RECENT LITERATURE

BANDING

(See also Numbers 6, 7)

1. Seventh Preliminary List of Recoveries of Birds Ringed in Greenland. (Syvende foreløbige liste over genfundne grønlandske ringfugle.) Finn Salomonsen. 1957. *Dansk Ornithologisk Forenings Tidsskrift*, **51**(1): 33-37. (With English summary.) Raw data for 49 more recoveries of 12 species of birds banded in Greenland and recovered abroad with comments on their significance by Dr. Salomonsen. Most of them are for White-fronted, Pink-footed, and Barnacle Geese taken on the wintering grounds in Ireland, Scotland, and the Hebrides. A round dozen Thick-billed Murres banded in the Upernavik district at 72°N. on the west coast were reported wintering in Newfoundland between October and early April. The first recovery abroad of a Lapland Longspur, taken in southern Manitoba, indicates "that the migration goes to the South-West and that the winter-quarter probably is situated in the interior of southern Canada." There are two more Snow Buntings from North America, one from Ontario, the other from Holt, Minnesota (westernmost record for the Greenland Snow Buntings). Both these birds were banded in western Greenland as, I believe, were all the others that have been reported from North America. A third Snow Bunting, banded in northeast Greenland (74° 20′ N., 20° W.) 9 May 1955 was reported taken 10 April 1956 in the Archangel District, northern Russia (64° 55′ N., 45° 41′ E.), indicating "that the spring migration of the N. E. Greenland population goes extraordinarily far to the East."—O. L. Austin, Jr.

2. Waterfowl Banding 1939-1954 by Ducks Unlimited. Bertram W. Cartwright. 1956. Ducks Unlimited, Winnipeg, Manitoba, Canada. Second Edition (Revised), 35 pp., 2 maps. No price given. This report adds four more years of records to the totals published in 1952 (see *Bird-Banding*, **24**(3): 132), and shows a little more care and thought in its compilation than did the previous edition, but not enough. The various tabulations of banding and of recoveries by species, by states, and by the so-called "flyways" are made to agree fairly well for a change, but the plotting of the data on the two pretty 3-color maps showing distribution of Mallard and Pintail recoveries bears only a vague relationship to the regional totals for these species given in the tables. A praiseworthy addition in this edition is a list of the totals of recoveries taken outside the United States, which reveals that a not insignificant 30 percent of D. U.'s banded ducks are killed in Canada.

The pamphlet may be of some use politically in showing the dependence of American duck hunters on Canadian duck production, and I trust it will satisfy the sportsmen who are financing the project that they are getting their money's worth. But after considerable study of its contents I fail to see how it can be, as the Preface states, "useful to students and administrators of our waterfowl resources." The data are not analyzed, they are merely compiled, and not enough information is given in the compilations to allow for reliable analysis of what they might be made to show. D. U. could perform a far more useful function by publishing all their raw data for competent students to analyze.

And D. U. evidently has ample funds for publication—otherwise why use 5 pages to do the work of 2, as is done in the last 3 tables in the book which simply recapitulate the same data on "retraps and releases." (By these terms they evidently mean "returns"—it would be nice if D. U. would use the standard terminology other banders find adequate.) These tables list the return totals by localities, and the localities do not jibe well with those given in the banding tables, at least to anyone not intimately familiar with all the localities mentioned. Hence it is impossible to correlate the return figures with the banding figures for each or any locality with any degree of accuracy, to determine the return percentages.

My calculations for the few sets of data I could correlate show the return percentages to be astonishingly, even alarmingly low. They are certainly less than 1 percent of the probable sample trapped, and a small fraction of 1 percent of the numbers of banded birds theoretically available to return. This is far lower than any other breeding ground return percentages I have ever seen, and does not augur well for the stability of the waterfowl breeding population nor

for D. U.'s conservation efforts. If D. U.'s return figures are correct, the ducks on their nesting preserves are either flouting all the laws of population dynamics, or else are maintaining their numbers (if they are doing so) against heavy odds. —O. L. Austin, Jr.

3. Results of the ringing investigation of migration instituted by the Royal Museum of Natural History, Leiden, 51 (1954), 2. (Resultaten van het ringonderzoek betreffende de vogeltrek, ingesteld door het Rijksmuseum van Natuurlijke Historie to Leiden, XLI (1954), 2.) G. C. A. Junge and J. Taapken. 1957. *Limosa*, **30**(1): 13-33. The second section of the 1954 report, from the gulls through the passerines. Contains another fine long list of Starling recoveries, 279 of them, which, as I have remarked before, it is high time somebody analyzed and worked up for publication. In 1954 the Netherland workers banded 32,860 birds of 159 species, 7,780 of them Starlings.—O. L. Austin, Jr.

4. Recoveries of birds banded abroad, 28. (Terugvondsten van in het buitenland geringe vogels, 28.) C. G. B. Ten Kate and J. Taapken. 1957. *Limosa*, **30**(1): 43-55. Lists the raw data for the 311 foreign-banded birds of 56 species recovered in Holland since the publication of the last list in 1955 *(Bird-Banding*, **27**: 187). About half of these have already been reported in print by the original banders, to whose reports references are given.—O. L. Austin, Jr.

5. The Ringing Scheme, 1955. Robert Spencer. 1957. *Bird Study*, **4**(1): 52-53. Banding by the B.T.O. cooperators increased 23 per cent in 1955 to a total of 126,303, and 33 per cent more recoveries were received than in 1954. Among the most interesting recoveries singled out for mention were 8 Manx Shearwaters from Brazil and well over 100 ducks from the U.S.S.R.—O. L. Austin, Jr.

MIGRATION

(See also Number 1)

6. Observations on the Autumn Migration of Blue Geese. Graham Cooch. 1955. *The Wilson Bulletin*, **67**(3): 171-174. Populations of Blue and Lesser Snow Geese *(Chen caerulescens caerulescens)* nesting at Boas River, Southampton Island (63° 42′ N., 85° 45′ W.) and at Eskimo Point (60° 50′ N., 94° 25′ W.) have a different autumn migratory route than those presumed to nest in the Baffin Island region. Some 15,000 Blues and Lesser Snows banded at Boas River and Eskimo Point since 1952 have yielded about 1,300 recoveries, which show that these birds migrate south along the west coast of Hudson Bay and pass some hundreds of miles west of James Bay. They frequently stop in route (7 of the past 12 autumns) at Sand Lake Refuge in northeastern South Dakota before completing their 2,100-mile flight from Hudson Bay to the wintering grounds in eastern Texas.

The Baffin Island Blue and Lesser Snow Geese apparently come to the James Bay area (about 53° N., 80° W.) and then fly nonstop the remaining 1,700 miles to Louisiana. In the autumn of 1952 this flight apparently took less than 60 hours; it started the evening of 16 October at James Bay and ended the morning of 19 October on the Gulf Coast of Louisiana.—L. Richard Mewaldt.

