14(1): 45, 1943; Mason 14(3): 75, 1943; Harding 15(3): 115, 1944; and Wharton 15(4): 160, 1944.

It is not known whether these return records are from birds which have remained in their respective localities or have returned from a migration flight. Repeat records on other Blue Jays and the recapture of the birds described and quoted here so close to the point of banding would seem to indicate that they had remained in their original localities. On the other hand, evidence has been presented by Roberts (The Birds of Minnesota, 1932); Lincoln (U. S. D. A. Cir. 363. 1935); Broun (Auk 58(2): 262, 1941); and the following references in Bird-Banding: Stoner 7(4): 170, 1936; Cottam 8(2): 79, 1937; Gill 12(3): 109, 1941; and Lewis 13(2): 79, 1942, to demonstrate that some Blue Jays do undertake a seasonal migration. Gill *(ibid)* has offered the theory that young Blue Jays migrate while the older ones remain in a given locality. All of the available evidence supports the theory of Gill.—Ralph W. Dexter, Dept. of Biology, Kent State Univ., Kent, Ohio.

RECENT LITERATURE

Reviews by DONALD S. FARNER

BANDING AND MIGRATION

1. Chimney Swift's Winter Home Discovered. Frederick C. Lincoln. 1944. *The Auk*, 61(4): 604-609. This paper records a historic milestone in bird-banding. Thirteen Chimney Swifts, *Chaetura pelagica* (L.), banded in eight different localities in the United States and Canada, were recovered by natives in November or December, 1943, on the Yanayaco River in the region between the Putumayo and the Napo Rivers in Perú. This region is about 1,000 miles from Manaus, Brazil, where Gilliard in 1943 observed large numbers of birds which he believed to be Chimney Swifts. A map shows the recovery area and the banding localities. Unfortunately the former is slightly misplaced. (The appearance of the September, 1944, number of *The Migrant* was kindly withheld until Mr. Lincoln's article in *The Auk* had been published. Eight of the thirteen recoveries were of birds banded in Tennessee. See reviews immediately following.—Ed.)

2. Winter Home of Chimney Swifts Discovered in Northeastern Peru. Ben B. Coffey, Jr. 1944. *The Migrant*, 15(3): 37-38. This is a tabulation of the data on the banded Chimney Swifts, *Chaetura pelagica* (L.), recovered on the Yanayaco River in Perú, approximately 3,000 miles from the places of banding. Of the thirteen recovered Swifts the oldest was banded in October, 1936. All recoveries were made in December, 1943. Eight of the birds were banded in Tennessee and one each in Alabama, Georgia, Illinois, Connecticut, and Ontario.

3. Maps Showing Chimney Swift Migration. Albert F. Ganier. 1944. *The Migrant*, 15(3): 44, 47-50. The first map gives the distribution of Nashville banded Swifts recovered elsewhere, and banding localities of Swifts recovered at Nashville. The second map shows the banding localities of the 13 Swifts recovered in Perú together with the probable migratory route to the Yanayaco River. (The route as given passes from Louisiana to Yucatán, skirts Honduras, and crosses Panama.) The third map shows the spring movement of Swifts northeastward through Texas as shown by recoveries of banded birds. This together with field observations constitutes a strong argument in favor of the hypothesis of an overland spring migration from Central America.

4. More about the Chimney Swifts Found in Perú. Albert F. Ganier. *The Migrant,* 15(3): 39-41. These are further notes and remarks concerning the thirteen Swifts recovered in Perú. The mouth of the Yanayaco River, the recovery locality, is 60 miles from Iquitos, a city of 34,000 inhabitants, located on the Amazon River, 2,400 miles from the Atlantic but only 380 feet above sea level. The author points out the many desirable details concerning the recoveries which as yet are lacking. For example it is not known over what period the bands were collected. In view of the usual ratio of banded to unbanded birds in trapping it is estimated that the thirteen recoveries represent an actual collection or examination of more than 5,000 Swifts.

5. Winter Recovery of a Nashville Chimney Swift. Amelia R. Laskey. 1944. *The Migrant,* 15(3): 42-43. These are a group of notes on one of the Chimney Swifts, *Chaetura pelagica* (L.), recovered on the Yanayaco, Perú. This Swift (No. 140-44267) was one of a flock of more than five thousand which was roosting in a nineteen-foot chimney in downtown Nashville, October 13, 1940.

6. Autumn Passage Migration in Eritrea. K. D. Smith. 1944. *The Ibis,* 86: 251-253. A list of eleven Palearctic migrants observed as early as August near the junction of Eritrea, Ethiopia, and the Anglo-Egyptian Sudan. With the exceptions of the Glossy Ibis, *Plegadis falcinellus falcinellus* (L.), and the European Teal, *Anas crecca* (L.), all are charadriiform species.

ECOLOGY

7. Observations on the Nesting Mortality of the Brewer Blackbird, *Euphagus cyanocephalus.* Ira La Rivers. 1944. *The American Midland Naturalist,* 32(2): 417-437. Observations on the nests of 107 pairs of *Euphagus cyanocephalus* (Wagler) which nested in a 15-acre tract of chaparral and forest near Reno, Nevada, were studied during May and June. This tract was at the junction of the Transition and Upper Sonoran life zones. The nest density was about seven per acre. Fifty-eight percent of the nests were less than five feet from the ground; 33 percent were from five to ten feet from the ground; and 9 percent were more than ten feet from the ground. The mortality was lower in the higher nests. Thirty-nine percent of 521 eggs observed in this study were hatched and reared to young which left the nest successfully. Primary predators (persistent egg and bird feeders) were the California Jay, *Aphelocoma californica* (Vigors); American Magpie, *Pica pica hudsonia* (Sabine); the Western Crow, *Corvus brachyrhynchos hesperis* (Ridgway); Nevada Bridled Weasel, *Mustela frenata nevadensis* (Hall); Western Ringtail, *Bassariscus astutus raptor* (Baird); Desert Bullsnake, *Pituophis catenifer deserticola* (Stejneger); Striped Racer, *Coluber taeniatus* (Hallowell); and the Striped Racer, *Coluber constrictor mormon* (Baird & Girard). There are also lists of secondary and incidental predators and interesting accounts of individual predatory acts. In addition to the 61 percent egg-nestling mortality (from laying of eggs until departure of young from nest) the author estimates that 50 percent of the young which leave the nest die before leaving the nesting area. The estimate of a one-third replacement each year to keep the population constant (33 percent per annum adult mortality) appears to be a trifle low when compared to calculations for other passerine species. An interesting paper.

8. Christmas Bird Census—1943. Various authors. 1944. *The Canadian Field-Naturalist,* 58(4): 135-141. These are the individual summaries the Christmas bird censuses in 24 communities in Canada. Weather conditions, periods of observation, number of observers, and the number of each species seen are recorded.

