

This immature Song Sparrow was independent when first trapped on August 1, 1940, and he was probably hatched on our place, or in the neighborhood, and was at least thirty days old, so that he is now five years old and has made at least two returns to the location of his birth.

When trapped on both of the returns, he apparently was accompanied by a mate, who on each occasion became greatly excited when she found her companion unable to leave the trap. She continued to run around the trap as if she was coaxing him to come out, or perhaps she may have sensed he was in some danger and desired to assist him.—HORACE GROSKIN, 210 Glenn Road, Ardmore, Pa.

RECENT LITERATURE

Reviews by Donald S. Farner

BANDING AND MIGRATION

1. **Eastward Migration through the Gulf States.** W. L. McAtee, T. D. Burleigh, G. H. Lowery, Jr., and H. L. Stoddard. 1944. *Wilson Bulletin*, 56: 152-160. An impressive discussion with a long bibliography. "A vast movement of birds from northwest to southeast is a recognized feature of the autumnal migration in North America." A two and a half page table lists western species which are found in migration in the Gulf States. "The chief interest of this eastward flow of birds is its significance in relation to theories of bird distribution." Table 2 lists thirteen "Birds of Probable Western Origin Now Resident in the Gulf States (East of Texas)."—M. M. NICE.

2. **Southward Migration of Adult Shorebirds on West Coast of James Bay, Ontario.** C. E. Hope and T. H. Shortt. 1944. *The Auk*, 61(4): 572-576. Observations made on a 100-mile canoe trip from Fort Albany to Moosonee between July 15 and 25 are presented in the form of an annotated list of fifteen species. All specimens which were taken and all those satisfactorily observed were adult birds with males predominating. Specimens were fat but molting. Flights generally followed the edge of tide and moved southward, but two huge flights were observed moving northward, one of which was observed to reverse itself coincident with a change in the tide. Knots, Hudsonian Curlews, Pectoral and Semipalmated Sandpipers predominated. Hudsonian Godwits were surprisingly abundant, numerous flocks of five to 125 being observed.—E. P. ODUM.

3. **The Homing Instinct in Pigeons.** C. S. Platt and Robert S. Dare. 1945. *Science*, 101(2626): 439-440. With controlled experiments the authors have confirmed the fact that pigeons are unable to return home unless trained over gradually increasing distances. Training at a distance of 40 miles was ineffective when birds were released at 80 miles. It is concluded that pigeons possess no instinct that will automatically take them home when released at distances of 80 miles.

4. **Departure of Swifts.** H. N. Southern. 1945. *British Birds*, 38(8): 151-152. The author emphasizes the desirability of quantitative data on the arrival and departure of migratory species rather than single individual records of the earliest arrival and the latest departure. A set of data on the departure of Swifts, *Apus apus apus* L., is given as an example.

5. **Notes on Some Migrants.** C. C. Lawrence. 1945. *The Emu*, 44(3): 226-229. Notes on the migration of eight Tasmanian species.

ECOLOGY AND POPULATION STUDIES

6. Survey of the Prairie Falcon in Colorado. Harold Webster, Jr. 1944. *The Auk*, 61(4): 609-616. A very interesting and readable account of *Falco mexicanus* Schlegel based on the author's evident long and acute study. The nesting population in Colorado is believed to be holding its own and is conservatively estimated at 500 pairs. Nesting birds show a preference for the lower foothill regions and seem invariably to require a tall cliff (for the nest) adjoining open prairie or mountain valley (for hunting ground). The author believes the breeding population to be non-migratory although they may wander in winter; dark individuals sometimes seen may represent migratory birds from farther north. The male arrives at the nest site a week or two ahead of the female; courtship may last a month; eggs are laid on the bare cliff and incubated 31-33 days. Nestling mortality is very low in most of the state but in the northern part only about 35 percent of the young leave the nest due to ticks which apparently attack the young with frequent fatal results but do not bother the adults. The tick is the same species found on ground squirrels and is apparently brought to the nest with this prey. Spermophiles and other rodents, Western Meadowlarks, doves, pigeons, Horned Larks, and other birds comprise the diet depending on availability. Early in the spring rodents may predominate while later birds may be largely taken. The author has seen falcons capture swifts and swallows and once observed a falcon instantly kill a full-grown Horned Owl by striking it from above! Interesting comparisons are made between the Duck Hawk and Prairie Falcon. The latter is more lightly built and consequently is more agile but not so powerful or swift as the heavier bird. In captivity the Prairie Falcon eats less than the Duck Hawk but has an "unpredictable temper" and is less suitable for falconry. It is hoped that the author will eventually work up literature comparisons and organize his material on this species into a life history monograph.—E. P. ODUM.

7. Age Groups and Longevity in the American Robin. Donald S. Farner. 1945. *Wilson Bulletin*, 57: 56-74. An important paper on longevity problems in birds with discussion of all pertinent literature; it is based on data from the Fish and Wildlife Service on 855 *Turdus m. migratorius* banded as young and subsequently recovered. "The age-group composition of the Robin population throughout the range of the northern race (excluding young that have not reached their first November 1) was found to be as follows: 1st year birds, 53 percent; 2nd year, 25 percent; 3rd year, less than 14 percent; 4th year, less than 6 per cent; 5th year, less than 2 per cent; and 6th year or older, less than one percent." "The mortality rate for all birds that have passed their first November 1 is slightly more than 50 percent per annum. The mortality rate is probably the same for all age groups."

"The average natural longevity (1.7 years) is only a fraction of the potential natural longevity (at least 9 years) and of the potential longevity (at least 13 years, perhaps as much as 20 years)." "A hypothetical calculation indicates that the mortality rate from the nest to November 1 (an average of about five months) is probably 70 percent, as compared with an estimated adult mortality rate of about 25 percent for the same five-month period."

In the note on p. 71 there is an error: "found" should be changed to "estimated," and "nest" to "pair."

Seven of the tables are concerned with Robins, while three give comparative data on survival rate, average natural longevity, and life expectancy of eight other species. In trying to interpret differences in results in the central, northeastern and northwestern portions of the range, the author was hampered by lack of information on average clutch sizes and numbers of broods in the three areas, and in calculating mortality from the nest to fall, by lack of data on success and failures of nests, "emphasizing again the need of *quantitative* observations on the life history of many of our common species of birds."

A fine, scholarly article, an example of the contribution that can be made by scientific use of the results of banding birds in large numbers.—M. M. NICE.

