place and soon had all the prerogatives of the latter.

*The confidence of the bird is the all-important factor.* The bird that soonest becomes familiar with a new place becomes despot. In four different places one group showed a change in peck-order, but after seven months' absence a return to the former locality brought a renewal of the former order. For mating the male has to have dominance; when two females pair, the dominant one takes the male part. It is difficult to get male pairs. The wife does not take the husband's rank as with Jackdaws and geese, where even the children take the rank of the parents. In maze tests birds low in rank did as well as those high in rank, except when a bird higher in rank was present in the room, even in a cage.

**21. The Belligerency of the Kingbird.**—David E. Davis. 1941. *Wilson Bulletin*, 53: 157–168. With *Tyrannus tyrannus* a territory is selected after pairing, not before. Incubation takes 16 days, fledging 16–17. One pair deserted three nests in turn; no eggs were laid, but the female "incubated" the empty nest for 15–25 minutes at a time exactly as if she had had eggs. "Both sexes go far from the territory to drive away a hawk or Crow." Both sexes drive away intruding Kingbirds, but only the male drove off other species that came near the nest. The author concludes that: "When a male Kingbird is fighting with another Kingbird within his territory he is simultaneously defending territory and sex-partner. The female defends the sex-partner only." This last phrase "refers to those actions of the male or female which prevent a rival from obtaining a mate," p. 165. It seems to the reviewer that another interpretation might be: both birds defend the territory, the male, being more belligerent, attacks other species as well as his own.

**22. Behaviour of White Wagtails Wintering in Cairo District.**—R. H. Greaves. 1941. *Ibis*, 14th ser., 5: 459–462. Individual *Motacilla alba* "exercised a territorial habit in feeding, and regularly frequented the same garden. A male would dispute his right with another male but generally tolerate a female on his territory, sometimes two, but as observations continued it seemed clear that the association was a loose one." Vast flocks roost in the sugar-cane; 470 were netted and ringed with Cairo Zoo rings.

**23. Notes on the Spring Territory of the Blackbird.**—David Lack and Wm. Light. 1941. *British Birds*, 35: 47–53. *Turdus m. merula* is a shy bird in South Devon. Twenty-five males and thirteen females were color-banded in the winter; nine males and two females proved to be residents. Males were very territorial, the territories comprising  $1\frac{1}{2}$ – $2\frac{1}{2}$  acres. "As with other territorial species, most encounters between males are settled by threat-display." The male "with lowered and retracted head, approaches gradually and indirectly in a series of hops, runs or very short flights." Stuffed specimens were ignored. "The

orange-yellow beak, inside of mouth and eyelid may be used as throat colors." "Round Dartington most male Blackbirds have staked out territories and possessed mates for several weeks . . . before they start to sing." "Hence, though unmated males sing somewhat more than mated ones, song would seem to have little or no survival value to the species at the present time, which is particularly curious in view of the beauty of the song." The Blackbird has conspicuous plumage and "pair-formation appears to have been pushed back to the autumn."

**24. Display in Blackbirds.**—H. Lambert Lack. 1941. *British Birds*, 35: 54–57. Remarkable communal display of cock Blackbirds in spring.

**25. Territorial and Mating Behavior of the House Wren.**—S. C. Kendeigh. 1941. *Illinois Biological Mon.* XVIII, No. 3: 1–120. \$1.50. A 19 year study of *Troglodytes aëdon* in northeastern Ohio on Dr. Baldwin's fifteen acre estate, based on 331 matings of 142 males and 147 females. All adults and young were banded with aluminum bands, the adults being also given celluloid bands merely to distinguish sex, not individuals, as is usually done. Since the parents were caught at the nest and in later years not until the young had hatched, there is often uncertainty as to the identity of certain birds which would have been obviated had individual color-banding been used. The older the bird, the earlier the arrival in spring. Homing ability as tested by experiments is poor; one-third of 42 males removed from less than one-half mile to 2½ miles failed to return, while two-thirds of 10 females failed to return. Territories averaged one acre in size. The male builds the foundation of the nest, the female puts in the lining, lays 5–7 eggs and incubates them for thirteen days. Both parents feed the young in the nest for fifteen days and both (or the female alone) feed them out of the nest for another 13 days. Sex recognition depends on behavior. "In 70 first nestings terminating successfully and followed by remating for a second brood by both adults, remating of the same individuals occurred in 40 per cent of the cases," p. 53. "Remating of a pair the following year occurred in 42 per cent of the cases where both birds of the pair survived and returned to the locality," p. 118. Two birds remated for both broods three years in succession. Another pair mated three years in succession for one brood each year. One male had the same mate for both broods two years in succession, but five other mates in four other years. The histories of 215 individual territories are given with accompanying maps; it is difficult to follow the birds designated with the long band numbers. The paper contains a great deal of valuable material.