9. The Prairie Chicken and Sharp-Tailed Grouse in Early Wisconsin. A. W. Schorger. 1944. *Transactions of the Wisconsin Academy of Sciences*, 35: 1-59. The author has made a thorough and critical study of the published material on the Prairie Chicken, *Tympanuchus cupido americanus* (Reichenbach), and the Sharp-Tailed Grouse, *Pedioecetes phasianellus campestris* (Ridgway). In this study material from popular periodicals, journals of expeditions, newspapers, as well as scientific journals has been used. A constant source of difficulty is the confusion of the two species by many of the observers. Nevertheless it has been possible to derive a reliable picture of the history of these species in Wisconsin. The original range of the Prairie Chicken included 43 counties in southern and southwestern Wisconsin. The early effect of agriculture on this species was probably an increase in numbers although the author rightfully points out that the degree of this increase is not known. The increase is probably due to an increase in habitat and food supply as the result of agriculture which at that time had not invaded the prairies. The maximum population probably occurred about 1850. After this the prairies were gradually diverted to farming and the steady decline of the Prairie Chicken population began. The Prairie Chicken gradually moved northward into secondary habitats created by destruction of the forestland. An important fact in considering the future of the species is that the flocks are now isolated and non-migratory which means extensive inbreeding. The future of the species in Wisconsin cannot be viewed with optimism in Wisconsin since the vast portion of its natural habitat has now been destroyed and cannot be reclaimed.

Originally the Sharp-Tailed Grouse occurred in all parts of the state. It became rare in southern Wisconsin by 1852 although it persisted in the south-central part of the state (Dane County) until recently. "There is every reason to believe that under present land policies the species will continue to be plentiful. The replacement of the virgin coniferous forest with hardwoods, the growth of brush on drained marshes, and the withdrawal of marginal lands from cultivation have improved its habitat in many sections of the state. It is thoroughly capable of thriving in regions untouched by agriculture. In fact, it seems to be incapable of existing without a certain amount of wild land."

10. Notes on a Cowbird Parasitizing a Song Sparrow. Russell T Norris. 1944. *Wilson Bulletin*, 56: 129-132. After summarizing the six published observations of egg-laying and eight of egg-removal by *Molothrus ater*, Mr. Norris tells of seeing a Cowbird carry off and eat a Song Sparrow egg at 9:45 a.m. May 28, and of her behavior on the nest where she laid an egg at 4:40 the following morning. An excellent picture of the Cowbird on the nest is given.—M. M. NICE.

11. Food-bringing by African Bronze Cuckoos. R. E. Moreau. 1944. *Ibis*, Jan.: 98-100. Three species of these parasitic Cuckoos—*Lampromorpha klaasi*, *L. caprius* and *Chryscoccyx cupreus intermedius* have been noted feeding young, an indication that these species "are not so far advanced in parasitism as other Cuckoos."—M. M. NICE.

CONSERVATION AND WILDLIFE MANAGEMENT

12. Conserving Endangered Wildlife Species. Hartley H. T. Jackson. 1943. *Transactions of the Wisconsin Academy of Science, Arts and Letters*, 35: 61-89. This paper is based on a lecture delivered January 15, 1941, to the class in wildlife conservation of the Graduate School of the United States Department of Agriculture. It discusses numerous examples of wildlife species which have become extinct or which have decreased in numbers until extinction is a distinct possibility. Emphasis is placed on American species. Although ecologic changes, severe weather conditions, and disease may have been contributing factors or rarely

the sole factors in the extinction of species, man is by all means a vastly more important destroyer of species than any other agent. Within the borders of the United States five species of birds are definitely known to be extinct. These are the Great Auk, *Plautus impennis* (L.), Passenger Pigeon, *Ectopistes migratorius* (L.), Labrador Duck, *Camptorhynchus labradorius* (Gmelin); Heath Hen, *Tympanuchus cupido cupido* (L.); and the Carolina Paroquet, *Conuropsis carolinensis carolinensis* (L.). The Eskimo Curlew, *Phaeopus borealis* (J. R. Forster) is almost certainly extinct and the Cape Sable Seaside Sparrow, *Ammospiza mirabilis* (Howell), was probably wiped out of existence by the tropical hurricane in southern Florida in 1937. Several species of North American birds are at present in a more or less precarious situation. Among these are Leach's Petrel, *Oceanodroma leucorhoa leucorhoa* (Vieillot); Reddish Egret, *Dichromanassa rufescens rufescens* (Gmelin); Golden Plover, *Pluvialis dominica dominica* (Mueller); and Upland Plover, *Bartramia longicauda* (Bechstein). These species now appear to be holding their own or are showing some recovery. The Great White Heron, *Ardea occidentalis* Audubon, in southern Florida, in spite of protection, appears to be barely holding its own. The situation of the nesting colonies of the Roseate Spoonbill, *Ajaia ajaja* (L.), is probably more precarious. The Trumpeter Swan, *Cygnus buccinator* Richardson, once widely distributed in northwestern United States now survives precariously in three restricted areas. The California Condor, *Gymnogyps californianus* (Shaw), has been reduced to a population of less than 70 individuals. The White-tailed Kite, *Elanus leucurus majusculus* Bangs and Penard, and the Everglade Kite, *Rostrahamus sociabilis plumbeus* Ridgway, are greatly reduced in numbers. All races of Prairie Chickens are in a more or less precarious situation. The Eastern Turkey, *Meleagris gallopavo silvestris* Vieillot, has all but disappeared as a pure-strain wild turkey. The formerly widespread Whooping Crane, *Grus americana* (L.), dwindled to a population of 25 individuals in 1925 and although it has recovered somewhat the total population is probably not more than 100. The Florida Crane, *Grus canadensis pratensis* Meyer, is dwindling in numbers and needs rigid protection. The plight of the Ivory-billed Woodpecker, *Campephilus principalis* (L.), is well known. With the war-time demands for timber rapidly reducing its required habitats little hope can be held for its preservation. Three species of small passerine birds have approached the danger line. These are Bachman's Warbler, *Vermivora bachmani* (Audubon); Ipswich Sparrow, *Passerculus princeps* (Maynard); and the Dusky Kinglet, *Corthylio calendula obscurus* (Ridgway) of Guadalupe Island, Lower California. Among the species of birds which have shown promising recovery under protection are the American Egret, *Casmerodius albus egretta* (Gmelin) and the Wood Duck, *Aix sponsa* (L.). Methods of preserving species are discussed. This paper which deals with mammals and reptiles in addition to birds is especially recommended to teachers of conservation and wildlife management as reading material for their classes.