7. Destruction of Warblers on Padre Island, Texas in May, 1951. Pauline James. 1956. *The Wilson Bulletin*, **68**(3): 224-227. A cold front passed over the Gulf Coast of Texas near Corpus Christi late on 6 May 1951, and was followed by unseasonably low temperatures and 25 m.p.h. winds. On 7 May, local showers and cold northeasterly winds prevailed in the area. From 2000 on 7 May to about 0200 on 8 May, many thousands of birds, mostly passerines, flew over the island from the Gulf into a northerly wind and cold drizzle. Large flood lights on high poles on Padre Island apparently attracted and confused the "exhausted birds" causing more than 10,000 to kill themselves against the lights, poles, and wires. Some hundreds more were picked up alive, some banded, and most released the next day.

The author picked up 2,421 dead birds of 39 species. These included 1,109 Magnolia Warblers *(Dendroica magnolia)*, 405 Yellow-throats *(Geothlypis trichas)*,

221 Bay-breasted Warblers *(Dendroica castanea)*, 165 Chestnut-sided Warblers *(Dendroica pensylvanica)*, 123 American Redstarts *(Setophaga ruticilla)*, and 285 more warblers (Parulidae) of 14 additional species. Other passerine families included Tyrannidae, Mimidae, Turdidae, Bombycillidae, Vireonidae, Icteridae, and Fringillidae. The only non-passerines were one Black-billed Cuckoo *(Coccyzus erythropthalmus)* and one Nighthawk *(Chordeiles minor)*.—L. Richard Mewaldt.

8. The Trans-Tasman Dispersal of the White-fronted Tern *(Sterna striata*, Gm.). W. C. Clark and E. W. Dawson. 1957. *Notornis*, **7**(3): 65-69. Six recoveries and six sight records in southeastern Australia of birds banded on the eastern side of South Island, New Zealand, confirm the fact that some New Zealand-raised White-fronted Terns cross the Tasman Sea to winter along the Australian coast. The recoveries to date are all of juveniles in their first winter. The species also winters commonly along the coasts of North Island, N. Z., where no South Island banded birds have as yet been recovered. More banding is needed, as well as continued observations of the species' presence and absence along the New Zealand and Australian coasts to clarify the many moot questions remaining on the species' movements.—O. L. Austin, Jr.

9. The orientation of homing-pigeons. (De oriëntering van postduiven.) D. A. Vleugel. 1956. *Limosa*, **29**(4): 129-137. (From the English summary.) Reviews briefly the experiments of Heinroth, Matthews, Kramer, Nicol, Platt and Dare, Griffin, and Hitchcock, and comments on their contradictory findings. Vleugel agrees that the pigeons do seem to have some sort of "navigational ability to fly in one particular direction," probably by "a form of sun navigation," but on psychological grounds he "thinks it impossible for pigeons to find the direction of their home by considering the sun-arc for some seconds after their release." He considers the wide gap between the results of Matthews and Kramer and those of Heinroth and the Americans to be due to the terrain and ecological clues present in the former and lacking in the latter experiments. Still to be explained, however, is "Why in Kramer's and Matthews' experiments off the training-line a great number of the vanishing points lay in the direction of the home loft."—O. L. Austin, Jr.

10. A study on the migration and the wintering grounds of the Eurasian Caspian Terns. (Etude sur la migration et les zones d'hivernage des Sternes caspiennes, *Hydroprogne caspia* (Pallas), d'Eurasie.) Noël Mayaud. 1956. *Alauda*, **24**: 206-218. This discussion is based on banding records in Europe and Asia, a complete list of which is given. The terns leave their wintering grounds in Sweden and Finland in the end of July and return in April and May. Two adult terns were recovered at distances of 50 and 500 kilometres from their birthplaces in Sweden. The birds fly across central Europe and not along the seashores. They return by the same route in the spring, with the peak of migration in April.

The main wintering grounds of the Swedish and Finnish terns are in Africa, rather south of the Mediterranean coasts. Of ten birds banded in the north, seven were recovered in Africa from September to December, one in Russia in September, another in France in October, and a third in Portugal in July, the last one presumably a non-breeder. Two terns banded at the Azov Sea in southern Russia were retaken in December in Tunisia, showing a west-southwesterly direction of flight. One tern, banded at the lakes of Turkestan in September, flew south-southeast and was recovered on the Ganges in January. This record suggests the crossing of the Earth's highest mountain range to reach the wintering grounds around the great rivers of India.—Louise de K. Lawrence.

11. The migration of the Pink-footed Goose and its presence in France in winter. (La migration de l'Oie à bec court *Anser fabalis brachyrhynchos* (Baillon) et sa présence en France l'hiver.) Noël Mayaud. 1956. *Alauda*, **24**: 245-249. The Pink-footed Geese breed in Greenland, Iceland, and Spitzbergen. Banding data disclose that the Greenland geese migrate across Iceland and, together with the Icelandic population, for the most part winter in Scotland and England. The Spitzbergen birds migrate along the coast of Norway and winter mainly in northern France, Belgium, Holland, and Denmark. Two recoveries of the Icelandic geese, one in the Azores and the other in the Canary Islands, suggest widely straying individuals.—Louise de K. Lawrence.

12. The first arrival [date] of the White Wagtail *(Motacilla alba)* in Germany during the years 1948-1956. (Die Erstankunft der Weissen Bachstelze in Deutchland in den Jahren 1918-1956.) Gustav Volkmann. 1957. *Ornithologische Mitteilungen,* **9**: 61-66. This paper is a summary and review of data obtained and reported by 310 observers during the years 1948-1956. The chief arrival date varied within a 20-day period, 4 March to 24 March. The average date ranged from 14 March in northern and eastern Germany through 12 March in central Germany to 11 March in the south. Although the paper discusses weather correlations in detail, no firm conclusions are drawn. Consideration of possible errors is very thorough.—R. O. Bender.

POPULATION DYNAMICS

(See also Numbers 2, 25, 43, 50, 51, 52, 59)

13. Mortality and Fertility of the White-fronted Goose. Hugh Boyd. 1957. *Bird Study,* **4**(2): 80-93. This well-planned study of the demography of the *Anser a. albifrons* population that breeds in arctic Russia and winters in Britain and Wales makes ingenious use of a type of data seldom if ever before used for the purpose. It is based primarily on the analysis of extensive, careful observations on the number, size, and composition of the family groups of White-fronts wintering on the B.T.O.'s Slimbridge preserve for five successive seasons. Analyses of the 62 recoveries received up to 1956 from the 232 White-fronts banded there from 1948 through 1953 supplement the conclusions drawn from the observational statistics.