Other studies dealing with territory are Nos. 12, 13, 16, 27, 43, 53.

#### BIRD BEHAVIOR

**26. An Experimental Analysis of the Breeding Cycle of the Tri-colored Red-wing.**—John T. Emlen, Jr. 1941. *Condor*, 43: 209–219. An important paper based on a large number of well-planned experiments, and giving a discussion of the pertinent literature. A chart is given showing the activities of male and female *Agelaius tricolor* during the 37 days of the first nesting cycle; the female builds, incubates, broods and feeds the young, while the male, who is absent during incubation, helps feed the nestlings and fledglings. Experiments were made on 204 nests in two colonies, one with about 7,000 nests, the other with about 15,000. Forty experiments were made on nest building to test the possibility of shortening or lengthening the normal 3–5 day period; 15 nests were abandoned, but 20 tests were considered satisfactory. When the lining was removed, no new material was added. "Eggs or young artificially introduced into an incomplete nest will not necessarily interrupt the normal course of nest building activity," p. 212. When "nest construction was interrupted or delayed by natural factors the birds commenced laying without regard to the incompleteness of their nests." Twice when complete nests were substituted for nests just begun the birds laid after two and three day intervals.

Sixty-two experiments on egg-laying showed that the period was not prolonged by removal of eggs nor shortened by additions. "The rate of egg-laying was not affected by: (a) removal of nest lining . . . ; (b) the hatching of previously introduced eggs in the nest . . . ; (c) the presence of artificially introduced nestlings being fed by the male," p. 215. On the other hand, the normal incubation period of 11+ days was reduced by the addition of other eggs to 6, 5, 3, 2, 1, and 0 days. Nestlings "2 to 3 days of age were introduced into 10 nests where the laying phase was just being completed. In 2 of these the old birds deserted, in the other 8 the strange nestlings took precedence over the eggs, and the nest owners passed directly from laying into the feeding-the-young stage." (Since the males are normally absent for 11 days, how did they know they had young? Do they return each day for a visit?) Young are normally fed about 11 days in the nest and 2 weeks afterwards. Nine day nestlings were successfully exchanged for 2 and 3 day old nestlings, and 2 day young for 10 day young.

The feeding response did not appear during nest-building; introduced young were built into the nests or the nests were deserted. It appears in the male during laying and incubation, in the female during incubation. The author concludes: "The development of breeding behavior in the Tricolored Red-Wing is closely regulated by physiological factors from the start of nest-building through the initiation of incubation. During the rest of the cycle, however, the rate of development is largely controlled by external situations associated with the nest," p. 218.

**27. The Behavior of the House Sparrow.** (Ueber das Verhalten des Haus-sperlings (*Passer d. domesticus* (L.) .).—A. Daanje. 1941. *Ardea*, 30: 1-42. At last a real study of the behavior of this familiar bird. It was carried out with colored bands in some cases, while other birds were known through individual peculiarities. Sketches are given of various attitudes. Eleven different notes are distinguished. (a) Infantile call-note: this is kept in adult life; the female uses it as an invitation to copulation, both adults use it when changing places on the nest, and in calling fledged young, while the male uses it when calling the female to a hole for the second brood. (b) Species call-note "*Schilpen*", this is also the location note of the fledgling. (c) "Love-call-note", higher than the *Schilpen*; given by a male calling a female to his nest-box. (d) Social song of the males; *Schilpen* with variations. (e) "Courtship" *Schilpen*, louder than usual. (f) "Piew", seems to be used in most situations that call forth the infantile call-note; significance not clear. (g) Scream (*Angstruf*), uttered by a young bird when taken in the hand; adults come hurrying to the scene. Many species have similar cries of distress and they react interspecifically upon hearing them; once House Sparrows approached a screaming Jay. (h) "*Puttitti*", a note of unknown meaning. (i) "*Step*", flight signal, stimulating others to follow suit. (j) Reactions to danger: *Krüü* call, given at appearance of a Sparrow Hawk (*Accipiter nisus*) or other hawks, the birds dashing into cover; *keukew* call given for cats and people. The *krüü* call is also given for people when the males are busy with a song-fest; it may be that hiding from a hawk and being unwilling to leave are somewhat analagous.

The House Sparrow is territorial, proclaiming ownership of a nest box or cavity with definite boundaries to his possessions. Pair-formation takes place as follows: the male calls faster and louder from in front of his hole when a female passes by; if she comes to him, he shows himself and the hole to her. Sometimes he attacks her and other males join in the *melée*. If the female stays with the male, there is a "betrothal" period when the pair keep close together but copulation does not yet take place. The female learns the boundaries of the territory and defends it, fighting off females, while her mate drives off males. Many males remain unmated; there appear to be twice as many males as females in Eindhoven, Holland. House Sparrows appear to prefer to live in loose colonies; solitary males often remain mateless.