13. Bobwhite Quail Populations on Hunted Vs. Protected Areas. F. M. Baumgartner. 1944. *The Journal of Wildlife Management*, 8(3): 259-260. "From 1939 through 1943, populations of Bobwhite Quail *(Colinus virginianus)* were censused intensively on about 2,400 to 3,100 acres of the Lake Carl Blackwell Project in Payne County, Oklahoma. Part of the area was subjected to controlled hunting of quail each autumn and the remainder was closed to hunting." The area of the hunted portion was 530 to 600 acres depending on the lake level. Censuses were taken on April 1 before breeding, November 1 before hunting season, and January 1 after hunting season. In the hunted area it was found that losses of 20 to 50 percent were recovered during the following breeding season. A loss of seventy percent during the winter of 1939-40 due to unfavorable conditions was recovered completely by the end of the breeding season in 1941. The recovery in the hunted area was favorable when compared to recovery of normal

losses in the closed area. Because of the obviously higher carrying capacity of the hunted areas the data are by no means comparable. Nevertheless the data on the hunted area indicate the amount of hunting loss which a population can withstand in this particular type of area.

14. Dispersal and Survival of Game Farm Bobwhite Quail in North-central Oklahoma. F. M. Baumgartner. 1944. *The Journal of Wildlife Management,* 8(2): 112-118. This is a summary of the data and observations obtained from the release of 1,064 game farm Bobwhite, *Colinus virginianus* (L.), on the Lake Carl Blackwell Project near Stillwater. The birds released were from seven weeks of age to adults. It was found that released game-farm birds fared badly in competition with wild birds especially when there was a surplus of the latter. The survival of game-farm birds was nil under unfavorable environmental conditions. Under favorable environmental conditions and lack of competition from wild birds it was found that game-farm birds, both young and adults, tended to take up ranges within a mile of the point of liberation with a few individuals dispersing rapidly to distances from two to eight miles within a period of a few days to several months. Under these favorable conditions it was estimated that as many as 50 percent of the game-farm young furnished hunting in the late autumn and 45 percent were available as breeding stock in the following spring. The author concludes that "heavy restocking with game-farm birds appears to be costly and a rather futile method to increase Bobwhite populations for either hunting or breeding stock."

15. Distribution of Upland Game Birds in Nebraska. Levi L. Mohler. 1944. *The Nebraska Bird Review,* 12 (1/2): 1-6. This is a summary of investigations by four game technicians on the distribution and abundance of upland game birds in Nebraska. The investigations were conducted from 1941 to 1944. The Ring-Necked Pheasant, *Phasianus colchicus torquatus* (L.), now occurs in all counties of Nebraska and has been open to legal shooting since 1927. The kill in recent years has been a million or more annually. The Bobwhite, *Colinus virginianus virginianus* (L.), is nearly state-wide in distribution although it is abundant only in the southeastern counties with isolated areas of abundance in other parts of the state. The Prairie Sharp-Tailed Grouse, *Pedioecetes phasianellus phasianellus* (L.), "is seldom reported outside the sandhill area and is not commonly seen at many points south of the Platte River." Even winter records outside of the sandhill area are rare. The Greater Prairie Chicken, *Tympanuchus cupido americanus* (Reichenbach), although at the present time recorded during the breeding season from thirty counties, occurs chiefly in the counties along the southern and eastern edges of the sandhills area where not more than 40 percent of the land, and usually much less, is under cultivation. During the winter most of the flocks are reported from the southern and eastern part of the breeding range. The Chukar Partridge, *Alectoris graeca chukar* (J. E. Gray), although "stocked in numbers during the past several years, including more than 5,000 in the past two years, . . . is nowhere abundant in the state, and at most points from which accurate records are available the species is definitely declining." In the spring of 1944 Hungarian Partridges, *Perdix perdix perdix* (L.), were reported from four northern counties. A few Sage Hens, *Centrocericus urophasianus* (Bonaparte), may be present in the extreme northwestern part of the state. The Long-billed Curlew, *Numenius americanus* (Bechstein), and the Upland Plover, *Bartramia longicauda* (Bechstein), although not included in the investigations, are believed by the author to have nested in increasing numbers in Nebraska in recent years.

16. North Dakota Upland Game Census for 1944. Roy N. Bach. *North Dakota Outdoors,* 7(3): 6-7. This brief account of the state-wide upland game census consists principally of three maps showing the distribution of the Ring-

necked Pheasant, *Phasianus colchicus torquatus* (Gmelin); Sharp-tailed and Pinnated Grouse, *Pedioecetes phasianellus campestris* Ridgway and *Tympanuchus cupido americanus* (Reichenbach); and the Hungarian Partridge, *Perdix perdix perdix* (L.). The data are presented comparatively as "best," "good," and "fair."

17. Saving the Trumpeter Swan. Jean Delacour. 1944. *Animal Kingdom*, N. Y. Zool. Soc., 17(6), 7pp. *Cygnus buccinator*, largest of the world's seven species of Swans, is the only one in danger of extermination. Nesting in northwest North America as far south as it can, and wintering as far north as it can, and lacking the wariness of the Whistling Swan, its numbers ten years ago had been reduced to some 60 birds in the United States and a few hundred in British Columbia. The establishment of the Red Rock Lake Refuge in Montana in 1935 has bettered the situation; in 1944 there were 169 adults and 62 young in that area and 44 adults and 11 young in the Yellowstone, and about 500 in Canada. The population limits at our two refuges seemed to have been reached and attempts to transplant birds to other refuges have met with small success. At Mrs. C. N. Edge's instigation a joint effort of conservation agencies is being made under Mr. Delacour's supervision to save this splendid species by direct control; 20 cygnets were caught the last of August on the Red Rock Refuge and are being raised at the Lake Malheur Refuge in Oregon. They and others caught during the next few seasons will be established as breeding pairs and their "offspring will eventually be used to resettle favorable waters in the former range of the species." Vision, co-operation, expert skill, and *action*—an inspiring example of conservation at work.—M. M. NICE.

18. The Status of Barrow's Golden-Eye in the Eastern United States. Edwin M. Hasbrouck. 1944. *The Auk*, 61(4): 544-554. Over 2,000 records of *Glaucionetta islandica* compiled from the literature and 200 specific inquiries to ornithologists are tabulated and mapped indicating that this species is a more common winter resident than formerly supposed. In Eastern United States, Massachusetts leads with 244 definite records and scattered records occur south to North Carolina, Southern Ohio, and Illinois.—E. P. ODUM.