In the adult geese the annual mortality is about 30 percent, some seven-tenths of which occurs during spring migration and on the breeding grounds. Adult losses on the wintering grounds are on the order of 1.8 percent per month. Lack of breeding ground data prevented Boyd's assessing the White-front's productivity accurately, but he estimates that at least one-third of each year's crop of young is lost between the time of hatching and arrival on the wintering grounds. As the wintering-ground losses of first-year birds are about 3 percent per month, the species' first-year mortality must be well in excess of 50 percent. From the available evidence Boyd concludes the population "may be fairly described as stationary," and is able to hold its own largely because its fecundity "is apparently adapted to an environment in which in most years large scale breeding failures occur."

It strikes me that a reproductive potential high enough to compensate for recurrent breeding failures is of greater importance to survival in many species than is generally realized. It is a significant factor in the success not only of geese, as Boyd points out, and other waterfowl, but of a number of other non-passerine groups as well. We have found it an essential feature in the survival of our Cape Cod terns *(Bird-Banding,* **27**: 65), and it must be a factor of moment, though of as yet undetermined magnitude, in the successful persistence of many species of gulls, cormorants, albatrosses, and herons to mention only a few, and perhaps most important of all in the Adelie and Emperor Penguins whose nesting success is so drastically low.

All these birds seem to have certain traits in common in addition to erratic and generally low breeding success: They all tend to mature late and reach breeding age in their second or third year or even later; as their adult mortalities are comparatively low, on the order of 20 to 30 percent per annum, they enjoy relatively long reproductive life spans; most of them are colonial or semicolonial breeders; most of them are highly migratory. In all of them maintenance of the adult population seems of greater importance to the survival of the species than the success of any particular year's crop of young. It would be interesting to determine in these groups whether or not the first year survival is significantly higher during years of low productivity than it is in the occasional years when large numbers of young are fledged successfully.

Certainly the complex interrelationships between a species' reproductive potential, nesting success, and juvenile and adult mortalities, and their bearing on that species' survival are well worthy of further and more intensive investigation. Papers such as this one of Boyd's are significant contributions to this highly important and little appreciated aspect of avian biology.—O. L. Austin, Jr.

14. Sex and Age Ratios of Some Japanese Birds. H. Elliott McClure. 1955. *The Wilson Bulletin*, **67**(4): 287-290. From 1 July 1950 to 1 January 1953, a total of 2,311 birds of 183 species were collected and sexed. The overall ratio of 120 males to 100 females probably reflects a sex difference in availability to the collecting gun. The July to November age ratio based on ossification of crania in 12 of the most common species of passerines (762 birds) was 283 juvenals to each 100 adults.—L. Richard Mewaldt.

15. Juvenile Mortality in a Ring-billed Gull Colony. John T. Emlen, Jr. 1956. *The Wilson Bulletin*, **68**(3): 232-238. Juvenile mortality factors were studied in an insular colony of about 850 pairs of Ring-billed Gulls *(Larus delawarensis)* on Green Island in the Mackinack Straits of Northern Michigan. In the main part of the colony an increase in territory size from 1.2 square meters during incubation to 2.0 square meters in the later juvenile stage is attributed to nest failures. Assuming a clutch of 3.0 eggs (2.9 recorded), an average of 0.83 eggs per clutch did not hatch. Of those which hatched, 0.67 chicks were calculated to have fledged. Of the 1.50 chicks lost between hatching and fledging, "highest mortality apparently occurred in middle-sized birds, those large enough to move away from the nest but too small to defend themselves effectively against adult attack." Destruction of shading vegetation (grass beaten down by the gulls) and intrusion on the colony by human observers induced forced movements of chicks. The return of chicks to their territories for feeding through other vigorously defended and tightly massed territories was an important cause of juvenile mortality. Predation by Herring Gulls *(Larus argentatus)* was a secondary cause of fledgeling deaths.—L. Richard Mewaldt.

16. Longevity of a White-fronted Goose. N. Rankin. 1957. *British Birds*, **50**(4): 164. A young female *Anser albifrons* was wing-tipped by W. H. Lemburg of Boelus, Nebraska, in 1903 or 1904. After 15 or 16 years she started to lay; "nearly every egg of hers would hatch each season . . . she is the start of a breeding flock of domesticated White-fronts." She laid fertile eggs up to her death in 1950 when at least 46 or 47 years old.—M. M. Nice.

NIDIFICATION AND REPRODUCTION

(See also Numbers 15, 16, 37, 43, 48, 50, 62, 66, 73, 75)

17. The Breeding Cycle in the Bank Swallow. Arnold J. Petersen. 1955. *The Wilson Bulletin*, **67**(4): 235-286. This detailed and well-executed study of the breeding cycle of the Bank Swallow *(Riparia riparia)* was made in the vicinity of Madison, Wisconsin. Specimens for morphological and physiological studies were collected from colonies other than those where observations were made on behavior. In certain situations birds were marked with airplane "dope" for individual identification. Some nestlings were given colored leg bands for designation of brood for studies of the late nesting and early post-nesting stages.

After arrival on about 22 April, pair formation took place at the colony. Only mated birds excavated burrows, and copulation apparently was accomplished in the completed burrow. Mean size of first clutches was 5.0 eggs, while renestings after nest destruction had a mean of 4.0 eggs per clutch. Though the males have no incubation patch, they shared incubation duties; in some instances males alone incubated the eggs or brooded the young at night. The period of incubation was determined to be 15 days.

Nest observations for 33 hours during the nestling period showed 24.7 feedings per hour in fair weather. Feeding rate was the same in large and small broods. Males fed nestlings more frequently than females. Nestlings, able to leave at 18 days after hatching, usually left in flight at about 23 days of age.

Morphological and physiological data were obtained from 35 males and 79 females taken at night from their burrows. Weights of females (mean = 14.8 grams) were greater than weights of males (mean = 13.7 grams) during the breeding season. Part of this greater weight in females is attributed to the heavier reproductive tracts and an occasional contained egg. Histological changes incident to incubation patch formation in the females are described.

During nest-building blood glucose concentrations in both males and females were more than double the "normal level" of 266 mgm./100 cc. found during the incubation and parental-care phases of nesting.—L. Richard Mewaldt.

18. The Summer Schedule of the Eastern Willet in Georgia. Ivan R. Tomkins. 1955. *The Wilson Bulletin*, **67**(4): 291-296. The Eastern Willet *(Catoptrophorus s. semipalmatus)* breeds on the coast of Georgia and South Carolina between mid-March and mid-July. The species appears in worn plumage and apparently does not molt before departing on fall migration. The median date for the beginning of incubation of 95 completed clutches over a period of 50 years was estimated to be 5 May. The status of the larger Western Willet *(Catoptrophorus s. inornatus)* as a migrant and visitor is discussed.—L. Richard Mewaldt.