8. The Effect of Tree Removal on a Mourning Dove Population. H. Elliot McClure. 1944. *The Auk*, 61(4): 560-563. Mourning Doves in small towns and farmyards of Iowa show great partiality to certain nesting trees ("patron trees"), the territorial demands being elastic enough to permit as many as seven active nests in one tree at one time. Several trees (non-native conifers, mostly) supported from ten to fourteen nests per season which were used fourteen to twenty-one times. The number of nests located in three blocks of Lewis, Iowa, during a three-year period was as follows: 1938—134; 1939—190; 1940—188. Between the 1939 and 1940 seasons a favorite "patron" tamarack was cut down resulting in a decrease of sixteen pairs in the block. Although there is no direct evidence (banding, for example) the author believes that the sixteen pairs moved in a body to a neighboring block since this block gained about sixteen pairs over the number present the year before.—E. P. ODUM.

9. The Cliff Swallow in Cortland County. Harold H. Axtell. 1945. *Arbor Day and Bird Day Bulletin to the Schools*, 31 (7): 232-236, Univ. State of New York. A census of colonies of *Petrochelidon albifrons* in Cortland County, New York State in 1936 and 1937. In 1936 496 pairs were found in 62 colonies, an average of one colony to every 32 farms; the next year 30 percent of the colonies had shifted to other barns. Cliff Swallows rarely wander more than two or three hundred yards from the home barn; they rise from 40 to 60 minutes later than do Barn Swallows and retire early, sometimes before sunset. "Broods are successfully raised in only about 30 percent of the nests constructed," a very low rate of success. Sometimes nests fall to the ground; sometimes nests are broken open by Starlings or usurped by English Sparrows. The author observed an adult hybrid between the Cliff and Barn Swallow.—M. M. NICE.

10. Use of Wood Duck Nesting Boxes in Wheeler Wildlife Refuge, Alabama. Paul Bryan. 1945. *Journal of the Tennessee Academy of Science*, 20(1): 35-40. The author has tabulated and discussed the use of 100 nesting boxes installed in the Wheeler Wildlife Refuge in 1941. Of the boxes in use 53 were used by gray squirrels, five by flying squirrels, four by opossum, two by screech owls, and nine by Wood Ducks, *Aix sponsa* (L.). Although the observed number of nests is small the author feels that it is preferable to place Wood Duck boxes at least 20 feet from the ground.

REPRODUCTION

11. Sex Ratios in Ducks. George A. Petrides. 1944. *The Auk*, 61(4): 564-571. Nearly all papers on sex ratios of American waterfowl report a preponderance of males, sometimes as high as three to one. This paper contains a timely summary of published data together with additional observations made at Washington, D. C. The author suggests that "the full extent and complexity of the problem is not generally recognized" and he wonders if "the entire subject should not be thrown open to more vigorous and widespread research than has lately been evident."

Before the unbalanced ratios can be accepted as representing the true condition, several possible sources of error must be considered. In the first place, most of the present data are based on banding trap catches and hunters bags; there is a distinct possibility that either traps or hunters or both might be unduly selective of males. Both Hawkins, comparing traps and hunters' bags in Illinois, and Petrides, comparing traps and sight counts in Washington, find that the excess of males was much greater in the trap data,—indicating that males enter traps

more freely than females. (The statement on page 567 that Hawkins' traps "attract more females than males" is evidently a misprint as it is just opposite from the statement on the preceding page). Sex ratios computed from reports of banded ducks of four species killed by hunters were nearly the same as ratios based on Lincoln's banding data, "indicating negligible sex selection by hunters." Petrides suggests that accurate sight counts of sexually distinct species should be a reliable source, and the few studies of this kind do show the disparity in the sexes to be much less than is indicated by the banding data.

Differential sex migration and distribution is a second possible source of error, and is without a doubt a complicating factor. Ratios obtained for Mallards at different localities and seasons show a variation of 0.74 to 2.86 males per female. Although it is known that females of some species migrate ahead of males, exact knowledge of differential sex distribution in migration and winter is lacking.

The chief value of this paper is that it shows that even though an excess of males in ducks may be an actual fact, data obtained by different methods and from different localities and seasons can neither be safely compared nor statistically analyzed until the sample methods are better evaluated and more accurate life history information is available. Each species probably has different "sex ratios" for different seasons and localities. Only careful local studies at key localities can solve the over-all problem.—E. P. ODUM.

12. Clutch Size: A Comparative Study, with Special Reference to African Birds. R. E. Moreau. 1944. *The Ibis*, 86: 286-348. The relation of climate to clutch size within species or within closely related groups of species has been the subject of much discussion. Frequently it is stated that clutch size increases in cooler climates. Whereas it is highly possible that this rule is generally correct no extensive compilation of data has been made to verify it adequately. By use of published literature and many unpublished records the author was able to base his study on "nearly 4000 specific African records" for more than 700 species. The data for 430 species are summarized in an appendix with individual treatment of 366 of them. Although the author's data are not sufficiently adequate for a thorough statistical analysis he is nevertheless able to present some interesting and pertinent observations. In 37 passerine species it was found that equatorial clutches were smaller than South African clutches, in 27 they were equal, and in one the equatorial clutch was larger. Among non-passerine species in 17 the equatorial clutches were smaller, 56 were equal, and in three the equatorial clutches were larger. In general the average differences are less than one egg. The clutch size of British and Palearctic species definitely exceeds that of closely related South African birds; in half of the cases the British species have clutches 50 percent larger. The author also considers the relation of the size of the species to the size of clutch. "Considered family by family, it is the exception, not the rule, for the biggest birds to have the smallest clutches, and vice versa." In considering the relation of habitat to clutch size it was concluded that birds in evergreen habitats tend to have smaller clutches than closely related species which nest in dry habitats. "In about 20 species of land-birds c/1 [one-egg clutches] is common, or the rule. Most of them belong to an evergreen habitat; in size they range from Eagles to Sunbirds." Although there are an unfortunate number of typographical errors, the data and observations are of much interest. There is a bibliography of 158 titles and a tabular appendix of 26 pages presenting the data on which the study is based.

13. Clutch-Size in Introduced Birds. R. E. Moreau. 1944. *The Auk*, 61(4): 583-587. English Sparrows in North America and in England average 4-5 eggs per clutch and no north-south difference is apparent in North America. Starlings have smaller clutches in North America than in Britain and smaller in the south of their range. The data on which these interesting conclusions are based

are not very convincing. Although information on clutch size of these species in North America is admittedly scarce, the author has by no means covered all sources of information, but has merely quoted a few spot reports. Nevertheless, North American ornithologists have seriously neglected the English Sparrow and Starling. Mr. Moreau, Lack and other colleagues overseas are doing us a favor by pointing out many unique opportunities of study presented by introduced species. As long as English Sparrows and Starlings are definitely members of our avifauna we might as well profit by them!—E. P. ODUM.