19. The Present Status of the Double-Crested Cormorant on the Coast of Maine. Alfred O. Gross. 1944. *The Auk*, 61(4): 513-537. Behind the matter-of-fact title and careful statistics of this paper lies a dramatic story of population dynamics which should be read by all conservationists. *Phalacrocorax auritus auritus* became entirely exterminated as breeding birds on the Maine coast shortly before 1900. Not until 1925 did the species nest again, but in a very short time it reinvaded the entire coast, at least 10,000 pairs nesting in 1943. As cormorants increased complaints from fishermen increased, and the Fish and Wildlife Service undertook control measures. Fortunately, control can apparently be accomplished by spraying eggs without danger of exterminating the species or injuring other birds breeding on the off-shore islands. Thus, both the value of accurate population data and moderate planned control or "management" is emphasized, since another cycle of extermination would probably follow if fishermen interests were led to take matters in their own hands as result of a too great increase in cormorant population.—E. P. ODUM.

LIFE HISTORY

20. A Study of the Cardinal in Tennessee. Amelia R. Laskey. 1944. *Wilson Bulletin*, 56: 27-44. Results of thirteen years of study on *Richmondena cardinalis cardinalis*, during which 1,621 birds were banded. Cardinals remain throughout the year in the same garden, an individual, rarely, if ever, wandering "farther than four miles from its birthplace." The winter groups of 6 to 25 birds

are apparently composed chiefly of young of the year. "Each sex defends territory against intruders of its own sex." "The female of a pair tends to follow her mate throughout the winter. . . . The male feeds the female during courtship and the first nesting." Nesting begins in April (occasionally in March), and may last into September; the female builds, incubates, and broods, the male helps feed the young; the usual set consists of three eggs, incubation lasts 12 to 13 days; the young leave at 9 to 10 days. "Young Cardinals begin to sing a distinctive warbling song at three or four weeks of age. . . . Cardinals have at least 28 different songs, but male and female song are indistinguishable."

Highest weights occur in late fall and winter. Two males reached the age of six years, but other banders have recorded ages of 10 and 13 years. Detailed observations are given on nesting and social behavior; there is a bibliography of 33 titles. An important contribution to the life history of this fine bird and an outstanding example of what can be done with colored and aluminum bands.—M. M. NICE.

21. The Eastern Chipping Sparrow in Michigan. L. H. Walkinshaw. 1944. *Wilson Bulletin*, 56: 193-205. Valuable summary of migratory, territorial, and nesting behavior of *Spizella p. passerina*. "The male sings almost continuously from arrival until mating but sings very little between mating and the beginning of incubation." Nesting routine follows the regular fringillid pattern. Incubation lasts 11 days, fledging 7 and 8. Young of late broods "were fed by their parents until they were 33 (perhaps 35 or 40) days old." "Of 66 nests, only three were parasitized by Cowbirds." Unusually high nesting success was enjoyed: "Of 50 nests (mostly near dwellings), 33 (66 percent) produced young; 31 (62 percent) produced fledglings. Of 152 eggs, 104 (68.42 percent) hatched; 93 (61.18 percent) produced fledglings." One explanation may lie in the protection afforded by evergreens planted on lawns, 27 of 51 nests near dwellings having been found in conifers.—M. M. NICE.

22. Clay-colored Sparrow Notes. L. H. Walkinshaw. 1944. *Jack-Pine Warbler*, 22: 120-131. Observations on *Spizella pallida* in Crawford County, Michigan. The species is strongly territorial, carrying on all its activities within the territory. A male was noted feeding an insect to his mate as they foraged; the pair had a nest, but no eggs. Nests are built from 10 to 105 cm. from the ground, the average of 40 being 45 cm.; six nests ranged from 2.1 to 7.3 grams in weight, averaging 3.95. Females build the nest, incubate the eggs, and brood the young, males occasionally assisting in the last two activities. Young usually stay in the nest eight days, weighing 10 grams on leaving. Weights of six nesting females averaged 11.8 grams, of a male in Alberta 12.8 grams. Size of sets ranged from 2 to 5, averaging 3.52. Ten of 19 nests were successful (52.6 percent); of 56 eggs, 41 hatched (73.2 percent), and 30 young left the nest (53.6 percent). No parasitism by Cowbirds was found.—M. M. NICE.

23. The White-faced Storm Petrel or Takahi-kare-moana. Part III. L. E. Richdale. 1944. *Trans. Roy. Soc. New Zealand*, 73(4): 835-850. The final section of this admirable study already noticed in *Bird-Banding* (July, 1944, No. 21, and October, No. 10). The fledging period of 38 chicks ranged between 52 and 67 days with an average of 57.45 days. They are fed fairly regularly up to the day of departure. Statistical treatment of weights and measurements of 100 adults and 94 chicks on the day of departure showed that full bill and wing length is not attained until after the young leave the burrow (adults' wings averaged 158.61 mm., chicks' wings 156.45), but that the young exceed the adults in weight, the latter averaging 47.19 grams, the former 51.77.—M. M. NICE.

24. Watching the Powerful Owl. David Fleay. 1944. *The Emu*, 44(2): 97-112. The information in this fine paper is based on observations extending over twenty years. In addition to extensive observations on courtship and nesting

the author has also reared young in captivity. Only a few of the many interesting observations can be recounted in a review of this length. As is the case also in the closely related Barking Owl, *Ninox connivens* (Latham), the male Powerful Owl, *Ninox strenua* (Gould). Among the interesting habits observed in this species is the taking of baths in cold creek-water in the chilly period before dawn. The food consists almost exclusively of arboreal mammals. "From a careful mapping-out of a considerable area of range country I have come to the conclusion that a pair of these large owls controls a territory several square miles in extent and no infringement of such bushland by others of their kind is tolerated. . . . Attempts at breeding in captivity were unsuccessful even in a large secluded aviary. The nesting activities of the Powerful Owl begin two or three months earlier than other Australian owls. Courtship begins in late April and early May. Eggs are laid during the last week of May or first days of June. "It nests during the most bitter wet and doleful weeks of the year when the bushland is at its worst." Two apparently young birds were observed to pair on September 16, 1941, but did not breed until the 1942 season. The author estimates the incubation period to be 38 days. Two of the author's captive owlets died of a respiratory infection believed to have been caused by an air-sac mite. It is suggested that this disease is an important natural cause of mortality. A very interesting and important paper.

25. Some Habits of the Chimney Swift. W. M. Walker. 1944. *The Migrant*, 15(3): 45-46, 51-52. This is a brief discussion of the Chimney Swift, *Chaetura pelagica* (L.), with notes on range, migration, roosting habits, structure, feeding and flight, and enemies.