19. Minimum Space Requirements of Some Nesting Passerine Species. James R. Beer, Louis D. Frenzel, and Norman Hansen. 1956. *The Wilson Bulletin*, **68**(3): 200-209. Sizes of nesting territories of the Song Sparrow *(Melospiza melodia)*, Yellow Warbler *(Dendroica petchia)* and Red-eyed Vireo *(Vireo olivaceus)* on small islands in Basswood Lake, Lake County, Minnesota, were investigated. The 42 islands vary in size from 0.04 to 18.6 acres with more than half of them containing less than 2 acres. Singing and obviously territorial males were used as the principal bases for determining nesting pairs present. Actual records of nests and successfully reared broods reinforced these observations. Birds of each species studied confined their nesting and feeding activities to their island of residence.

The three species reacted similarly to the imposition of reduced space enforced by the water barrier. Song Sparrows repeatedly utilized islands less than 0.1 acre (as small as 0.04 acre) to rear broods. This is one-fifth (to less than one-tenth) the territory size apparently required in a mainland situation. The Red-eyed Vireo and Yellow Warbler showed similar but less pronounced tendencies. This suggests that size of territory is based upon a number of factors and not on any single factor such as food.—L. Richard Mewaldt.

20. Egg-Retrieving and orientation at the nest site in Kentish and Little Ringed Plover *(Charadrius alexandrinus and dubius)*. Eirückgewinnung unde Nistplatzorientierung bei See- und Flussregenpfeifer.) J. Walters. 1956. *Limosa*, **29**(4): 103-129. (From the English summary.) Describes a series of experiments to determine how these and other beach-nesting species retrieve eggs moved out of the nest, find and dig out eggs buried under sand, and in the latter case how well the birds know the exact location of the nest. The two plovers roll single eggs back into the nest from a foot or so away more readily than do either the Herring Gull or the Arctic Tern. When the entire clutch is moved, the bird usually accepts the new site and scrapes out a new nest cup under the eggs, unless the ground is too hard to scrape, in which case it may roll the entire clutch back to the original site. When the eggs and nest are covered by sand, unless the ground has good landmarks the plovers may err in locating it by 4 to 10 inches, and sometimes find the eggs only after a certain amount of trial-and-error probing. In 14 trials with Common Terns, the birds failed to dig up eggs that were completely covered.—O. L. Austin, Jr.

21. On the authenticity of the sets of *Sterna s. sandvicensis* consisting of two eggs. (Over de authenticiteit der tweelegsels van *Sterna sandvicensis sandvicensis* Lath. in de Nederlandse kolonies.) W. Ph. J. Hellebrekers. 1957. *Limosa*, **30**(1): 34-40. (From the English summary.) About half the clutches of Sandwich Terns in Holland contain a single egg; those that contain two usually differ widely in shape and color. The author collected 13 sets of 2-egg clutches, and lists in tabular form their differences in shape, color and markings, length, breadth, weight, and incubation. From these data he concludes "that about 90 % of the sets of these birds in Holland consists only of one egg or two eggs of different females. Of course it is possible that a female produces two eggs in two different nests." Both these possible alternatives are so contradictory to what we know of breeding behavior and territorial relationships in other species of colonial-nesting terns that they should be tested by close field observations of color-banded birds on marked nests at laying time.—O. L. Austin, Jr.

22. On the characteristics and history of nesting divergencies in the Swift in northern Europe. (Zur Charakteristik und Geschichte der nistökologischen Divergenz beim Mauersegler, *Apus apus* (L.), in Nordeuropa.) Jukka Koskimies. 1956. *Ornis Fennica*, **33**(3-4): 77-96. The Swift nests widely across northern Europe in forested areas in abandoned woodpecker holes. The author assumes this to be the "primitive, natural" type of Swift nesting. He believes the species' habit of nesting on buildings and in nesting boxes developed comparatively recently in southern and central Europe when Swifts nesting originally in mountain cliffs were driven by population pressures to take advantage of man-made structures. He postulates that this "culturally-habituated" population gradually spread northward through the thickly settled parts of Europe until in Finland it has now reached the habitat of the stock breeding in the "primitive state" in forest trees. The distribution of the several types of nesting in Finland leads him to believe these populations lead "rather separate lives, both ecologically and genetically," but that the intruders are beginning to adapt themselves secondarily on the fringes of their range to a nesting technique similar to that of the forest-inhabiting stock near by. His argument is highly theoretical and leaves much to be desired in the way of proof.—O. L. Austin, Jr.

23. The influence of temperature on brooding rhythm. (Einfluss der Temperatur auf den Brutrhythmus.) Lars von Haartman. 1956. *Ornis Fennica*, **33**(3-4): 100-107. (English summary.) Experiments with Pied Flycatchers *(Muscicapa hypoleuca)* in a thermostatically controlled nesting box showed the temperature within the box influences the brooding rhythm; the higher the temperature, the shorter were the individual brooding periods. The intervals between brooding periods were unaffected by the outside temperature. "The species' incubation period averaged 14.2 days. It was longer in May than in June. The cause may have been the air temperature; the colder the air, the longer the incubation period." The incubation period of the species in Germany was reported to be significantly shorter than in the study area in southwestern Finland.—O. L. Austin, Jr.

24. The Annual Reproductory Cycle of the Magpie, *Gymnorhina dorsalis* Campbell, in Southwestern Australia. Angus Robinson. 1956. *Emu*, **56**(4): 233-336. The author bases this lengthy dissertation on the Magpie's territorial and sexual behavior on his observations over some 12 years. The species lives the year round in groups of 6 to 20 birds. Each group holds a permanent territory which its members defend against adjacent groups and intruding males. Sexual promiscuity appears to be the rule in most groups, but the normal pair-bond has not been completely suppressed. No courtship occurs. The female builds the nests and incubates; the male sometimes helps feed the nestlings. Young are often dependent on their parents for 6 months after leaving the nest, and young birds of the previous season sometimes help feed the new brood.

The paper includes detailed notes on plumages, molts, song, food, and weather in relation to breeding, and on the seasonal changes in the male gonads. "The breeding cycle appears to be geared so that the young will hatch at the most propitious time with regard to food and weather conditions."—O. L. Austin, Jr.

25. Nest Records of the Swallow. L. E. G. Adams. 1957. *Bird Study*, **4**(1): 28-33. An analysis of 1,445 B.T.O. nest record cards for *Hirundo rustica* shows its laying period in Great Britain extends from late April to late August "with a large peak between 13 May and 16 June and a smaller one between 1 and 21 July. The main start of laying is about a week later in the north of England than in the south . . . the average clutch size is 4.4 eggs, starting at 4.7 eggs at the end of April and declining to 3.8 eggs in August. The average incubation period is 15.3 days; the nestling period 19.1 days. The breeding success (71.9%) was higher than in most species previously studied."—O. L. Austin, Jr.