Building the nest and copulation begin at about the same time; both sexes

build, incubate and brood the young. From 20 hours' observation at 5 nests it was found that the male incubated in periods of 6-13 minutes, averaging 11; the female in periods of 9-17 minutes, averaging 13. The female incubated at night. From six hours' observation at five nests it was found that the male brooded from 3-11 minutes, averaging  $7\frac{1}{2}$ ; the female from 5-10 minutes, averaging  $6\frac{1}{4}$ . The male postures and gives the infantile call-note to lure his mate to the site he has chosen for the second brood. The female takes most of the care of the fledged young, for the male may be more interested in starting the next brood than in the older young. Once when the author caught young and they screamed, the female went through a kind of "injury-feigning"—fluttering about near him and screaming herself; at another time a male parent showed somewhat the same behavior.

The puzzling subject of "courting parties" is discussed: the males gather (most frequently in February and March) and "court" and peck the female; the more the female pecks back the more will the males "court." A mated male drives off others that try to "court" his mate. The author believes this behavior is a remnant of primitive forcible mating (Lorenz' lizard type, 1935). He discusses cases where the male attempts to dominate the female at the beginning of pair-formation—the male Canary sings loudly and drives the female, while many birds indulge in "sexual flights" (Howard, 1920).

**28. Food Detection by Vultures and Condors.**—William Vogt. 1941. *Auk*, 58: 571. Two sheep were killed and placed on the coastal desert of Peru, 400 meters apart, one uncovered, the other covered with a single layer of gunny sack. Within an hour Turkey Vultures (*Cathartes aura jota*), Black Vultures (*Coragyps atratus foetens*) and Condors (*Vultur gryphus*) "were circling over the exposed sheep." The covered sheep was not found by the birds, even though small flies, twice the size of *Drosophila* had discovered it "across a half-mile of sterile desert."

**29. Experiments on the Color Preference of Black-chinned Humming-birds.**—Frank Bené. 1941. *Condor*, 43: 237-242. Three *Archilochus alexandri* preferred yellow to any other color. "Color preference may be conditioned by training, as when a hummingbird trained to feed on colorless syrup remains constant to it, even when the colorless syrup is placed among feeders containing syrups of different colors."

**30. Development and Enemy Recognition of the Curve-billed Thrasher** *Toxostoma curvirostre*. Art. II. Results of the Archbold Expeditions, No. 34.—A. L. Rand. 1941. *Bull. Am. Mus. Nat. Hist.*, 78: 213-242. A very interesting account of the development of hand-raised birds. Seventeen thrashers were taken at the age of 14-18 days and most of them kept some eleven weeks. Physical growth and behavior of the nestling are described, also behavior after leaving, which normally occurs at 18 days; independence of adults comes at about 40 days. A great many experiments were made on "Response to Stimulus Objects, Enemy and Otherwise." Nineteen-day-old birds did not learn from painful experiences to avoid dangerous objects, but "29-to-35-day old birds responded more definitely but less so than the older thrashers." They did "not differentiate between rabbits and cats; a harmless animal and a predatory one," p. 239. They tended to "approach and peck at the smaller mammals, and to flee from the larger ones." Experiments with a "screech owl provide no evidence for a recognition of the owl as such," p. 240.

Towards snakes the birds instinctively spread their "wings in the horizontal plane while facing the snake at 18 inches to 2 feet distance," at the same time giving a "wooden 'kuk.'" The display of one bird did not seem to induce other birds to display, at least with birds up to 33 days of age, p. 233. The author considers it "a maladaptation," p. 241. This display was given to many things besides snakes. "The features that a non-moving strange dish of food, a moving



familiar box, a Mexican carrying a dead rabbit, and a quiet shadow have in common are that they have some strange, new characteristic; either motion, shape or proximity. We may conclude that the response is dependent on a complex or pattern of stimuli. Any one of a wide variety of stimuli may produce the response in less than optimum intensity or duration. But the pattern of stimuli furnished by a large snake alone elicits the response in maximum intensity and duration," p. 241.

**31. The influence of Tameness on the So-called "Animal Hypnosis" in Birds.** (Der Einfluss der Zähmheit auf die sogenannte "tierische Hypnose" bei Vögeln.)—F. Steiniger. 1941. *Zeitschr. f. Tierpsych.*, 4: 260-271. A better name for animal hypnosis is "inhibited reaction" (Reaktionshemmung). This is different from mere crouching which begins shortly after hatching with young gulls, shorebirds, etc., for in "inhibited reaction" the bird will stay on its back if placed there, and also *flexibilitas cerea* occurs. Young gulls show this behavior from about 3-6 days to 4 weeks or just before they can fly; it is released by the sight of an enemy and the warning cry of the parent. Sixteen young Common Gulls (*Larus canus*) taken at the age of 12-19 days were caged and fed; after one day there was no more "inhibited reaction"; they were no longer afraid of people and they no longer heard warning cries. It is evident that "inhibited reaction" depends on both physiological and psychological factors.