BEHAVIOR

26. The Problem of Anting. A. H. Chisholm. 1944. *The Ibis*, 86: 388-405. This paper consists of an extensive interesting discussion of the history of the anting problem as well as a presentation of the theories proposed to account for this phenomenon. The theories considered in this paper are as follows: (1) *Food carriage.* This theory assumes that the ants are placed among the feathers to be used later as a source of food. There is little to support this theory. (2) *Food cleansing.* It is proposed that the ants are thrust among the feathers in order to remove the formic acid before they are eaten. Although this may have been the origin of the anting habit it does not explain it completely since the ants thus "cleansed" are not always eaten. (3) *Skin cleansing.* It is suggested that the formic acid removed from the ants serves as an ectoparasitic repellant. (4) *Skin stimulus.* In this respect it is suggesting that anting may serve a role similar to dusting. (5) *Aroma attraction.* This theory suggests that the aroma of formic acid derived from the ants is pleasing to birds. It is unfortunate that this very complete discussion is not accompanied by a bibliography.

27. An Avian Crèche. H. R. Ivor. 1944. *Nature Magazine*, 37: 349-351, 386. Very interesting account of the activities of a six-weeks-old female Bluebird *(Sialia sialis)* and an adult female Wood Thrush *(Hylocichla mustelina)*—both hand-reared—in helping feed 18 nestlings of seven species adopted by the author. The Bluebird fed all the young birds, but at first the Thrush was attracted only to the young of her own species. Curiously enough, *in two days these 12-day-old young had become so conditioned to Mr. Ivor as their parent-companion that they refused to gape to one of their own kind.* (I had a similar experience with Song Sparrows, but they were taken at six days and it was a week later that they came again into contact with an adult of their own species.) They gave in after a while and the next day the Thrush was feeding all 15 with untiring energy; she fed with a "sudden, incisive movement," that suited the Thrushes and Cardinals, but not the Bobolinks and Orioles whose parents are gentle feeders.—M. M. Nice.

28. Aye, She was Bonnie. H. R. Ivor. 1944. *Nature Magazine*, 37: 473-475. Further account of the young Bluebird that helped feed younger birds; later she assisted a pair of Bluebirds in feeding their small nestlings and also *brooded them along with the mother.* Both articles are illustrated with excellent photographs.—M. M. NICE.

29. The Heart Rate of Small Birds. Eugene P. Odum. 1945. *Science*, 101(2615): 153-154. The author discusses briefly some of the results obtained in the measurement of heart rate of small birds by the use of the cardiovibrometer, particularly as an indicator of the physiologic response to environmental changes. Basal heart rates in passerine birds have been found to vary from 350 to 615 beats per minute; maximum rates vary from 800 to more than 1,000 beats per minute. Heart rates shows roughly an inverse relation to body weight. A general statement concerning sex differences in heart rate is not possible although there seems to be a distinct difference in the domestic fowl. In the young of altricial species the relation of heart beat to temperature is the same as in poikilothermal animals. "Interestingly enough, at a thermal neutral temperature the heart rate of nestlings of all ages, juveniles and adults of the House Wren is about the same, 450 per minute. At 21°C. (70°F.), however, the heart rate rises from 150 per minute at hatching to 600 per minute at nine days of age (when heat loss control is poor) and drops to 490 per minute in the adult . . ." Heart rate usually decreases slightly at the peak of lung and air sac inflation. Other cyclic, but less satisfactorily explained, variations occur. At lower temperatures breathing rates and heart rates correlate directly; the relation is inverse at higher temperatures. "The ratio of breathing rate to heart rate appears to be significantly different in small birds and mammals, being greater than 1 to 6 in birds and less in mammals. In general, small birds breathe less rapidly but have a somewhat higher heart rate than small mammals of the same size although comparable data are as yet few."

30. Some Weights of African and of Wintering Palaearctic Birds. R. E. Moreau. 1944. *Ibis*, Jan.: 16-29. Weights of 132 species of African birds and 15 Palaearctic. Breeding and non-breeding males of the ploceine Weavers *Sitagra n. nigriceps* and *Xanthophilus aureoflavus* did not differ in weight. Specimens of the "Warbler" *Apalis m. melanocephala* "from 2,900-3,600 feet are significantly heavier than those from 200-1,200 feet." Weights for five of the Palaearctic migrants are less than those given by Heinroth (1922) and Niethammer (1937-38) for the summer home; the differences are striking with the European Cuckoo *(Cuculus c. canorus)*, the Nightjar *(Caprimulgus e. europaeus)*, and Red-backed Shrike *(Lanius collurio)*. This is an interesting problem for banders in the southern states and Latin America.—M. M. NICE.

31. Rensch on the Increase of Heart-weight in Relation to Body-weight with Increase in Altitude. R. E. Moreau. 1944. *Ibis*, Jan.: 30-32. The author concludes that "though the trend indicated might be expected on physiological grounds," Rensch's (1930) evidence is unsatisfactory.—M. M. NICE.

32. Extraordinary Egg Production in a Robin. H. W. Shove. 1944. *British Birds*, 38: 117. In May, 1944, a British Robin *(Erithacus rubecula melophilus)* laid 20 eggs in one nest, after which she was, the author thinks, "disturbed by a cat and never returned." "Between about every six or seven eggs she took an interval of a few days." It is a pity that exact dates were not kept and notes given as to her mate's behavior. This would not seem to be a matter of continuous laying as in the case of the famous Flicker, but rather that the Robin laid three sets with probably the customary five-day interval when one nesting cycle is suddenly terminated. Without more details it is impossible to hazard a guess as to why one set was "deserted" and another laid on top of it; possibly she was an unmated bird.—M. M. NICE.

33. Breeding of Double-banded Dotterel. R. H. D. Stidolph. 1944. *The Emu*, 44(2): 85-86. The author records three clutches of eggs of *Charadrius bicinctus* (Jardine and Selby) which contained four, four, and six eggs. All three clutches were found within a radius of a few feet on three successive summers. The normal number is two or three. The author believes that these clutches were the eggs of one female which returned to the same nesting locality three successive summers.

FOOD HABITS

34. Some Insect Food of the Chickadee. George F. Knowlton. 1944. *Bulletin of the Brooklyn Entomological Society*, 39(3): 85. Five specimens of *Penthestestes atricapillus septentrionalis* (Harris) collected at Cove, Utah, September, 1940, indicated that the birds had fed principally on aphids of sagebrush, willow, cockle-burr, and probably alfalfa.

35. Insect Food of the Western Meadowlark. G. F. Knowlton and D. R. Maddock. 1943. *The Great Basin Naturalist*, 4(3/4): 101-102. An examination of the stomach contents of 172 specimens of *Sturnella neglecta* (Audubon) emphasizes the insectivorous habits of the birds. Among the insects occurring most frequently were several species of grasshoppers and crickets, several species of beetles, Lepidoptera, bugs (Hemiptera), and Hymenoptera.