14. Silver Gulls Breeding near Melbourne. C. E. Bryant. 1945. *The Emu*, 44(3): 200-201. The author describes a breeding colony of about 150 pairs of *Larus novaehollandiae*, Stephens, at the northwestern corner of Port Phillip Bay, about fifteen miles from Melbourne. This colony was found in an old salt pan in which the earth consisted of coarse, partly sandy and partly gravelly soil, impregnated with a heavy salt content; the earth had been scraped and stacked into mounds which had become surrounded by water forming little islands, each occupied by a pair of gulls.

15. Holboell's Grebe Nesting in Southern Ontario. J. M. Speirs, G. W. North, and J. A. Crosby. 1944. *Wilson Bulletin*, 56: 206-208. Southeastern extension of the breeding range of *Colymbus grisegena holböllii*; seven nests were built in 1943 at the western end of Lake Ontario, none of which were successful, but the following season two pairs raised three young.—M. M. NICE.

16. A Ground-nesting Black-billed Cuckoo. R. A. McCabe. 1944. *The Passenger Pigeon*, 6(3): 60-61. This is reported as the first Wisconsin record of its type.

PHYSIOLOGY

17. Measurement of the Normal Temperature of Birds with Mercury Thermometers. (Mesure de la température normale des oiseaux au moyen de thermomètres à mercure.) Richard Bernard, Raymond Cayouette, and J.-A. Brassard. 1944. *Revue Canadienne de Biologie*, 3(2): 251-277. The authors with a carefully controlled technique using mercury thermometers have made 503 temperature measurements on 450 individual birds of 78 species in 29 families; 252 were birds in the Jardin Zoologique de Québec and 198 were wild birds captured in the course of banding operations. Before each temperature determination the bird was kept in the dark and without food for 30-45 minutes. The lowest body temperatures, 103.1, 103.2, and 103.6° F. (39.5, 39.5, and 39.7° C.), were recorded in the Indian Peacock, *Pavo cristatus* L.; Barred Owl, *Strix varia varia* Barton; and the Barnacle Goose, *Branta leucopsis* (Bechstein) respectively. The highest temperatures, about 110° F. (43.3° C.) were found among 15 species in the Bombycillidae, Ploceidae, Icteridae, and Fringillidae. In general the results of this investigation give temperatures from 0.5 to 2.5° F. higher than those given by Wetmore (*Smithsonian Miscellaneous Collections*, Volume 72, Number 12, 1921), the greatest differences existing in the small passerine species. In Wetmore's investigation the birds were shot and the rectal temperatures recorded immediately with mercury thermometers. In adopting this procedure it was assumed that the instantaneous death resulted in a complete cessation of thermal regulation and that the temperatures recorded immediately after death were essentially the same as the temperatures just before shooting. It appears possible that the differences between the temperatures recorded in the two investigations could be due either to the elevations of body temperature due to struggle and excitement in the case of the subject investigation or to loss by radiation in the case of Wetmore's procedure. The former seems to be the more plausible explanation. However,

Baldwin and Kendeigh (*Physiology of the Temperature of Birds*, 1932, p. 89) have shown that it is not possible to speak of a normal body temperature for a species since their data show daily fluctuations of 3.9-6.9° F. in several passerine species. In view of this the results given in this paper and those of Wetmore are compatible.

18. Weight Records for Some Atlantic Alcidae. R. A. Johnson. 1944. *Wilson Bulletin*, 56: 161-168. Data on weights of eggs, young and adults were collected during three seasons on Razor-billed Auk (*Alca torda*), Atlantic Murre (*Uria aalge*), Black Guillemot (*Cepphus grylle*), and Atlantic Puffin (*Fratercula arctica*). Young Murres normally leave the nest between 18 and 24 days of age, but are likely to leave earlier if a food shortage comes after they are fourteen days old; if it comes earlier, they die. Young of "Guillemots and Puffins (both burrow nesters) remain at the nest site much longer than the young of the related Auks and Murres (both surface nesters)."—M. M. NICE.

FOOD HABITS

19. Hawks and Owls in Oklahoma, 1939-1942: Food Habits and Population Changes. A. M. and F. M. Baumgartner. 1944. *Wilson Bulletin*, 56: 209-215. A study on 3,000 acres of Lake Carl Blackwell Cooperative Land Use Project, near Stillwater; birds were caught in traps with padded jaws, daily censuses were taken of hawks and owls, 896 pellets were examined, and rodents trapped. In 1939 there was a high in the population of rodents, especially cotton rats; Barn Owls, Marsh Hawks and Screech Owls were abundant and nine other predatory species of birds were present. After very cold weather in January, 1940, cotton rats disappeared and also most species of predatory birds. "The Great Horned Owl, whose food habits are more generalized, and the Cooper's Hawk, which feeds primarily on small birds, were recorded in their usual numbers after the period of unusual cold." Tables are given showing the numbers of predatory birds trapped in 1939, the numbers seen per mile each month from 1939 to 1942, food items found in the pellets, and changes in food of the Great Horned Owl.—M. M. NICE.

20. The Relation of Non-heritable Food Habits to Evolution. John E. Cushing, Jr. 1944. *The Condor*, 46(6): 265-271. From a number of English-language papers the author has selected data showing that the feeding habits of many species of birds are not inherited but rather are learned from the parents. It is contended then that these non-inherited habits may be agents of selection in the evolution of species.

BEHAVIOR

21. The Black Duck in Captivity. A. F. D'Ombrain. 1944. *The Emu*, 44(1): 8-28. This paper contains extensive notes on a captive pair of Black Ducks, *Anas superciliosa*, which had been reared from captive parents. Courtship ordinarily began in August when the two birds displayed mild courtship activity on the pond. The next sign was an intense desire for grass, especially on the part of the female. In September, when the weather became warmer, courtship display was observed frequently. "Although the water is so shallow, the ducks completely submerge and swim around under water making a great commotion and throwing water in all directions. This may go on for two or three minutes, the birds bobbing up for air for a few seconds before continuing the submarine chasings. Strange as it may seem, the duck usually starts the chase. After a minute or two they reappear and commence 'bowing and dipping.' In this act both birds face each other a few inches apart, and repeatedly bow, at first just slightly, but