**32. Non-Genetic Mating Preference as a Factor in Evolution.**—John E. Cushing, Jr. 1941. *Condor*, 43: 233-236. With some birds the recognition of mates is an inherited matter—witness the Cowbirds; with others the mating preference is acquired, apparently at a very early age—pigeons, ducks, Jackdaw, Raven, Shell Parakeet, etc.

**33. Some Aspects of Instinctive Behaviour and Display in Birds.**—David Lack. 1941. *Ibis*, 14th Ser., 5: 407-441. The author attempts to define instinctive behavior and points out the difficulties. He suggests possible origins of different displays and stresses their present survival value, for they usually serve as a means of communication.

#### MOLT

**34. Time and Course of Molt in Some Species of Ducks.** (Zeitpunkt und Verlauf der Mauser bei einigen Entenarten.)—E. Stresemann. 1940. *Journ. f. Ornithologie*, 88: 288-333. An interesting discussion of the normal course of the molt and also of experiments. The male has four plumages: down, juvenal, breeding (*Prachtleid*), eclipse. The female has four: down, juvenal, breeding (*Brutkleid*), resting plumage (*Ruhekleid*). The molt into the eclipse is not dependent on definite regression of testes; it apparently depends on the hypophysis. Perhaps a hormone keeps the female in henny plumage all the year, the male part of the year. The bright plumage of the male brings the sexes together and draws attention of enemies away from the female and brood. The bright plumage (*Prachtleid*) is neutral since it is attained when the gonads are regressed. Cavazza (1938, *Arch. d'Anat. Microsc.*, 31: 145-270) found that both sexes assume it after castration. The eclipse lasts only 3-5 weeks; all the primaries are lost as soon as this plumage is attained.

The author says that if the Black Duck (*Anas rubripes*) molts but once, then we can conclude that the double molt is an acquired characteristic of the Anatidae which came as a consequence of increasing sex dimorphism; but if it molts twice, then it would seem that the primary reason was renewal of worn feathers. Dr. Miles Pirnie informs me that Black Ducks do have an eclipse plumage, the drakes assuming it in late May and June. Tropical ducks molt but once a year, even if dimorphism is striking. Hybrids between ducks molting once and those molting twice have two molts (Heinroth, 1911). Females molt twice, but usually carry

the resting plumage till spring and have a fresh plumage before they nest.

There are two conditions in birds in the determination of plumages. In one both sexes possess the same inherited predisposition (*Erbanlage*) for feather coloring; the difference depends on hormones. In the other the inherited predisposition for the female lies in the heterochromosome; here there is a genetic male plumage and genetic female plumage as in the House Sparrow (Keck, 1934).

**35. The Juvenal Plumage and Postjuvenal Molt of the Vesper Sparrow.**—George M. Sutton. 1941. *Occasional Papers Museum Zoology, University of Michigan*, No. 445: 1-10. Each of three young *Pooecetes g. gramineus* began its post-juvenal molt when 18 days old. (Incubation lasted 12 days.)

**36. The Plumages and Molts of the Young Eastern Whippoorwill.**—George M. Sutton. 1941. *Ibid.*, No. 446: 1-6. The post-juvenal molt of *Antrostomus v. vociferus* is "very gradual, requiring several weeks." [Molt is a subject on which banders can make important contributions.

See also No. 37.

#### PHOTOPERIOD EXPERIMENTS

**37. Effect of Photoperiod on Molting of Feather.**—S. W. Leshner and S. C. Kendeigh. 1941. *Wilson Bulletin*, 53: 169-180. White-throated Sparrows (*Zonotrichia albicollis*) and a Bobwhite (*Colinus virginianus*), both of which have a partial spring molt, molted out of season when given increased day-length; they and House Sparrows (*Passer domesticus*) did the same when given decreased day-length. The more rapidly the light was decreased, the more rapid the molt, but the total time of loss and regrowth of feathers (65-73 days) "was approximately the same at all rates of decrease," p. 180. Weight "decreased during the progress of the molt and renewal of feathers."

**38. Length of Day and Energy Requirements for Gonad Development and Egg-Laying in Birds.**—S. C. Kendeigh. 1941. *Ecology*, 22: 237-248. To test the effect of light versus exercise on stimulating gonadal growth, 6 sets of English Sparrows, 8 in a cage were run; the 4 at 72° F. were: "controls", "exercised in dark", "lighted with food" (during the light periods), and "lighted without food"; the 2 at 36° F. were: "lighted with food", and "lighted without food." Added "light produced increased size of gonads in both males and females", but this was not the case with the exercised birds. These were not trained to the apparatus in the light; see Wolfson's suggestion (*Condor*, 1941) that non-training in daylight with Riley's English Sparrows and training with Rowan's Juncos explained the negative results of the former and positive of the latter. The food was cracked chick-feed and occasional green stuff. The 4 sets at 72° ate from 21 to 25 per cent of their weight daily, while those at 36° ate 28 to 36 per cent. The mortality in these last two sets ran from 32 to 57 per cent; in the first three from 5 to 9 per cent, and in the "lighted without food" at 72° 19 per cent. The fact that the birds exposed to the cold averaged no higher in weight than those in warm quarters shows that conditions were abnormal.