36. Pentatomidae Eaten by Utah Birds. George F. Knowlton. 1944. *Journal of Economic Entomology*, 37(1): 118. Stomachs of 2,373 birds belonging to 33 species contained Pentatomidae (stink bugs) of 18 species. Many of these species cause injury to crops; some are beneficial because they feed on injurious caterpillars, harmful beetle larvae, and other injurious insects.

37. Utah Bird Predators of the False Chinch Bug. George F. Knowlton and Stephen L. Wood. 1943. *Journal of Economic Entomology* 36(2): 332. This paper lists 46 species of birds which, on the basis of stomach analyses, are known to feed on the false chinch bug, *Nysius ericae* (Schilling).

38. Clarke's Nutcracker, *Nucifraga columbiana*, at Banff. N. B. Sanson. 1944. *The Canadian Field-Naturalist*, 58(5): 182. These are notes concerning the habits of the Clarke Nutcracker in feeding on the cones of the White Bark Pine, *Pinus albicaulis*.

SYSTEMATIC ORNITHOLOGY

38. The Races of the Solitary Sandpiper. Boardman Conover. 1944. *The Auk*, 61(4): 537-544. The author presents evidence to show that *Tringa solitaria solitaria* and *T. s. cinnamomea* are good races, but have a north-south rather than an east-west distribution as previously assumed. *Solitarius* breeds from British Columbia east to Labrador while *cinnamomea* breeds further north but west of Hudson Bay. *Cinnamomea* is larger, and in breeding plumage coloration of upper parts is best criterion for distinguishing races.—E. P. Odum.

39. Notes on the Palm Warbler, *Dendroica palmarum* (Gmelin), in Canada. A. L. Rand. 1944. *The Canadian Field-Naturalist*, 58(5): 181-182. A series of six Ottawa birds although intermediate between a series of *palmarum* from Manitoba and *hypochrysea* from New Brunswick is closer to the latter and obviously referable to it. Ottawa probably represents the westernmost breeding area of the eastern race. The single specimen of *palmarum* collected in Quebec (Moisie Bay) is regarded as a stray. Recently the western race, *palmarum*, has been found to breed in northeastern British Columbia, thus extending its known breeding range westward.

EVOLUTION

40. An Analysis of the Characters of *Archeopteryx* and *Archeornis*. Were they Reptiles or Birds? P. R. Lowe. 1944. *The Ibis*, 86: 517-543. Following an extensive study of the available material of these two fossil genera the author concludes that with the exception of feathers these genera have no avian characteristics. "In spite, then, of the fact that since the days of Owen these creatures have been almost universally regarded as birds, I have been forced to the opinion that they are arboreal climbing dinosaurs with the power to glide. They failed to attain to perfect flight and they failed to attain to avian status. They were, I suggest, a reptilian side-issue which takes place not at the bottom of the avian phylum but at the top of the reptilian." The importance of this conclusion lies not in the placement of the genera in Reptilia instead of in Aves but rather in the conclusion that they are not among, or closely related to, the immediate reptilian ancestors of birds.

PARASITOLOGY AND DISEASES

41. Parasitism by Protocalliphora and Management of Cavity-Nesting Birds. Edwin A. Mason. 1944. *The Journal of Wildlife Management*, 8(3): 232-247. The larvae of the fly, *Protocalliphora splendida* Macquardt, are nest parasites of various species of cavity-nesting birds. Usually the larvae are found beneath the cup of the nest. Generally they attack the nestlings at night, usually sucking blood from the feet or legs. From 1936 to 1941, 162 nests of cavity-nesting species were examined. *Protocalliphora* infestations were found in 94 percent of the Bluebird nests, 82 percent of the Tree Swallow nests, and 47 percent of the House Wren nests. This parasite may be an adverse factor in nesting success in conjunction with unfavorable weather conditions or inadequate nutrition. *Protocalliphora splendida* has two broods per year. The second brood passes through the winter in the adult stage. A chalcid secondary parasite, *Mormoniella vitripennis*, is a common parasite of the larva of *Protocalliphora splendida* and is important as a natural control. It is at least two brooded. It spends the winter in the larval stage with the adults emerging in late spring or early summer after a brief period in which metamorphosis occurs. It is important in controlling *Protocalliphora* that the nesting boxes be cleaned each year and that the *Mormoniella* population be maintained at its maximum. Since the *Mormoniella* larvae winter in the bird boxes it is necessary that the bird-box cleaning be delayed until just before the time of occupancy. It is then best to sweep the contents of each box into a container to remain undisturbed and dry in an open shed or elsewhere, so that the chalcid adults *(Mormoniella)* can fly freely on emergence. Autumn cleaning would result in the loss of the *Mormoniella* larvae and a consequent increase in parasitism of the nestlings by the *Protocalliphora* larvae in the following nesting season.

42. Visceral Gout in a Wild Ruffed Grouse. I. McT. Cowan and C. D. Fowle. 1944. *The Journal of Wildlife Management*, 8(3): 260-261. The authors report a case of visceral gout in *Bonasa umbellus sabini* (Douglas) which they believe to be the first recorded in wild gallinaceous birds. Visceral gout (uremic poisoning) is not infrequent in the domestic fowl.

43. Inapparent Muscular Dystrophy in Young Ring-Necked Pheasants. Erwin Jungherr, Rebecca Gifford, and A. L. Lamson. 1944. *Journal of Wildlife Management*, 8(3): 261-262. Dystrophic alterations in the breast muscle and to some extent in the superficial flexors of the leg were noted in 37 percent of the young birds examined. The example examined was from 14 Connecticut pheasant breeders. The cause of the dystrophy is unknown although the lesions suggested non-bacterial degenerative conditions similar to that caused by a low vitamin E level in the diets of small laboratory mammals and ducks.

44. Host List of the Genus *Trichomonas* (Protozoa: Flagellata). Banner Bill Morgan. 1944. *Transactions of the Wisconsin Academy of Sciences, Arts and Letters,* 35: 235-245. According to this list flagellates of the Genus *Trichomonas* have been recorded from 44 species and 13 orders of birds. Although this list has doubtlessly received critical attention in its preparation it may be of somewhat limited value as a tool for investigators since it contains no names of authors either of hosts or parasites and has no bibliographic references to the sources of the records.

45. The Trombiculid Mites (Chigger Mites) and their Relation to Disease. H. E. Ewing. 1944. *The Journal of Parasitology,* 30(6): 339-365. Although this paper is devoted largely to the biology and systematics of chiggers and the relation of these mites to disease it may be of interest to ornithologists since many species of chiggers are ectoparasites of birds. There is a bibliography of 158 titles.