increasing the length of the bow until their beaks dip in the water. As the beaks come out water drips freely from them and it appears that the birds hold a small quantity in the mouth for the purpose of letting it fall upon the raising of the head. Keeping perfect time, this goes on perhaps ten or twenty times before slowing down, when the birds' movements become a little irregular and eventually stop." There is a description of "booming" by the male which is also an integral part of courtship. "The only display that is carried out to any extent on the land is a curious habit the birds have of rushing around each other in a form of side-step, at the same time turning the neck, which is held very low down, at nearly right angles to the body, and darting it backwards and forwards very rapidly. All this time they keep up a short, sharp quacking, repeated in two 'quacks' at a time." Courtship is followed by nest seeking in which the birds assume a different posture from the "hunched-up waddling position" and walk about with their necks held high. In four years' observations the first egg was laid between September 25 and October 1. The first egg hatched between October 31 and November 8. The clutch was eight or nine. Although the drake would not tolerate the presence of young in the pond during the day, no attempt was made to drive them away in the evening. "About December and January the birds perform what I termed the 'dusk dance,' as it always takes place just on dusk. Actually I think it is a nocturnal urge which comes over them at this time and leads to the young birds flying off and looking after themselves. One bird will start off running around in a large circle with wings beating at about four beats to the second, to be quickly followed by the rest until the whole six birds are circling the lawn like a squadron of aeroplanes 'taxiing' across the aerodrome. As their feet barely touch the ground, the illusion is created that they are bouncing along, whilst the white underparts of their wings show out clearly against their dimly silhouetted bodies which are held rigidly erect. During the corroboree a faint chuckling or throaty sound is kept up, with now and then a wheezy questioning 'quack.' This may go on for a minute or more before one of the birds breaks the circle, when the others also fall out and stand about with their necks craning from side to side after the manner of a cormorant that is about to fly. Suddenly one runs forward about twenty feet, with head held high and neck feathers sleeked out, gives a faint chuckle and stops motionless, apparently listening. The others then do the same, either one at a time or perhaps two together, and come to a halt alongside the first bird. After a short pause the whole party will 'about turn' quickly and repeat the performance in the other direction. Now and then one, or perhaps two, will go 'taxiing' across the lawn as if tired of the whole affair and rush for the pond, where a long period is spent wetting and setting feathers." An interesting series of observations.

22. The Spotted and Satin Bower-birds: A Comparison. Norman Chaffer. 1945. *The Emu*, 44(3): 161-181. The author describes in considerable detail the bowers of three Spotted Bower-birds, *Chlamydera guttata* Gould. The "playthings" attached to the walls and arranged on the floor and in the immediate vicinity of the bowers consisted of pebbles, small bones (usually vertebrae of sheep), and various miscellaneous articles such as pieces of glass, iron wire, washers, pieces of tin, beetle wing cases, small buckle, cartridge cases, mussel shell, twigs, native lemons, and others. The walls of one of the bowers were painted, i.e. the blades of grass and twigs were covered with a thinly coated grayish brown material which on microscopic examination proved to be composed of finely divided particles of dried grass. There are extensive notes on the activities of one of the birds at its bower and courtship activities. These notes are compared with similar observations on the Satin Bower-Birds, *Ptilonorhynchus violaceus* (Vieillot). The author's remarks concerning the function of the bower-building habit are interesting. "While the bower-building habit probably originated as a sexual ceremony, and still retains that very necessary function it

seems to have gone beyond such purely utilitarian usage. After watching the male of both the Spotted and Satin Bower-birds playing alone in their bowers, one cannot doubt that they derive a great deal of satisfaction and pleasure in such activities. It should also be remembered that the bower is built, and assiduously tended, months before the nesting season occurs, and frequently after its close."

LIFE HISTORY

23. Life History of the Blue-throated Toucanet. A. F. Skutch. 1944. *Wilson Bulletin*, 56: 133-151. A fine study on *Aulacorhynchus caeruleogularis* in the mountain forests of Costa Rica; about the size of a pigeon, this bird nests in woodpecker holes, both sexes sharing incubation and brooding. Incubation lasted sixteen days, but fledging took 43. Food consisted of fruit and occasionally insects and small nestlings. "The length of the toucan's bill is important in bringing within reach food that would otherwise be inaccessible. The bulk and bright coloration of the bill intimidate the small birds whose nests they despoil, thereby preventing attacks on the toucans by angry parents."—M. M. NICE.

24. Life History of the Quetzal. Alexander F. Skutch. 1945. *The Condor*, 46(5): 213-235. This paper contains a wealth of observations on this spectacular neotropical species, *Pharomachus mocinnus* de la Llave. The range of the Quetzal includes the high humid forests of the Subtropical Zone from Chiapas in Mexico to western Panama. In areas where these forests have been destroyed the Quetzal has disappeared. Although it is at present protected by law in Guatemala it owes its existence principally to the inaccessibility of its habitat. The author has recorded some of the legends which surround this species, especially in relation to its role as the national emblem of Guatemala. The Quetzal is inseparably associated with the Subtropical rain forest with trees ranging from 100-150 feet in height and bearing an abundance of epiphytic vegetation. The nest is invariably in a hole in a badly decayed tree, upright or inclined. The entrance to the hole is an irregular circle, 4 to 4½ inches in diameter. The depth of the hole is at least 4½ inches; one was observed with a depth of 11 inches. The method of nest carving was not observed; however, it is assumed to be done by Quetzals since much of the range has no hole-carving species capable of carving holes as large as those needed by the Quetzal. The eggs are laid on the wood chips in the bottom of the nest; two is apparently the usual set. The incubation period is 17 or 18 days; both sexes incubate. For the first ten days the young receive a diet consisting almost exclusively of insects and other small invertebrates; thereafter fruits constitute an increasing proportion of the diet. The nestlings probably remain in the nest about one month. The parents remove the empty egg shells and clean the nest for about the first ten days. There are also descriptive notes on juvenal and adult plumages as well as notes on habits and voice. A very interesting paper.

25. Notes on the Breeding Lapland Longspurs at Churchill, Manitoba. Lawrence I. Grinnel. 1944. *The Auk*, 61(4): 554-560. The nesting of *Calcarius l. lapponicus* at Churchill in 1940 began between June 17-20, somewhat earlier than *C. pictus*. The song resembles that of a Horned Lark, but has a distinctive ending and was given from an elevated hummock or on the wing. No mention of territory is made except a statement that the minimum distance between nests was 200 yds. Near the nest, four different call notes were heard, one uttered by males, three by females. Five nests found were placed in tundra depressions, were 4.5 cm. in inside diameter and held four or five eggs. Incubation and nesting periods were about ten days each and nestling mortality about fifty percent. During two days' observation incubating and brooding females averaged forty-two percent of time on or at the nests and fifty-eight percent away (presumably female did all

incubating and shading of young but this point is not clearly indicated in the text). Details of daily development of nestlings are well tabulated and pictured by photographs, but the table (page 559) on growth and weights is based on inadequate data and could well have been omitted.—E. P. ODOM.