26. The Breeding of the Lapland Bunting in Swedish Lapland. C. H. Fraser Rowell. 1957. *Bird Study*, **4**(1): 33-50. A detailed study of the breeding of *Calcarius lapponicus* based on a review of previous literature augmented by the author's obviously intensive work during a single breeding season in the field. It contains good observations on song, nuptial behavior, and on feeding and fledging of the nestlings. High points are an apparent absence of territorial activity,

a wide scatter in the length and timing of various phases of the breeding cycle, and a 4-day interval between the nestlings leaving the nest and becoming capable of flight. One wonders just how much this early departure from the nest was influenced by the observer's presence. That the flightless young survive so long a period of vulnerability is reflective of the scarcity of terrestrial predators.—O. L. Austin, Jr.

27. The Breeding of the Red-legged Partridge. David Jenkins. 1957. *Bird Study*, **4**(2): 97-100. Observations made on a British game preserve of the conjugal relationships of this apparently promiscuous species *(Alectoris rufa)*, in which "sometimes both the cock and hen of a single pair incubate separate clutches." Evidence shows one hen pairing with two cocks and laying three clutches; another hen paired with two cocks, one of which was already mated to a different hen. "There was sometimes considerable mixing of broods; adults with broods were not antagonistic towards other adults." One wonders how much of this sort of behavior is normal, and how much of it aberrant, perhaps induced by the unnatural conditions on a highly successful game preserve where predators and other natural checks and balances are eliminated and the birds are induced to breed in much closer proximity to one another than they normally would in an open, "unpreserved" range.—O. L. Austin, Jr.

28. Mixed Clutch of Oystercatcher *(Haematopus ostralegus)* and Common Tern *(Sterna hirundo)*. (Mischgelege von Austernfischer und Flussseeschwalbe.) Gerhard Grosskopf. 1957. *Ornithologische Mitteilungen*, **9**: 35. The author found an Oystercatcher nest with two eggs which a day later contained an egg of the Common Tern and at the next check 12 days after, a second egg of the Tern. The two Oystercatcher eggs hatched on the 29th and 30th of June. The following morning the second Tern egg was picked (the first was infertile). Expecting to trap an adult Oystercatcher, the author set a trap but was surprised to find instead a Tern. The author surmises that the Oystercatchers had incubated their eggs before the Terns moved in. A report on the fate of the young of the two species would have been of interest but is not given. In a note following this paper Herbert Bruns records a mixed clutch of three Oystercatcher eggs and one Tern egg with a photograph.—R. O. Bender.

29. The removal of damaged Eggs by Little Ringed and Kentish Plover. (Das Fortschaffen beschädigter Eier bei Fluss—und Seeregenpfeifer.) J. Walters. 1957. *Ornithologische Mitteilungen*, **9**(2): 27-28. An observation by the writer of the disappearance of one of four eggs of the Little Ringed Plover *(Charadrius dubius)* which had been broken by a bicycle tire led to experiments which proved that birds would carry away damaged eggs. This behavior is presumed to be inherited as a protection to the remainder of the clutch. In another interesting experiment, he found a Kentish Plover *(Charadrius alexandrinus)* nest with two newly hatched young, one egg, and the larger part of the blunt end of the egg from which the second young had been hatched. This shell was filled with sand with the open end turned away from the nest and about 10 cm. distant from it. An hour later it had been rolled back into the nest. Repeated the next day when the third young had hatched, it was again rolled back into the nest. In this case the adult had not evidently recognized it as an empty shell.—R. O. Bender.

30. Study of the Choice of Nest-boxes with and without Marten protection by hole-nesting Songbirds. (Untersuchungen über die Annahme von Nistgeräten mit und ohne Marderschutzvorrichtung durch höhlenbrutende Singvögel.) Herbert Bruns. 1957. *Ornithologische Mitteilungen*, **9**(2): 24-26. As the Pine Marten *(Martes martes)* is considered to be one of the most important enemies of hole-nesting birds, the author studied the effect of various devices designed to prevent it from removing the contents of the nest-box. Overhanging porches or "noses" were found to darken the interior of the nest box but a half spiral of metal inside of the box at the entrance, while it did not darken the box, was still not accepted by Pied Flycatchers *(Muscicapa hypoleuca)*. Because much of the population increases obtained by use of nest boxes have been due to increases in the numbers of flycatchers, the author concludes that further studies are required to obtain a Marten-proof box acceptable by this species. Titmice were less selective.—R. O. Bender.

31. Tree Sparrow hung by nest material. (Feldsperling erhängt sich an Nistmaterial.) Bruno Weber. 1957. *Ornithologische Mitteilungen,* **9:** 36. Report of a Tree Sparrow *(Passer montanus)* found hung by a thread at a partially constructed nest.—R. O. Bender.

32. Nest of the White Wagtail *(Motacilla alba)* on a traveling tank truck. (Brut der Weissen Bachstelze auf fahrendem Lastkraftwagen.) Lokietsch. 1957. *Ornithologische Mitteilungen,* **9:** 98. A pair of White Wagtails nested in 1955 on the rods of a tank truck operated from a garage of the local plant in Marl (Westfalen). During the nesting period, the truck made many long trips. Incubation was maintained during the trips. Nest relief followed the return of the truck. Shortly before hatching, the nest was removed. Four young birds were fledged. A table shows the dates on which the truck made its trips.—R. O. Bender.

33. Additional references to birds obviously born wingless or with one wing. (Weitere Hinweise auf offenbar einflügelig bzw. geborene Vögel.) H. Kumerloeve. 1957. *Ornithologische Mitteilungen,* **9:** 99-100. Record of a Song Thrush *(Turdus philomelos)* [sic], missing a left wing with no evidence of prior injury and a wingless swift *(Micropus apus)* in the nest.—R. O. Bender.

34. How do Songbirds react to an experimentally produced, single-day elimination of the possibility of further laying in the nest? (Wie reagieren Singvögel auf eine experimentell herbeigeführte eintägige Blockierung der Möglichkeit in ihr Nest weiter zu legen?) Franz Groebbels. 1957. *Ornithologische Mitteilungen,* **9:** 5-6. This paper reports preliminary results of experiments in which songbirds were prevented from laying for a 24-hour period by placement of a glass plate over the nest. In the first series of experiments, a plain glass plate was used and these birds laid the eggs which would normally have been deposited in the nest somewhere outside the nest. In the second series, pieces of leaves from the nest bush or tree were placed over the glass plate and the eggs were frequently laid on it. Twenty experiments were conducted involving *Sylvia borin, S. atricapilla, S. communis,* and *Prunella modularis.* All experimental nests were ultimately unsuccessful although some hatched young. The method of presenting the data makes it exceedingly difficult to determine exactly what happened, particularly whether or not laying was resumed after removal of the obstruction. The author notes that his data are too few to warrant conclusions and that further experiments will be undertaken.—R. O. Bender.