The second part of the paper deals with temperature relations with the eggs of the House Wren. It is a pity that the only comparisons made are those with domestic fowls, the large amount of data on eggs of passerines in *Transactions of the Linnæan Society of New York*, 4: 1937, chapter XII, being overlooked. Wren eggs increase in weight during one set, but decrease some 7 per cent later in the season. With Song Sparrows, on the contrary, eggs of 17 later sets averaged 13 per cent heavier than eggs of 17 early sets of the same birds. With the wrens the months involved are May to July, with the Song Sparrow April to June, so the temperature situation is different with the two species.

The weight of 16 first sets averaged 84 per cent of the weight of the female House Wren; that of 36 second sets 68 per cent. With the Song Sparrow the

weight of a set is approximately half that of the bird. With the wrens, the "average weight of eggs is greatest when their formation occurs at moderate air temperatures during the three days previous to laying and decreases when air temperatures are either raised or lowered." "Eggs of maximum size are produced at temperatures ten degrees lower (67° F. compared with 77° F.) during the first breeding period (May to late June) than during the second breeding period (late June to July)."

**39. Light-Induced Egg Production in Large Pens Followed by Normal Nesting in Pheasants.**—T. H. Bissonnette and A. G. Csech. 1941. *Journal of Wildlife Management*, 5: 383-389. Mongolian, Ring-neck and Black-neck Pheasants were night-lighted from January 3 to April 25; they began laying in February despite snow and low temperatures. "Severe weather reduced laying but did not stop it, indicating that it is a factor in the later stages of breeding, not in the fundamental activation," p. 388.

#### HEART RATE

**40. Variations in the Heart Rate of Birds: a Study in Physiological Ecology.**—Eugene P. Odum. 1941. *Ecological Monographs*, 3: 299-326. A remarkable study based on the use of a new instrument, the cardio-vibrometer, both on trapped birds in the laboratory and on incubating birds in the wild. In general the standard heart rate is inversely proportional to body size, 165 per minute with the Mourning Dove (*Zenaidura macroura*), 450 for the Song Sparrow (*Melospiza melodia*), 520 for the Black-capped Chickadee (*Parus atricapillus*), and 615 for the Ruby-throated Hummingbird (*Archilochus colubris*). "Maximum heart rates of 16 species taken following strenuous exercise are listed: in 6 of the smallest species a rate of 1,000 per minute or over has been recorded. Increase in heart rate as a result of muscular activity is very rapid. Acceleration in anticipation to movement has been noted in some cases, both in the laboratory and the field." "Food and mental activity have important effects on the heart rate of birds."

"The heart rate of two species (house wren and catbird) in nature was obtained by inserting the crystal under the nest and operating the recording instruments from a blind. During a daytime attentive period on the nest" the heart rate of the wren dropped from 740 to 600 per minute, that of the catbird from 480 to 375 at temperatures of approximately 80° F. "The heart rate of the incubating bird on the nest at night was distinctly higher than when the same bird was resting quietly on the nest in the daytime. This is correlated with the drop in air temperature and the increase in muscle tremors and general activity on the nest which occurred at night. In the house wren, the increase in heart rate at night amounted to 18%, accompanying a drop in temperature of 15° F. from 81 to 66° F.; in the catbird, a 26% increase occurred accompanied by a drop of 15° F. in air temperature from 77.5 to 62.5° F." These quotations are only samples of the important additions to our knowledge of bird physiology given in this paper.

#### CENSUSES

**41. Audubon' Magazine's Fifth Breeding-Bird Census.**—Joseph J. Hickey. 1941. *Audubon Magazine (formerly Bird-Lore)*, 43: sect. II: 480-500. The 40 censuses, totalling 1,535 acres are divided into the following categories: Bogs and Marshes; Deserts, Prairies and Fields; Maple-Beech Woodlands in Ohio; Coniferous Woodlands; Other Deciduous Woodlands. Twenty-four are "repeated on the identical areas covered in 1940"; with many, records are given for four years. The primitive salt marsh in New Jersey showed a density of over 400 birds per 100 acres; maple-beech woodlands in Ohio were much richer in bird life than oak-maple forest in Illinois, while Colorado desert in California was

better than original prairie in Oklahoma. These studies are of high value. More censuses are wanted, especially on extensive coniferous tracts and other areas "representative of a large region."