26. Field Notes on *Mirafra javanica*. M. S. R. Sharland. 1944. *The Emu*, 44(1): 1-5. An interesting set of notes on the habits of this species in Australia where it is "common in northern and eastern Australia, South Australia and parts of Western Australia, but not in Tasmania . . ." Particularly interesting are the observations on the mimicry of the songs of other species such as the Swallow, *Hirundo neoxena* Gould; Magpie-Lark, *Grallina cyanoleuca* (Lath.); Little Grass-bird, *Megalurus gramineus* (Gould); Goldfinch, *Carduelis carduelis* (L.); Sparrow, *Passer domesticus* L.; and Stubble-Quail, *Coturnix pectoralis* Gould. Because of its habitual occurrence in fields, paddocks, and crop land the author suggests that its vernacular name be changed from Bush Lark to Field Lark.

27. The Cardinal's Period of Dependency. H. Brackbill. 1944. *Wilson Bulletin*, 56: 173-174. Color-banded young *Richmondia cardinalis* attained strong flight at about 19 days, "partial independence at about 38 days, complete independence at 45 days, and severance of family ties at 56 to 59 days." This was the final brood for the season.—M. M. NICE.

28. How Fast Does a Catbird Grow? Dayton and Lillian Stoner. 1945. *Arbor Day and Bird Day Bulletin to the Schools*, 31(7): 217-219, Univ. State of New York. Measurements of bony and feather growth, increase in body temperature, and weight were taken on fifteen nestling *Dumetella carolinensis*. Temperature in one bird ranged from 101.6° to 103.2° during the first three days, from 106.1° to 107.4° from the fifth to tenth days. Weight increased from 5.9 grams at 23 hours to 29.4 grams at nine days: adults weighed between 35 and 36 grams.—M. M. NICE.

29. Honeyeaters of the Sydney District (County of Cumberland) New South Wales. K. A. Hindwood. 1944. *Australian Zoologist*, 10: 231-251. An account of 29 species with excellent photographs and a bibliography extending for more than a hundred years. In this family all members "have a protrusible and partly-cleft tongue, with a frayed brush-like tip, used for extracting nectar from flowers." "Their habits indicate a long association with a profusely-flowering indigenous flora, comprising, in Australia, trees of the genera *Eucalyptus*, *Banksia*, and many other trees and shrubs. They are attracted by almost all nectar-bearing blossoms, whether on native or introduced plants, and also live extensively on insects, fruit, pollen and other vegetable matter. Honeyeaters are important agents in the fertilization of plants. . . . The gregarious and nomadic instincts are well developed."

Flowering trees and shrubs attract mixed flocks of these birds; once, however, a number of Red Wattle-birds (*Coleia carunculata*) took possession of a black-bean tree during the entire flowering seasons of two months, driving away other birds seeking nectar. A number of the Honeyeaters gather hair for their nests from cows, possums or even human beings. Injury-feigning is recorded of the White-eared Honeyeater (*Nesoptilotis leucotis*).—M. M. NICE.

SYSTEMATIC ORNITHOLOGY

30. A Revision of the Genera and Species of the Family Pycnonotidae (Bulbuls). Jean Delacour. 1943. *Zoologica*, 28(1): 17-28. This paper demonstrates the importance in systematic work in studying a single group throughout its geographic range and likewise the use of observations made on the birds in life,

both in the wild and in captivity. The author accepts the family Muscipidae in its broad sense including the Turdinae, Sylviinae, and Timaliinae but excluding the bulbuls as a separate family, Pycnonotidae. "Bulbuls are of moderate size, varying from that of an English sparrow to about that of an American robin. They have rather short wings and a comparatively long tail; their beak is never large, but is slender to moderately thick, notched, with rictal bristles usually well developed; nostrils are long or oval, more or less operculated. Their legs and feet are always rather weak, usually small and often very short." "The following characteristics are peculiar to the Pycnonotidae: the body feathers are long, soft and fluffy, particularly on the lower back. The skin is thin and the neck very short and more or less devoid of feathers behind, so that a bulbul with an outstretched neck shows a somewhat bare patch between the nape and upper back feathers, a feature rather characteristic of the group." The sexes are alike. Most species are fruit and berry eaters, occasionally taking insects; some are insectivorous. Most of the species are sedentary although some migrate considerable distances. "Representatives of the Pycnonotidae, as defined above, are found all over Africa, in Madagascar and the Mascarene Islands, Asia, the Philippines, the Malay Archipelago and the Moluccas." Of the thirteen genera eight are African, three Indo-Malayan, and two occur in both. *Haplopteron familiare* (Kittlitz) of the Bonin Island is not regarded as bulbul as is also the case with *Tylas edwardi* Hartlaub from Madagascar and the African *Hypergerus atriceps* (Lesson). Other groups showing some affinities to the Pycnonotidae but of uncertain position are discussed. The paper does not list or discuss races but is rather concerned with specific and generic relationships. The systematic section contains descriptions of the genera and lists the species (with geographic distribution) in each.

31. Notes on the Races of the White-Breasted Nuthatch. John W. Alurich. 1914. *The Auk*, 61(4): 592-604. This taxonomic revision of *Sitta carolinensis* is notable in at least two respects: first, no new sub-species are described, and second, the map (p. 602) shows not only the range of each race but the trends in the variations of the major characters (size, length of bill, and color). Thus, the gradients of change (too often obscured in the detailed descriptions of individual races) are made immediately apparent. The work of the taxonomic specialist would be of much greater interest and value to the general ornithologist if the practice of mapping *characters* (both qualitative and quantitative) as well as *names* was generally followed.

Specimens of the White-breasted Nuthatch show a darkening in color of the upper parts from north to south and also as one approaches the Rocky Mountains from both coasts. There is a north-south decrease in size in the east but a reverse trend in the west, complicated by a west-east increase in size. The maximum size and also greatest intensity of coloration is reached in the tableland of central Mexico (*S. c. umbrosa* van Rossem). Bill length is not correlated with wing length; western populations have the longest bills which become stouter proceeding both southward and eastward.—E. P. ODUM.