35. Experimental blocking of bird nests. (Experimentelle Blockierung von Vogelnestern.) Werner Jahnke. 1957. *Ornithologische Mitteilungen,* **9:** 104-105. Dr. Jahnke quetsions the value of the work reported by Groebbels (see No. 34) on the basis that the results of the experiments were predictable and that the experiments were in conflict with conservation principles.—R. O. Bender.

36. Explanation of my nest-blocking experiments with Songbirds. (Erläuterungen zu meinen Nestblockierungsversuchen bei Singvogelarten.) Franz Groebbels. 1957. *Ornithologische Mitteilungen,* **9:** 105-107. This paper is Dr. Groebbels' defense against the criticism of Dr. Jahnke (see Nos. 34 and 35). He contends that the results of his studies are not predictable and defends the contention that scientific research, even though involving the loss of individuals of a species, is justified because the resulting knowledge is valuable to intelligent conservation practices. He also minimizes the losses resulting from his studies. The research under discussion appears to me to be marginal in value since it is being conducted in an area where there are so many pertinent, uncontrollable variables, some of which are difficult to recognize and record. The net effect is to require either an impossibly large volume of data or to relegate the conclusions to the status of informed opinion. These difficulties and the hard choices which they impose on the researcher are too frequently overlooked or ignored by the experimental biologist.—R. O. Bender.

BEHAVIOR

(See also Numbers 20, 26, 27, 29, 61, 66, 67, 73, 75)

37. A Behavior Study of the Red-winged Blackbird. Robert W. Nero. 1956. *The Wilson Bulletin*, **68**(1): 5-37. (I. Mating and Nesting Activities); **68**(2): 129-150 (II. Territoriality). Detailed observations of a breeding colony of Red-winged Blackbirds *(Agelaius phoeniceus)* were made at Madison, Wisconsin, from 1948 to 1953. Most of the birds were individually marked with colored bands. Although text (p. 7) and Table I are not in full agreement, apparently a 55 to 60 percent return of marked adults was obtained. One 9-year and two 8-year-old males returned in 1955. Summer resident birds first appeared between 6 and 17 March (average 10-11 March). Marked birds had left the breeding marsh by August. In cases where records were complete, 5 males were known to be monogamous, 16 males had 2 mates each, and 4 had 3 mates each. Only three instances of double nestings by females were recorded; each was with her original mate and each was successful.

Most observations were made from 12-foot towers which permitted close scrutiny of behavior ordinarily concealed by the marsh vegetation. Items reported and discussed include arrival and establishment of females, the pairing bond, pair-formation, courtship, prominent displays and postures, symbolic nesting, sexual chasing, and copulation. In the four birds for which complete data were obtained, the average period between pair-formation and laying of the first egg was 21 days.

Seventeen territories of well-established male Red-wings varied in size from 1,330 to 6,280 square feet (mean 3,550). Size of territory varied inversely with population density. Each territory usually included a tree. Aggressive intolerance (sporadic) of other birds extended to 20 species of 13 families. Females established and defended sub-territories within the greater territories of their mates. A tendency to return to a given territory in subsequent years was exhibited by both sexes, but was stronger in males. Males did not tolerate females other than their mate(s) on their territories. First-year males did not breed or hold territory in the study area.—L. Richard Mewaldt.

38. A Study of Anting Behavior in Birds. Holger Poulsen. 1956. *Dansk Ornithologisk Forenings Tidsskrift*, **50**(4): 267-298. In reporting his experiments on anting, wherein he put live ants in the cages of 152 birds of 25 species in the Copenhagen zoo and observed the birds' subsequent behavior at close range, the author also reviews the literature (bibliography of 39 titles) and presents a concise and useful summary of our knowledge of the phenomenon to date, which has been reported in more than 100 species of 25 families, mostly passerines. He describes five different types of anting and considers all of them to be "non-learned behavior patterns. There are no individual variations except in the intensity of the performance. . . . Anting is released by irritating and tactile stimuli on the skin . . . but may also be a conditioned response to visual stimuli. . . . The irritating stimuli may be formic acid or any other substance with a pungent smell or maybe taste. . . .

"Some of the many theories as to the function of anting are obviously incorrect and none of them seems to be convincing. There is no direct evidence for any of these theories and still this problem awaits its solution."—O. L. Austin, Jr.

39. Studies on the Behavior of the Mallard. I. The Fixed Patterns. (Verhaltensstudien an der Stockente *(Anas platyrhynchos* L.). I. Das Aktionsystem.) Uli Weidmann. 1956. *Zeitschrift für Tierpsychologie*, **13**(2): 208-271. A 20-month study of 70 hand-raised Mallards at Konrad Lorenz' station at Buldern in Westphalia. "An attempt has been made to give an exhaustive description of the fixed patterns (an ethogram) of the mallard. In some cases the activity periods, casual factors, biological significance and evolution of these patterns and their occurrence in the normal sequence of behaviour are discussed." Detailed descriptions are given of the patterns in locomotion, comfort movements, flight, fighting, courtship, mother and young relations, etc. "Unlike Schjelderup-Ebbe I could not find a peck-order or a leader. Isolated members of a flock show appetitive behaviour on returning to it. . . . It is as reasonable to talk of a social drive as of an escape drive."

Members of a family never fight each other, nor do they flee from each other; there is no peck-order among the young. Some experiments on releasing following in the ducklings are described; this subject will be dealt with in detail in a later report. This interesting and thought-provoking paper concludes with a 2-page summary in English and a long bibliography.—M. M. Nice.

40. The Preying Technique of the Northern Shrike and Other Predators on Mice. (Zum Beuteverhalten des Raubwürgers *(Lanius excubitor* L.) und anderer Maüsejäger.) Gerhard Thielke. 1956. *Zeitschrift für Tierpsychologie,* **13**(2): 272-277. The Northern Shrike can recognize a mouse running on the ground at a distance of 80 meters, while it reacts to a member of its own species 450 meters away. It always seizes a mouse with its bill, transferring it to its claws after taking wing. "The birds defend their territory all the year round, conspecifics are threatened in a movement similar to the 'upright flight' described by Hinde in the Great Tit."—M. M. Nice.

41. Studies on Daily and Annual Periodic Changes in Activity in Caged Migratory Birds. (Untersuchungen über tages- und jahresperiodische Aktivitätsänderungen bei gekäftigten Zugvögeln.) F. W. Merkel. 1956. *Zeitschrift für Tierpsychologie,* **13**(2): 278-301. Description of experiments in activity cages, illustrated with numerous charts. Differences in behavior of birds held in Breslau and in Frankfort/M. are partly ascribed to differences in temperature. "The observations indicate that two antagonistic factors, or groups of factors, which act with varying strength during the course of the day and the year, may regulate the level and distribution of motor activity."—M. M. Nice.