46. Bibliography Pertaining to the Mite Family Trombidiidae. Roger W. Williams. 1944. *The American Midland Naturalist,* 32(3): 699-712. A classified bibliography of 375 titles some of which deal with species ectoparasitic on birds.

47. Tsutsugamushi Disease. D. S. Farner and C. P. Katsampes. 1944. *U. S. Naval Medical Bulletin,* 43: 800-836. A portion of this paper is devoted to a discussion of the role of birds as hosts of tsutsugamushi disease transmitting mites and hence their possible role in transporting the disease from area to area by transporting infected mites.

GEOGRAPHIC DISTRIBUTION

48. Timor and the Colonization of Australia by Birds. Ernst Mayr. 1944. *The Emu,* 44(2): 113-130. Australia has been an isolated land mass at least since the early Eocene by which time it had become separated from Indo-Malaya. This has allowed a period of 60 million years for the development of a distinct avifauna. Many Australian species show little relation to the Asiatic avifauna and are assumed to have been derived from early arrivals in Australia. On the other hand there is a considerable number of species which are obviously recent arrivals in Australia. Systematic studies indicate that some of these obviously arrived from the island of Timor. During the period (or periods) of Pleistocene glaciation, because of the accumulations of polar ice, the Timor Strait was much narrower than its present width due to the exposure of much of the Sahul shelf. It seems evident that the width of this strait was reduced to 40-75 miles, about one-fifth of the present width. Actually there were three or four Pleistocene glaciations; possibly each was accompanied by a wave of immigration from Timor to Australia. Excluding widely distributed Indo-Australian species which may have reached Australia from either New Guinea or Timor and the pre-Pleistocene emigrants from Timor there are probably twenty-two Australian species which were derived from Timor during Pleistocene times.

Conversely at least seventeen Australian species immigrated to Timor during the Pleistocene.

The origins (immigrations routes) of the Pleistocene Timor elements in the Australian avifauna are classified by the author as follows: (1) *Malayan Route from Asia via the Malay Peninsula, Java, and Lesser Sunda.* The Barn Owl, *Tyto alba;* White-winged Triller, *Lalage sueurii tricolor* (Swainson); and the Pipit, *Anthus novaeseelandiae.* (2) *The Philippine Route via Formosa, Philippines, Celebes, and Flores.* This is an important route for grasslands species. Australian species which have arrived via this route are the Reed Warbler,

Acrocephalus arundinaceus and the Fantail Warbler, *Cisticola exilis.* (3) *From the West.* Three widespread species, the King Quail, *Excalfactoria chinensis;* the *Turnix sylvatica-macula* group; and the Roller, *Eurystomus orientalis* have arrived from the west either from Java or the Philippines or both. (4) *From the Moluccas.* These are mostly old endemic forms of the Moluccas and the Banda Sea islands. In this group are the *Oriolus* species of Australia; the Black-banded Pigeon, *Ptilinopus cinctus;* and the Red-crowned Pigeon, *Ptilinopus regina.* (5) *Route of immigration doubtful.*

Using the degree of differentiation as a crude indicator of the time of arrival in Australia it appears that all arrivals from Celebes and most of those from Java are recent and have "not changed subspecifically or only slightly so." The grassland nature of the majority of the species indicates that the climate of the Pleistocene period must have been as dry in this period as it is at present. Several species, including the *Tyto alba,* after immigrating into Australia have eventually expanded from there into eastern New Guinea and adjacent islands.

49. The Bird Fauna of the West Sumatra Islands. S. Dillon Ripley. 1944. *Bulletin of the Museum of Comparative Zoology at Harvard College,* 94: 305-430. A series of seven larger and many smaller islands including Nias and Simalur, which lie parallel to the western shore of Sumatra, are of exceptional interest to the zoogeographer and student of speciation. Numerous authors have published reports on collections from one or the other island, but this is the first comprehensive report covering the whole archipelago. Ripley recognizes 280 species and subspecies from the islands. Altogether 220 forms were described from the islands, but Ripley found only 114 to be valid. Of the authors that have described most of the new forms in this archipelago, the following number of synonyms were created, according to Ripley: Richmond 2 (=8 percent of all the new forms he described), Salvadori 2 (=10 percent), Chasen and Kloss 5 (=45 percent), Riley 3 (=50 percent), and Oberholser 84 (=66 percent).

Since all these islands have the same climate and approximately the same vegetation as well as distance from the coast of Sumatra, the faunal differences between the islands are ascribed by Ripley mainly to two factors: size of each island and distance from the Pleistocene shoreline. The larger an island or the closer to the continental shelf, the richer its fauna. The more isolated an island the greater the number of its endemics. Of 111 endemic races 79 (=71 percent) differ in size, 71 (=64 percent) in color, and 39 (=35 percent) both in size and color. Of 79 endemic races that differ in size from the nearest relative 64 (=81 percent) are larger.—E. MAYR.

50. The Birds of Ottawa, 1944. Hoyes Lloyd. 1944. *The Canadian Field-Naturalist,* 58(5): 143-175. This list replaces the last complete list published in 1923-1924. The present list contains 255 species and subspecies. Annotations give dates and localities of collected specimens, some sight record, and migration dates.

51. Birds of the Adelaide River District, Northern Territory. Lyle J. Rhodes. 1944. *The Emu,* 44(2): 87-93. This is an annotated list of 120 species observed in the Adelaide River district in the Northern Territory based on observations made from June, 1942, to June, 1943, while the author was in military service. Because relatively few papers have been published concerning the avifauna of this region this account is particularly valuable.

52. The Royal Penguin *(Eudyptes schlegeli):* **A Tasmanian Record.** K. A. Hindwood and M. S. R. Sharland. 1944. *The Emu,* 44(2): 81-84. This is the record of a single crested penguin which came ashore on the beach of Eaglehawk Neck, southeastern Tasmania, on February 22, 1944, and returned to sea

after five or six days. During this period the bird was apparently molting. Although the authors did not see the bird, photographs made by witnesses seem to establish its identity beyond doubt. This species breeds in large numbers on Macquarie Island, approximately 900 miles south of Hobart. The authors reject the previous provisional acceptance of this species on the Australian list based on a specimen collected near Davenport, Tasmania, in 1913. It is thought that this bird was an immature specimen of *Eudyptes pachyrhynchus*.—G. R. GRAY.

53. The Breeding of the Little Ringed Plover in England in 1944. M. D. England, E. O. Höhn, E. G. Pedler, and B. W. Tucker. 1944. *British Birds,* 38(6): 102-103. In 1944 three known breeding pairs of *Charadrius dubius curonicus* Gmelin were located in southern England, two at Tring and one at Middlesex. Prior to this time there were only about a dozen breeding records in Britain. Curiously the last known breeding pair before 1944 was a pair which nested at Tring in 1938; their nesting place was occupied by one of the 1944 Tring pairs. It is a certainty that neither of the 1944 birds were members of the 1938 pair since both members of the latter were banded and neither of the 1944 birds had bands.