**42. The Effect of Revegetation on the Small Bird Population in Arizona.**—Gale Monson. 1941. *Journal of Wildlife Management*, 5: 395-397. In two 160-acre plots that had been over-grazed, 92 individuals of 12 species were found in mid-July; in two 160-acre plots protected for two years from grazing, there were 186 individuals of 14 species.

**43. Visual and Auditory Conspicuousness in a Woodland Bird Community: a Quantitative Analysis.**—M. K. Colquhoun. 1940. *Proc. Zool. Soc.*, London, A, 110: 129-147. A refined technique of censusing, based on a study of relative conspicuousness. The breeding population of an 11 acre mixed copse was 123 individuals in 1938, 111 in 1939; the number of individuals identified in a series of "slow daily walks" in this copse at the rate of one-third of a mile per hour was counted. "The coefficient of relative conspicuousness for each species is the actual population, expressed as adults per acre, divided by the number of adults per hour," p. 131. The Chiffchaff (*Phylloscopus collybita*) was four times as conspicuous as the Hedge Sparrow (*Prunella modularis*), the coefficients being .22 and .86 respectively.

Many birds with songs that carry far have correspondingly large territories. By multiplying the length of a song by its frequency, one finds the "approximate values of absolute song in minutes per hour," ranging from 18 minutes per hour with the Chaffinch (*Fringilla coelebs*) to 30 for the Chiffchaff. "The function of song is advertisement. The function of territory, at its lowest denominator, is privacy . . . the greater the privacy insisted on, the more need for advertisement," p. 143.

**44. The Density of Woodland Birds Determined by the Sample Count Method.**—M. K. Colquhoun. 1940. *Journal of Animal Ecology*, 9: 53-67. A time unit with "a slow observing speed" is advised rather than a space unit. According to the "coefficient of conspicuousness" the Chiffchaff was found to be  $3\frac{3}{4}$  times as conspicuous as the Whitethroat (*Sylvia communis*).

**45. The Birds of Savernake Forest, Wiltshire.**—M. K. Colquhoun. 1941. *Journal of Animal Ecology*, 10: 25-34. Counts of birds in this mature oak forest are discussed in the light of "relative conspicuousness." It is feared that the Forestry Commission will make drastic changes in this area; if they destroy the hawthorne scrub, the insectivorous birds will be driven away and the forest itself adversely affected.

**46. The Density of Downland Birds.**—M. K. Colquhoun and Averil Morley. 1941. *Journal of Animal Ecology*, 10: 35-46. An interesting discussion on the "conspicuousness of downland birds," analyzing the characteristics of and computing the identification distance for each species. By "using a 'normal identification distance' for each species" the attempt is "made to compute the actual density per square mile," p. 45. The total population per 100 acres was computed as 14 in winter, 35 in the "pre-breeding" season and 32 in the breeding.

**47. The Status of Migratory Game Birds: 1940-41.** 1941. U. S. Fish and Wildlife Service Leaflet, 196: 1-28. In January 1939 the continental population of ducks and geese was estimated at about "65,000,000, or about half of the number that existed in 1900." More than 1,200,000 hunters purchased Duck Stamps. Woodcock, Wilson Snipe and Rails are decreasing in numbers, while the "mourning dove is probably at its lowest point in history," particularly east of the Mississippi River, due to winter losses and "heavy over-shooting."

## BIRDS AND THEIR FOOD

**48. Food of Ducks and Coots at Swan Lake, British Columbia.**—J. A. Munro. 1939. *Canadian Journal of Research*, 17: 178-186. Examination of 136 stomachs showed that "competition for food between ducks and coots during the autumn months is negligible."

**49. Duck Food Plants of the Illinois River Valley.**—Frank C. Bellrose, Jr. 1941. *Bulletin Illinois Natural History Survey*, 21, Art. 8: 237-280. A very fine study on water levels, effect of floods and drought, turbidity, different factors in plant abundance, important duck food plants, plant competition, management recommendations. The bulletin is illustrated with maps and many photographs.

**50. A Study of the Fall Food Supply of the Ring-necked Pheasant and the Bob-white Quail in Washington County, Rhode Island.**—Thomas Wright, Jr. 1941. *Journal of Wildlife Management*, 5: 279-296. The "chemical composition of weed seeds shows them to be dietetically superior to the common cereal grains in protein and fat content . . . Skunk cabbage fruits and snapweed seeds have a very high nutritive value."