42. Territorial Behavior in Lapwing in Autumn. (Territorial opførsel hos Vibe *(Vanellus vanellus* (L.)) om efteråret.) Hans Lind. 1957. *Dansk Ornithologisk Forenings Tidsskrift,* **51**(1): 22-29. (From the English summary.) The author watched Lapwings exhibiting typical aggressive territorial behavior along the Jutland shore during a warm spell in late September. He describes their actions in detail and comments: "The territorial behavior is presumably only a passing phenomenon. It may be due to a weak reproductive drive. . . . Aggressiveness will occur in the flocks, and in the case of stronger drive this will result in isolation. No pair-formation behavior was observed."—O. L. Austin, Jr.

43. Terns and gulls as features of habitat recognition for birds nesting in their colonies. Jukka Koskimies. 1957. *Ornis Fennica,* **34**(1): 1-6. The author attempts to reconcile the two apparently contradictory theories explaining the tendency of several species of ducks, grebes, and shorebirds to nest in breeding colonies of gulls and terns, first the widely accepted "protection" theory, second the "companion" or "social attraction" theory. Koskimies agrees with the majority that "protection by the larids is the fundamental biological cause," but believes the habit to be enhanced by "a refined habitat recognition system acquired through imprinting in local populations. . . . It is probable that the imprinting to the presence of larids takes place during the period when the young birds are developing in these characteristic surroundings. In this way, the habit of breeding in full colonies, once acquired as a result of perhaps more or less accidental breeding in such surroundings, will be perpetuated in following generations."—O. L. Austin, Jr.

44. The Functions of Territory. N. Tinbergen. 1957. *Bird Study,* **4**(1): 14-27. Professor Tinbergen reviews some of the recent thinking on avian territoriality and attempts to explain the importance of territorial behavior to specific survival. While acknowledging the survival value of site attachment (a more fitting term, by the way, than "site tenacity" which we have heretofore applied to the phenomenon in our tern studies), he emphasizes here the importance of the intraspecific hostility through which birds establish and maintain their territories. He argues in essence that while site attachment enhances the perpetual occupancy of favorable terrain and "assures for the individual certain advantages of being where it is," hostility is important as a highly efficient dispersal mechanism that prevents overcrowding, enhances range-extension, and assures the occupancy of the less desirable but nevertheless suitable sites. Pertinent and thought-provoking though the argument is, it still leaves much room for contro-

versy. As the author points out, the factual evidence in support of his thesis "is far from complete" and, I might add, its semantics still need clarification and simplification.—O. L. Austin, Jr.

45. Treecreepers Roosting in Wellingtonias. J. M. D. Mackenzie. 1957. *Bird Study*, **4**(2): 94-97. Creepers *(Certhia familiaris)* now roost commonly in niches in the thick, spongy bark of the Giant Sequoia practically wherever this tree occurs in Great Britain. As the first Sequoias were introduced to Britain in 1853 and could not "have been suitably well grown until about 1890-1900," the British Creepers have learned and developed the habit during the past 60 years at most. "The use of soft bark for roosting is an entirely new development in Britain, though apparently general in the North American continent throughout the range of the tree." The author considers it parallel to the new habit of "tits tearing milk bottle covers to get at the cream," whereas "the general acceptance of nest-boxes by tits, etc., is not in the same category: man has gone to considerable trouble to produce what is a copy of natural holes in essentials. . . . Nor does the use of buildings by Swifts, Swallows and House Martins seem to be anything but a move from caves and cliffs to sites with the same essentials in an improved form."—O. L. Austin, Jr.

46. A noteworthy Titmouse roost. (Ein bemerkenswerter Meisenschlafplatz.) Preywisch. 1957. *Ornithologische Mitteilungen*, **9**: 37. On two occasions titmice were seen entering the roof of a gas lantern on cold evenings to roost. In one case the Great Tit *(Parus major)* was definitely identified. A very unusual instance of urbanization of birds in Höxter.—R. O. Bender.

47. On the complex causes of the urbanization of birds. (Zum Ursachenkomplex der Verstädterung der Vögel.) Josef Peitzmeier. 1957. *Ornithologische Mitteilungen*, **9**: 92-93. As cities expand, human activities in peripheral areas increase. The author suggests that the resulting increase in contact between birds and people tends to overcome their natural shyness and becomes a factor in their ultimate settlement in the cities. He suggests also that living in proximity to people reduces the danger from natural enemies and also from hunters so that the birds overcome their natural fear of man because of a greater fear of other enemies.—R. O. Bender.

WILDLIFE MANAGEMENT

(See also Numbers 2, 27, 30, 55, 59)

48. Waterfowl Nesting Islands. M. C. Hammond and G. E. Mann. 1956. *Journal of Wildlife Management*, **20**(4): 345-352. On the Lower Souris National Wildlife Refuge, 70 artificial islands built in 1935 have received very heavy use by nesting ducks and Canada Geese. Densities between 20 and 80 duck nests per acre are regular. Gadwall concentrations of 200 nests per acre have been reported on small islands. Advantages and disadvantages of island-nesting are discussed with the conclusion that island construction is good waterfowl habitat management, provided that islands are sufficiently isolated from the mainland to discourage terrestrial predators. The authors do not believe that the building of islands in large marshes can make up for the nesting habitat lost through agricultural drainage of small marshes and potholes.—Oliver H. Hewitt.

49. Waterfowl Sex Ratios during Spring in Washington State and their Interpretation. Paul A. Johnsgard and Irven O. Buss. 1956. *Journal of Wildlife Management*, **20**(4): 384-388. While the data presented are from the State of Washington, the conclusions drawn from their interpretation can be widely applied. Spring sex ratios vary greatly according to date, habitat preference, and pairing behavior. Paired and unpaired ducks exhibited differential tolerances to disturbance. Correct interpretation of sex ratio data requires that date, habitat, evidence of pairing, etc., be recorded.—Oliver H. Hewitt.

50. Productivity of Canada Geese in the Flathead Valley, Montana. Mary Barraclough Geis. 1956. *Journal of Wildlife Management*, **20**(4): 409-419.

Intensive observations of a unit population of Canada Geese, composed of 800 pairs in 1953 and 1,075 pairs in 1954, provided fine information on productivity. It is reported that non-breeders formed 50 percent or more of the population; from 30 to 40 percent of unsuccessful pairs renested; more than 90 percent of nests were on islands; known nesting success was 73 percent in 1953, 51 percent in 1954; major causes of nest failure were severe weather, desertion and predation; hatchability in both years was over 85 percent; 2-day-old marked broods moved from 2 to 10 miles to rearing areas; productivity, based on number of young raised to flying age, was 3.16 per pair in 1953, and 2.32 per pair in 1954.—Oliver H. Hewitt.