32. A Note on the Type Specimens of Prion Subspecies. C. A. Fleming. 1945. *The Emu*, 44(3): 216-217. The author has designated lectotypes for *Pachyptila salvini muriwai* Mathews, *Pseudoprion turtur mangerei* Mathews (author suggests that the designated lectotype of this race may be a topotype of *huttoni* Mathews), and *Fulmarprion crassirostris antipodes* Mathews. A neotype is selected for *Pseudoprion turtur armiger* Mathews which was described from the measurements by Buddle of live birds on Poor Knights Islands. *Pseudoprion turtur benchi* Mathews was described from measurements of live birds from Bench Island made by Richdale and recorded by Falla; no specimens from this island are available and types therefore cannot be designated.

33. A Western Australian Grass Owl. L. Glauert. 1945. *The Emu*, 44(3): 229-230. Original description of *Tyto longimembris maculosa* Glauert.

34. The Downy Plumage of the Australian Dabchick. Ernst Mayr. 1945. *The Emu*, 44(3): 231-233. The differences in the downy plumage of *Podiceps ruficollis* (Pallas) and *Podiceps novaehollandiae* Stephens emphasize further their specific differences. Formerly they have been regarded as conspecific.

35. Notes on the Pterylography of the Australian Raven. Erhard F. Boehm. 1945. *The Emu*, 44(3): 230-231. A preliminary note on the pterylography of *Corvus coronoides* Vigors and Horsfield. "Wing feathers twenty, comprising ten primaries and ten secondaries. Formula for primaries, commencing to count at the proximal end of the manus: 7, 8, 6, 9, 5, 4, 3, 10, 2, 1. . . . Tail feathers twelve, the central pair longest and the outer pair being shortest."

36. A Color Abnormality in the Slate-Colored Junco. Ernst Caspari. 1944. *The Auk*, 61(4): 576-580. Plumage details of an apparent "albino" *Junco hyemalis* are examined in detail. The specimen is not a true albino since the bases of the ventral feathers are pigmented. Structure of the non-pigmented feather or feather parts is mostly normal. The fact that the boundary between pigmented and unpigmented feathers coincides with the boundary between fully pigmented and partly pigmented feathers in a normal bird suggests that the abnormality is not a mosaic but the result of the abnormal operation of pattern determinators. Similar differential pattern suppression in experimental animals is known to result from both specific genes and external factors.—E. P. ODUM.

37. Notes on Some Virginia Birds. C. E. Addy. 1944. *The Auk*, 6(4): 580-583. "Notes on the sub-specific status of some Virginia birds" would be a more accurate title for this paper based on the study of a series of specimens of *Turdus migratorius*, *Parus carolinensis*, *Cyanocitta cristata*, *Dryobates pubescens*, *D. villosus*, *Colaptes auratus*, *Otus asio*, *Bonasa umbellus* collected in the western part of Virginia. Specimens of the Robin (breeding), Screech Owl, and Flicker are referred to both the northern and southern forms. The largest series comprises 35 Ruffed Grouse, all of which are assigned to *B. u. monticola*. Were it not for the present practice which seems to require that a trinomial be assigned to every individual specimen, it would seem more satisfactory to list some of the specimens as intergrades since they appear from the author's descriptions to be clearly intermediate between recognized races.—E. P. ODUM.

GEOGRAPHIC DISTRIBUTION

38. White Phase of the Reef-Heron (*Demigretta sacra*) in New Zealand. K. A. Wodzicki and Jas. R. Eyles. 1945. *The Emu*, 44(3): 181-182. This bird was observed on many occasions from May to November. It was observed that this white bird did not associate itself with the normal birds of the same species. "The question arises now as to whether the Wairu Bar visitor is an accidental mutant of the grey form of New Zealand or has it to be considered as a straggler from one of the Pacific Islands. The unsociable behaviour of the bird and the fact that although almost certainly over a year old, it was not observed at Wairu Bar and surrounding districts prior to April 15, 1944, suggests the latter."

39. The Mongolian Sand-Dotterel in Australia. A. R. McGill and J. A. Keast. 1945. *The Emu*, 44(3): 202-216. The authors have listed and mapped the records of specimens of the two races of the Mongolian Sand-Dotterel, *Charadrius mongolus mongolus* Pallas and *Charadrius mongolus atrifrons* Wagler.

for Australia. Specimens have been taken in Australia during every month of the year except June, July and August. Greatest abundance is in April.

40. Birds of the Gilbert Diary. A. H. Chisholm. 1944-5. *The Emu*, 44(2): 131-150 and (3): 183-200. This is a scholarly study of the diary kept by John Gilbert during 1844-5 while he was a member of an exploring party which made its way inland northward from southern Queensland to northern Queensland and Northern Territory. Gilbert died in the course of this expedition and the diary apparently passed into the possession of the leader of the expedition, Leichhardt, and eventually reached Gould in London, after which it remained unknown for nearly a century. Because of the extensive use which Gould made of Gilbert's specimens and notes this paper is of special interest. The author has carefully analyzed and systematized the notes which apply to birds.

41. The White-throated Honeyeater in New South Wales. K. A. Hindwood. 1944. *The Emu*, 44(1): 31-32. The author lists seven specimens of *Melithreptus albogularis* Gould from New South Wales indicating that it should be added to the list of that territory.

42. Occurrence of the Eastern Common Tern (*Sterna hirundo longipennis*) in Australia. K. A. Hindwood. 1944. *Sterna hirundo longipennis* Nordmann, the Siberian breeding race, normally migrates no further south than the Moluccas, Aroe Islands, New Guinea, and the Solomon Islands. The author lists and discusses the "Australian" records: single specimens from Cape York and Warrior Reef in Torres Strait, and three from Lord Howe Island.

43. Birds of the Northern Cascade Mountains of Washington. Austin W. Burdick. 1944. *The Condor*, 46 (5): 238-242. An annotated list of 102 species and subspecies based on observations and collected specimens.

ANATOMY

44. A Systematic Study of the Main Arteries in the Region of the Heart—Arts XIII. Ciconiiformes, Part 1. Fred H. Glenny. 1945. *The American Midland Naturalist*, 33(2): 449-454. The ciconiiform species show the trend from the normal bicarotid situation to the dextracarotid condition. In *Bo'scurus* and other genera there is an anastomosis of the left and right internal carotids. In *Phoenicopterus* the left inner carotid is reduced and in *Ixobrychus* there is a complete degeneration or atrophy of the proximal portion of the left internal carotid artery. Another important paper in this interesting series.

PALEONTOLOGY

45. A Miocene Hawk from California. Hildegard Howard. 1944. *The Condor*, 46(5): 236-237. The original description of the genus *Miohierax* Howard and *Miohierax stocki* Howard described from an incomplete left foot collected in the Lower Miocene, Tick Canyon formation near head of Vasquez Canyon, Los Angeles County, California.