54. The First Pair at Tring. E. G. Pedler and B. W. Tucker. 1944. *British Birds,* 38(6): 103-107. These are notes on one of the pairs of Little Ringed Plover which nested at Tring in 1944. It is probable that this pair raised two young.

55. The Second Pair at Tring. M. D. England. 1944. *British Birds,* 38(6): 107-110. These notes on the other pair at Tring indicate that the four young were observed as late as August 23.

56. The Middlesex Pair. E. O. Höhn. 1944. *British Birds,* 38(6): 110-111. Notes on the third pair known to nest in Britain in 1944.

57. Sturnus vulgaris poltaratskyi: A New Subspecies to the British List. Jeffery G. Harrison. 1944. *British Birds,* 38(6): 112-113. The range of *Sturnus vulgaris poltaratskyi* Finsch includes southeastern Russia and much of Asiatic U.S.S.R. This British record was collected in Lincolnshire, December 23, 1943. The nearest previous record was a specimen taken in southwestern Russia. It is conjectured that the bird fell into northward migration with a flock of the typical race.

58. Saskatchewan Records of the Whooping Crane *(Grus americana).* Frank L. Farley. 1944. *The Canadian Field-Naturalist,* 58(4): 142. The author records a specimen in the possession of W. C. Barrie of Edmonton which was collected in the fall of 1910 by William Kirkwood, northeast of Davidson, Saskatchewan. This bird, one of four, was believed to have been one of a family group. Three sight records for Saskatchewan are also given. The last of these was in 1928 when "several" were observed near Henshell by John Williams of Camrose.

59. Birds of the Alaskan Highway in British Columbia. A. L. Rand. 1944. *The Canadian Field-Naturalist,* 58(4): 111-125. This is an annotated list of 114 species and subspecies observed and collected between Dawson Creek and Watson Lake between July 10 and September, 1943. Whereas this list contains no unusual observations or records it should be of considerable interest and aid to those who look forward to the use of Alaska in vacation times.

60. The Birds of Addis Ababa, Central Abyssinia its Surroundings. K. D. Smith, 1944. *The Ibis,* 86: 245-251. An annotated list of 56 species observed in the region from August, 1941, to March, 1942.

61. A Further Note on Northern Rhodesia Birds. C. M. N. White. 1944. *The Ibis*, 86: 257-259. Notes on 24 species mostly based on observations at Mazabuka and Isoka.

BOOKS

62. The Birds of the Southwest Pacific. Ernst Mayr. 1945. Macmillan Co., New York, N. Y. xix+316 pp., 3 col. pls., 16 text figs., 1 map. $3.75.

With the spread of the war to the southwestern Pacific, a great many Americans suddenly found themselves placed in remote islands where everything was new and strange to them. Those of our men who were interested in nature quickly became aware of the fact that, among other things, the birds around them were completely different from the ones they had known at home and they were bewildered by the lack of information regarding even their names. Before long all the major museums and many of the universities began to receive requests for aid in identifying these unfamiliar birds, and while such information as was available was sent in response, it was necessarily inadequate except for very specific inquiries. The book here under review is the answer to these requests and it is as an answer to these calls for help that it should be judged. The author, for many years the leading student of Polynesian birds, was the logical man to write the book, and he has done so with a background of personal experience that greatly enhances the usability of the volume. In a manual for field identification it is the usability of the book that counts for more than any other feature.

The area covered by the volume takes in all the islands between the Fiji group, New Caledonia, and Micronesia. In other words it includes the Marianas, the Carolines, the Marshalls, the Gilberts, the Ellice Islands, the Solomons, the Phoenix and Samoan groups, the Santa Cruz, New Hebrides, and Tonga Archipelagoes, and New Caledonia. Lack of space in a book restricted to the size of a field guide forbade the inclusion of the bird-rich Bismarcks and New Guinea. The diversity in some of these island groups has necessitated an approach differing from the type of manual we are familiar with at home. The book is divided in two parts:—a general section comprising three chapters, one on the seabirds of the whole area, one on the shorebirds, and one on the land and fresh-water birds of the islands; and a geographical section divided into seven chapters each dealing with a particular group of islands and excluding the wide-ranging seabirds common to all of them.

The description of the birds (some 388 species or 803 species and subspecies) is necessarily terse but adequate. The first part of the book, the general section, gives carefully worded accounts and simple keys to all the birds by systematic groups—a condensed mass of material comparable in itself to the usual field manual. At least one species of each major group of birds is figured in color (39 birds on 3 plates), while the text is further illustrated by 16 text figures of birds or of comparative parts of birds. The reviewer has tested this part of the book with specimens recently received in the National Museum from certain islands in the area covered, has found it to work very well, although our knowledge of the area and of its bird life is not as complete as he was led to believe. Thus, the first specimen picked up, a white-bellied sea eagle, *Haliaeetus leucogaster*, was a species nowhere mentioned in the book. The author even writes (p. 218) that Sanford's eagle, *Haliaeetus sanfordi*, is the only large eagle known from the Solomon Islands. Again, in a small lot of birds from the Solomon Islands, were specimens of a rail, *Poliolimnas cinereus*, hitherto unrecorded from the Solomons. Field users of the book will undoubtedly find other examples to add to these. These are no reflections on the book, but merely on the still incomplete state of our knowledge of the area it covers.

Having identified his birds in the first section of the book, the observer in the field finds a convenient way of checking the results arrived at by turning to the geographical section where the number of species is limited by the fact that he

needs to consider only those that occur on the particular island where he happens to be. This section also gives him some idea of what he may expect, what to look for in any given place—a very real help to the newcomer.

A short preface by Robert Cushman Murphy, a simple glossary of terms and an index complete this volume. The work gives every appearance of accuracy, and usability and should be a thoroughly satisfactory answer to the requests that were the original cause of its being written.—HERBERT FRIEDMANN (Published by permission of the Secretary of the Smithsonian Institution).

63. Couriers of the Sky. Mary Graham Bonner. 1944. Alfred A. Knopff, Inc., New York, N. Y. 82 pp., 13 photographs. This is another in the series of *Borzoi Books for Young People.* It describes in a commendably interesting manner the story, method, and romance of pigeon fancying and training. Much attention is given to the role of homing pigeons as messengers in times of war. The three chapters devoted to the raising of pigeons are well conceived and adequate for the purposes of the young enthusiast who wishes to start a colony. There is also a discussion of the elements of training homers and racers. This little book is recommended as a useful addition to the science collections of school libraries.