**51. An Experimental Study of Browse as a Winter Diet for Prairie Chicken.**—F. N. Hamerstrom, Jr., F. Hopkins and A. J. Rinzel. 1941. *Wilson Bulletin*, 53: 185-195. Unlike its relatives, *Tympanuchus cupido americanus* was found incapable of surviving in winter on browse unsupplemented with grains. "Too much cultivation has driven Prairie Chickens from most of their original range; too little is having the same effect in parts of their acquired northern range, where areas once open are growing up solidly to brush," p. 186. "Perhaps on their original range and under original conditions Prairie Chickens subsisted on the typical grouse regimen of low concentrate foods." It may be that "the fact that they were adaptable enough to alter their type of feeding has made it possible for them to extend their range so far north of their original limits," p. 194.

## BOOKS

**52. Factors Affecting the General Status of Wild Geese and Wild Duck.**—Percy R. Lowe, et al. 1941. *International Wildfowl Inquiry, I*. Cambridge University Press. N. Y. Macmillan. \$2.25. 123 pp. An important report by a special sub-committee of the British Section of the International Committee for Bird Preservation, calling attention to the great dangers facing wild duck and geese with "increased facilities of travel and transport," "cold-storage and commercialization," destruction of eggs and birds in the Far North, "ill-considered reclamation of unsuitable areas of land" especially in central Europe, spread of human populations into the tundra of Siberia and Scandinavia, "siltling of mud in estuaries," "disturbance by aeroplanes," hunting seasons that begin too early and last too late. Great slaughter of ducks takes place in the "decoys" in Holland and by shooting in Hungary, Egypt and India. Seven chapters, each by different authors treat of conditions in northern breeding areas, the distribution of eel grass, British decoys, punt-gunning, ringing of ducks and "Close Time." The situation for wildfowl is alarming throughout the world. Let us hope that with drastically shortened hunting seasons, stopping the sale of game, limits on bags and methods, and protection at the breeding grounds, as well as refuges, the birds can be saved before it is too late.

**53. A Behavior Study of the Common Tern (*Sterna hirundo hirundo* L.)**—Ralph S. Palmer. 1941. *Proc. Boston Society of Natural History*, 42: 1-119. Two seasons were spent studying the terns at the Sugar Loaf Islands in Maine, but in neither year did the author arrive early in the season. Banding and various methods of feather marking were used; also a "fairly large number of tern speci-

mens" were collected from the observation tent, after "recording the behavior." Sketches are given of various postures, "mostly line drawings made from photographic images projected directly on drawing paper." Part One deals with "The Environment in the Breeding Season," emphasizing the need for isolation, for a nearby source of food, and for suitable ground conditions. Under "Associates" the author doubts the suggestion made by Fabricius (1937) and Hartman (1937) that ducks preferred nesting on islands with breeding colonies of Laridae for the protection afforded from Crows, saying that terns arrive after the ducks have started to nest. Rintoul and Baxter (1924, *Scottish Naturalist*, 148: 110), however, say that on the Shetlands "the first nests of the Eiders were very much harried by the Gulls, Ravens and Hoodie Crows," but when the terns arrived, they "kept off the Gulls and other marauders . . . so the Ducks got a chance, and although late, twenty or thirty of them got away with young ones."

The literature on terns is well covered, so much so that it is sometimes difficult to know just what is based on personal observation. For instance, it is not clear whether the evidence for "the pecking ceremony whereby the territory holder determines the sex of his companion" is based solely on the one instance recorded June 29 (p. 47), or whether it has been seen often and by different observers; if the former is true, too much is concluded from what may have been an aberrant behavior pattern. It is not plain just why the "bent" attitude "is for intimidation" and "the erect one indicates submission." It also seems a little far-fetched to call the "formalized preening" in flocks "substitute behavior"—"the result of a tension . . . because the social drive is opposed to the dominance drive," p. 100.

Many interesting facts are brought out on social behavior—fishing, bathing, "up flights" and social attacks, as well as on behavior of young. "Adults and young recognize each other when the latter are five days old." Common Terns hatched eggs of Roseate Terns (*Sterna dougalli*), "but did not rear the young, because the begging note of the latter species is weaker and will not stimulate a feeding reaction." Young terns swim much until they can fly; the first flight comes at about 30 days and the young may be blown out to sea.

Nests may be as near as 17 inches to each other, but in such a crowded colony more young are killed by neighbors than where pairs are more widely spaced. "A male or female on its territory will almost invariably fight an intruder regardless of the sex of the latter," p. 54. "In the highly social Common Tern, the value of territory seems to be that it gives individuals sufficient room in which to carry out individual reactions necessary for the continuance of the species, while at the same time leaving the birds so situated that many social reactions, which are beneficial to the group as a whole, can occur," p. 56.