PARASITOLOGY

46. Distribution and Hosts of Certain North American Ticks. F. C. Bishopp and Helen Louise Trembley. 1945. *The Journal of Parasitology*, 31(1): 1-54. This paper summarizes an accumulation of many years' records for some of the common American ticks. Twelve of the species are known to parasitize birds. This paper is important in that it adds many new locality and host records for the species with which it deals.

47. Epidemiological Studies on Coccidiosis of California Quail. Carlton M. Herman and John E. Chattin. 1943. *California Fish and Game*, 29(4): 168-179. A widespread prevalence of coccidiosis in the California Quail, *Lophortyx californica* subsp., is indicated by the fact that the authors, with a total of 3,500 fecal examinations, demonstrated its occurrence in 19 different areas and in three game farms. Incidence was found to vary from about 20 percent to more than 90 percent. The pathogenicity of the various species of coccidia (*Eimeria* spp.) occurring in the California Quail has not been ascertained.

48. The Occurrence of Blood Parasites in Birds from Southwestern United States. Sherwin F. Wood and Carlton M. Herman. 1943. *Journal of Parasitology*, 29(3): 187-196. An examination of 1,525 birds of 112 species and subspecies revealed 23.4 percent to be infected with blood parasites of some type. The genus *Haemoproteus* was the most commonly observed parasite among the birds examined. *Trypanosoma*, *Plasmodium*, *Leucocytozoon*, *Hepatozoon*, unidentified intraleucocytic parasites, microfilariae, and a new sporozoan, *Spirogregarina jusiformis* Wood and Herman.

49. Studies in Neotropical Mallophaga (V). The Lipeuroid Forms of the New World "Galliformes." Part I. M. A. Carriker, Jr. 1944. *Revista Brasileira de Biologia*, 4(4): 557-585. The author lists, with descriptions, 22 species and subspecies record from New World galliform birds. There are descriptions of twelve new species and three new subspecies.

HISTORY

50. Philo Romaine Hoy. A. W. Schorger. 1944. *The Passenger Pigeon*, 6(3): 55-59. Hoy came to Wisconsin in 1846 and became interested in many phases of natural history of the state. The author has assembled an able account of Hoy's activities especially as they relate to ornithology.

51. Benjamin Franklin Goss. A. W. Schorger. 1944. *The Passenger Pigeon*, 6(4): 82-86. Goss came to Pewaukee, Wisconsin, in 1842, where much of his collecting was done. He gained national renown for his collections of eggs and nests. He apparently had considerable success with his aviary. Unfortunately he published only two ornithological papers. An interesting biography.

52. Aaron Ludwig Kumlien. A. W. Schorger. 1945. *The Passenger Pigeon*, 7(1): 9-14. Aaron Ludwig Kumlien, son of the distinguished Thure Kumlien, completed the sixty years of invaluable work on Wisconsin birds accomplished by this family. A very interesting biography.

53. The Passenger Pigeon as Observed by the Rev. Cotton Mather. Frederic T. Lewis. 1944. *The Auk*, 61(4): 587-592. Quotations from Mather's "The Christian Philosopher" (1721) are discussed. One statement asserting that pigeons build "ventilated" nests because their bodies are hotter than other birds cannot be accepted today, but Mather's description of the formation and use of "pigeon milk" is surprisingly accurate even in the light of a host of modern experiments. The rapid growth of young fed on pigeon milk is suggested as a possible factor contributing to their former amazing abundance.—E. P. ODUM.

BOOKS AND MONOGRAPHS

54. The Distribution of the Birds of California. Joseph Grinnell and Alden H. Miller. 1944. *Pacific Coast Avifauna*, Number 27. Cooper Ornithological Club. 608 pp. \$6 unbound, \$7 bound. This careful compilation combines the results of many years' study and observations by two outstanding Ameri-

can ornithologists together with their critical analyses of the records and observations of other students of California birds. The main list contains only those species and subspecies which are known definitely to have occurred naturally in California during historic times "and of which at least one specimen has been preserved or verified as to identity by some ornithologist." This excludes fossils and introduced species as well as several species known only from sight records. Records of modern species excluded from the main list are given in the supplementary list regardless of the type or status of the record or report. The main list is presented first as a "Systematic List of Species and Subspecies" with scientific names and authors (without dates and citations of original descriptions), and common names. To each bird included in this list there is devoted a section in "The Native Birds of California" which forms the bulk (521 pages) of the book. The synonymy given for each species or subspecies contains both scientific names (without authors and citations) and common names as applied to that particular bird in California. The status (winter visitant, permanent resident, etc., and abundance, with terms defined as adequately as possible) of each is given concisely. Particularly praiseworthy is the presentation of the authors' determination of the geographic ranges. For each species or subspecies all of the records, actual specimens and critically evaluated records in the literature, or at least all critical records are given. These records are given according to seasons including pertinent migratory dates and localities. There is also very useful information on altitudinal and life-zone distribution for terrestrial species. For most of the species with more than one breeding race in California there is a map showing the geographic relation of the races. In plotting these maps the authors have recorded the data, localities from which specimens were examined or localities recorded in the literature, on the maps as evidence in support of the proposed distributions. Notes on habitat give essential ecologic data for these species as they apply in California. Descriptions are wisely omitted as they would add to the bulk of the book. The main list contains 427 species (644 species and subspecies). The volume is well organized and composed; its adequate systematic index makes it an easily usable reference. Its usefulness will be immediately recognized by those familiar with the California avifauna as well as by new students of the birds of the state. Its greatest value lies in the fact that it compiles critically in a single volume the known information on the distribution of California birds and as such will always be an important reference for ornithologists.

55. Man and the Earth. By William Vogt. (El Hombre y la Tierra. Por Guillermo Vogt.) 1944. No. 32. Biblioteca Enciclopedia Popular. Secretaria de Educación Publica. México. 25 centavos. 94 pp. (Pan American Union, Washington, D. C.) The dynamic character of this little book is evident from the titles to its chapters: Land, the Guardian of Man; Fruits of the Earth; Mexico Is Thirsty; The Soil, Fountain of Life; The Web of Life; Only God Can Make a Tree; Pasturage; I Will Lift Up Mine Eyes to the Mountains; The Land Belongs to All the People. In simple, forceful language, illustrated by a few telling sketches, Mr. Vogt asserts the simple, but largely forgotten truth, that man depends entirely on the earth. He describes the deforestation, progressive desiccation, over-grazing, erosion, and slaughter of birds and other wild life in the country, and he points out the fate of nations that have violated the laws of Nature. His emphasis, however, is on the constructive side; he dwells upon the pride of the Mexicans in the beauty of their country, he mentions the rewards to be expected from tourist travel to National Parks and a smiling countryside; and he dilates upon the benefits that will come from working with Nature instead of exploiting her. An admirable, eloquent presentation of this all-important matter, well calculated to impress and educate the school children and adults of Mexico.