**54. Birds in Your Backyard.**—Virginia S. Eifert. 1941. Popular Science Series, Vol. II. Illinois State Museum. Springfield, Illinois. 240 pp. Paper. 60 cents. This is "a series of word and brush impressions of the birds of Sangamon County, Central Illinois, and the Illinois State Museum, about the places in which they live, and their association with trees and lakes and open fields." Some hundred species are pictured with full page sketches by the author and an "appreciation" on the page facing. The pictures are of uneven value, many amateurish, some charming, while most give a pretty good idea of the bird and its haunts. The "appreciations" are written in lively, informal fashion; one wishes the author had used all the space available and told more about each bird. It is too bad that the incubation period of the Cowbird is given as 9 to 10 days instead of the correct period—11 to 12 days—as found by Hann and the reviewer. There are short chapters on feeding birds, birds to be found in Springfield and vicinity, a list of helpful books, a check list of birds of Sangamon County, briefly annotated, a delightful diary—"the Year of Birds"—with observations each week, and an index. A book that should do much to arouse interest in birds in central Illinois.

**55. The Road of a Naturalist.**—Donald C. Peattie. 1941. Boston. Houghton. 315 pp. \$3.00. This is a different kind of autobiography. We travel

with the author as he writes the book: interspersed with chapters on the fascination of the Mohave Desert and the glory of the great forests of the Northwest, we read of Mr. Peattie's ancestors, boyhood and early manhood, his wanderings in many places over this continent and in France. "In Nature the only barrens are the cities; these are all a howling wilderness where neither lion nor jackal dare set foot." He points out the qualities necessary in city birds, yet when he credits the English Sparrow with four broods a year, it should be noted that banded birds have been shown to raise only two broods, as Dr. Weaver informs me. (Two other slips should be mentioned: the only undisputed new avian species discovered in eastern North America in this century is the Cape Sable Seaside Sparrow (*Ammospiza mirabilis*); Audubon did not do the first banding, since a Grey Heron was ringed as early as 1710.)

The Road of a Naturalist takes us through an ever-changing landscape, showing us the wonders of nature and inspiring us to greater awareness of the life about us. Mr. Peattie writes eloquently of the love of life in bird and beast "in every scampering quadruped the tingling adventure of hour-to-hour existence—felt intensely, thought about never." And in these troublous times he hopes that man will change and improve and "some newer species not merely intelligent but wise, may walk the earth, deserving of his place on it in the ancient sunlight."

**56. Courtship and Display Among Birds.**—C. R. Stoner. 1940. London, Country Life. 140 pp. This book was written for "the non-specialist, interested in natural history, and for ornithologists who have not had time to go deeply into this branch of their subject." He states the theory that courtship display "makes a strong impression on her [the female's] eye, is flashed back to the brain and to the pituitary gland, which sends its message out to the rest of the body," i.e. to secrete hormones. Nuptial flights of shorebirds are "warning displays." Most birds have to be inconspicuous most of the time; some display hidden colors in courtship or show unusual flight or gait; some shed their plumes and bright plumage after the breeding season. The most gorgeous birds are forest dwellers. Much of the effect of display depends on its suddenness. The courtship of Grebe, Ruff and Mallard is compared. The author leans heavily on Marshall (1936). Only 29 authors are cited, Lorenz, Tinbergen and Lack all being omitted.

**57. The Birds of America.**—John James Audubon. Edited by William Vogt. Second ed. 1941. N. Y. Macmillan. \$4.95. This gorgeous volume of Audubon's prints with Mr. Vogt's excellent introduction and pertinent remarks under each species is now available at a much lower price than the original edition.

**58. Speciation in the Avian Genus Junco.**—Alden H. Miller. 1941. University of California Publications in Zoology, 44(3): 173-434. An outstanding contribution to the study of Junco evolution, including sedentary and migratory species and races, ranging from the tree limit in Canada and Alaska to Panama. The author is particularly successful in analyzing the approaches that should be made in interpreting the complex of phenomena of speciation. However, a review of this volume to be of real value to those specializing in evolutionary studies would require many pages of *Bird-Banding*, since the author in his "Discussion and Summary" devotes 27 pages to the subject.—C. L. W.

**59. Pageant in the Sky.** A Book of the Modern Sport of Bird-Watching Raymond S. Deck with photographs by the author. New York, Dodd, Mead & Company. October, 1941. \$3.00. pp. i-xiv + 268.

A book written by an enthusiast for amateurs. In a small compass this book touches on a variety of subjects in no especially logical sequence:—the mystery of migration, flyways, feeding birds in winter, bird houses, planting to attract birds, introduced species, courtship, nesting, sex, "the mystery bird" [woodcock], extinction of the Passenger Pigeon, classification, bird-banding, origin of ver-

naacular names, observation, and the water fowl situation, to mention the more prominent subjects. Intended as it is for beginners, the value of *Pageant in the Sky* could have been greatly increased if somewhere the author could have given a list of books and other references where the subjects so briefly touched on by him might be studied in greater detail. The photographic illustrations are not outstanding; judged by standards of a generation ago they are acceptable but do not measure up to present-day photographic work either in technical excellence or in composition.—J. L. P.