Mr. Vogt writes me that the Mexican government plans to teach conservation in all the schools, "the first time that any country has done it in the Western

Hemisphere." An additional 25,000 copies of the book are being printed as the first 50,000 are nearly exhausted. Chile is revising the book to suit its own conditions and plans to publish 25,000 for school teachers. Perú is almost certainly going to do the same. We need similar guides to "Man and the Earth" for all countries.—M. M. NICE.

56. An Introduction to Ornithology. Harry W. Hann. 1945. i-xviii, 1-142. Ann Arbor, Mich. From the author, \$3.25. Part I, "The Biology of Birds," gives a good brief discussion of morphology, physiology and anatomy; migration, nesting, distribution, conservation and attracting birds. Most of the volume is devoted to Part II—"A Brief Review of the Birds of the World, with Emphasis on North American Species." The classification follows Peters, the A.O.U. Check-List and Knowlton's "Birds of the World." Each order and most of the families are described, briefly in the case of foreign birds, while each North American species is treated in some detail with a short description, and statement as to habits, food and range, in most cases a map of North America or the Western Hemisphere showing its summer and wintering ranges—a most illuminating device. The same method is very helpful in showing ranges of subspecies, which are listed under the species. A well-selected bibliography of some 130 titles is included, as well as an index. This book is an admirable introduction to ornithology both for college students and bird students in general, two of its best features being its broad foundation of information on birds of the world and the excellent little maps.

A companion volume—"Ornithology Notebook"—(45 pp., \$1.25)—is concerned with laboratory and field study, giving further references and check lists of the birds of southern Michigan for field trips.—M. M. NICE.

57. The Avifaunal Survey of Ceylon Conducted Jointly by the British and Colombo Museums. Hugh Whistler. 1944. *Spolia Zeylonica*, 23(3/4): 119-321. Price Rupees 6. As a result of the extensive avifaunal survey work undertaken in India from 1929 on by the Bombay Natural History Society, the late Mr. Hugh Whistler became convinced that the birds of Ceylon were still rather incompletely worked out. After negotiations between the British Museum, the Colombo Museums and Mr. W. W. A. Phillips, collections were made from 1936 to 1939. This survey was Mr. Whistler's last work and was published posthumously. Whistler lists 384 forms as occurring on the island, of which 239 are resident. This contrasts with 372 forms listed by Wait in the last Ceylon list (1925). Of the resident forms Whistler lists the following endemisms: 4 genera, 22 species and 77 subspecies. With each listed species valuable notes are included on measurements, localities and range on the island.

The distributional evidence cited tends to indicate that the three climatic zones into which the island is divided are of relatively little significance as speciation factors in the case of present subspecies. However, thirteen of the species and all of the endemic genera are found only in the low country Wet Zone and the Hill Zone. These two zones contain the earliest arrivals also in the case of two waves of any form.

In the case of these two so-called zones it is perhaps worth pointing out that no very exact distinction exists today between them. In many ways they are better treated as one zone from the point of view of faunal distribution. The low country Wet Zone is very limited in extent, confined to the southwestern part of the island, and, except for the coastal area, mostly immediately adjacent to the hills. With the disruption of the original habitats by deforestation the boundaries between these zones tend to disappear. Tea and rubber estates extending up and down the hills seem to have removed the horizontal barriers, if such ever really existed. Thus such hill forms as *Eumyias sordida* and *Zosterops ceylonensis* have recently been found at less than 1,500 feet. This is a point which I feel Whistler should have recognized in his zonal discussion.

This paper is valuable for its many notes and comments, mostly taxonomic or historical, drawn from Mr. Whistler's vast fund of the Indian avifauna. Unfortunately a good many of the endemic forms listed were not present in the collection as worked out and so could not be definitely analyzed. Another drawback has been the great time lag between submission of the paper and its publication. In addition much of the nomenclature used by the author is already way out of date, stemming from Stuart Baker's "Fauna" period (1922-1930) and completely ignoring most of the revisionary work of the last ten years, particularly in America. Basically, however, this paper is a great improvement on the previous published lists and serves to indicate the amount of work that remains to be done on the bird fauna of the Indian sub-region. Two Ceylon and one Indian subspecies are named in the text. The map used is an old plate taken from another work and is quite useless in its present form.—S. D. RIPLEY.

58. Birds of Georgia. A Preliminary Check-List and Bibliography of Georgia Ornithology. E. R. Greene, Wm. Griffin, E. P. Odum, H. L. Stoddard, and I. Tompkins. 1945. Sponsored by Georgia Ornithological Society as Occasional Publication No. 2. Univ. Georgia Press, Athens. 111 pp. \$2.00. This, the first state book for Georgia, is a careful, scientific work, based on much field study, considerable collecting, and thorough acquaintance with the literature. The 44-page annotated list gives a concise account of occurrence and distribution of the species and subspecies (we are not told the number of forms admitted, nor number breeding); migration and nesting dates are not given. The Hypothetical List of 23 species attests to the high standard adopted for inclusion—no sight records except of "large and conspicuous water birds (for example, the Gannet) reported by competent observers, authenticated by collected specimens from adjoining states to the north and south, and within the recognized range." The Annotated Bibliography of over 700 titles does not include Christmas censuses nor "articles of a popular nature." The Appendix offers two useful lists: an account of nine Georgia Ornithological Societies and Bird Clubs, organized since 1916, seven of which are still active, with addresses of secretaries; the citation of fifteen Local Lists. The volume closes with a most helpful "Ornithological Map of Georgia," showing counties, "the four principal physiographic regions of the state, and the localities which have been actively worked or have active bird students and clubs." A much too brief account is given of physiography, "Life zones and vegetational equivalents."

The Georgia Ornithological Society can be proud of its State Book, its soundness, its comprehensiveness, its admirable get-up—the attractive board covers, the beautiful reproduction of Menaboni's Great Blue Heron, and the excellent printing. Yet I wish the authors had given more thought to the opportunity for education. Without compromising their high ideals of science, a page could have been devoted on suggestions to beginners on what books to buy, what journals to read; Dr. Murphey in his historical sketch could have put more emphasis on conditions in the early days; and short chapters on changes in bird life, endangered and vanishing species, and the most important steps in conservation of Georgia wild life would have been immensely valuable to amateur and professional alike.—M. M. NICE.