51. Annual Survival of Massachusetts Male Woodcocks. William G. Sheldon. 1956. *Journal of Wildlife Management*, **20**(4): 420-427. Data from 128 retrapping records of 86 male woodcock banded on 188 singing grounds form the basis for this report. Thirty-two percent of these returns were retrapped on the singing grounds where originally trapped; 81 percent were retrapped within a mile of original capture. Traps captured between 50 and 60 percent of the breeding males present in trapping areas. Pine plantations and normal succession caused deterioration of woodcock habitat and abandonment of 66 singing fields between 1951 and 1955. A minimum annual survival of 57 percent of adult male woodcocks is indicated.—Oliver H. Hewitt.

52. Breeding Density and Productivity of Mourning Doves on a County-wide Basis in Georgia. Jack I. Lowe. 1956. *Journal of Wildlife Management*, **20**(4): 428-433. Intensive study on eight areas of 150 acres each revealed a breeding density of 2.5 pairs per 100 acres, producing two young per pair per year. Breeding density calculated from call-counts was somewhat lower, varying from 1.22 to 1.55 pairs per 100 acres in four seasons. Dove populations have remained fairly constant in Oconee County from 1951 through 1954 in spite of a low productivity.—Oliver H. Hewitt.

PARASITES AND DISEASES

(See also Number 33)

53. Maggot infestation of Nestling Linnets *(Carduelis cannabina* (L.)) and Chaffinches *(Fringilla coelebs* L.). Holger Poulsen. 1957. *Dansk Ornithologisk Forenings Tidsskrift*, **51**(1): 19-21. Reports two cases of infestation by *Protocalliphora* larvae of passerine nests, in both cases fatal to the nestlings. "In both cases the maggots were only attached to the ventral side of the nestlings and were not to be found in the ears, nostrils, and legs as known from the literature."—O. L. Austin, Jr.

54. Rare causes of death in Gulls. (Seltsame Todesursachen bei Möwen.) Ulrich Dunkelmann. 1957. *Ornithologische Mitteilungen*, **9**: 96. A Black-headed Gull *(Larus ridibundus)* that died in Nov. 1956 when examined was found to contain (presumably in the stomach although not so stated) 103 small stones and 46 fragments of mussel shells weighing 35 g. altogether. About a fourth of the fragments had an average diameter of 10-15 mm. Two of the stones about 25 mm. in length were flat and so razor-sharp on all sides that one wondered how they could have been swallowed without cutting the esophagus.

A Herring Gull *(Larus argentatus)* found dead in Nov. 1953 had the skin of the neck and crop swollen. Dissection revealed a mole in the crop. The gull has apparently swallowed the mole without killing it. The mole had bitten through the esophagus and skin of the neck in an effort to escape, but only succeeded in killing the gull without regaining its freedom.—R. O. Bender.

55. Effects of the use of Dieldrin for Bettle control on the Bird population and of E 605 on Nestlings. (Auswirkungen einer Maikäferbekämpfung mit Dieldrin auf den Vogelbestand und die Einwirkung von E 605 forte auf Jungvögel (Nestlinge).) Wilfred Przygodda. 1957. *Ornithologische Mitteilungen*, **9**: 67-78. The effects on bird life of spraying 29 hectares of woodland near Dormagen in 1956 to control the beetle *(Melolontha hippocastani)* with 0.2 kg. Dieldrin +

0.2 kg. Lindan per hectare are reported in the first part of this paper. With one exception, all of the broods being checked were destroyed. A part of the adult population also died. Titmice and warblers were especially affected. Reasoning from other information, the author ascribes this destruction almost entirely to Dieldrin.

The second part of the paper describes the effect of experimentally feeding food contaminated with controlled quantities of E 605 to young free-nesting birds. Finally, the studies were confined to nestlings of the Great Tit *(Parus major)*. A majority of nestlings died when about 30% of the daily food requirement (calculated from body weight = 100%) was poisoned with 0.035% solution of E 605.

Later studies conducted in the laboratory enabled daily weights to be determined. The feeding rhythm of the adult was followed. Part of the young (of a brood) perished when 100% of the daily food supply was poisoned and a part also when 50% was poisoned. The author remarks that the hazard with E 605 is closely related to the constitution of the nestlings.

He concludes that less toxic insecticides must be developed. This paper is very complete and detailed.—R. O. Bender.

PHYSIOLOGY

(See also Number 69)

56. Torpidity in Nightjars. (Om natravne (Caprimulgus europaeus L.) i. dvale. Jørgen Fog and Kay W. Petersen. 1957. *Dansk Ornithologisk Forenings Tidsskrift,* **51**(1): 1-6. (From the English summary.) Ever since Jaeger's discovery of hibernation in the Poor-will in 1948, ornithologists have been on the alert for its occurrence in other related species. Stimulated by a report that the Nightjar could enter into a torpid state when the air temperature approached 0°C., the authors subjected one in a cage to frigid temperatures for 12 hours, starting at +4°C. and dropping until for the last hour it was at —2.5°C. During the entire time no demonstrable drop in cloacal temperature occurred, nor did the bird's respiratory rate change, "and its behavior during the whole experiment also was quite normal. On the basis of this experiment we are of the opinion that the published information of torpidity in European Nightjars must be regarded with much skepticism."—O. L. Austin, Jr.

PLUMAGES AND MOLTS

(See also Number 18)

57. Notes on the Molts and Plumages of the Sparrow Hawk. Kenneth C. Parkes. 1955. *The Wilson Bulletin,* **67**(3): 194-199. The author attempts to prove the occurrence of a significant post-juvenal body molt in the male Sparrow Hawk *(Falco sparverius)* in September and October. This is in contradiction to statements in 1943 by Richard M. Bond *(The Condor,* **45**(5): 168-185), but in essential agreement with some earlier works including those of Bent and of Mearns.—L. Richard Mewaldt.

ZOOGEOGRAPHY

(See also Numbers 47, 70, 71, 72, 73)

58. The Birds of Aruba, Curacao, and Bonaire. K. H. Voous. 1957. *Studies on the Fauna of Curacao and Other Caribbean Islands.* **7**(29): 1-260 + 13 plates. This companion volume to the author's "Birds of St Martin, Saba, and St. Eustatius" (see *Bird-Banding,* **27**(4): 198) completes Dr. Voous' reports on his 7 months afield in the Netherlands Antilles in 1951 and 1952. The work is based mainly on his own diligent collecting—986 specimens, representing 103 of the 137 species he recognizes as occurring in these islands. He has also combed

the literature thoroughly and examined most of the earlier specimens from the group in collections in America and Europe. The result is an exceedingly valuable, up-to-date, and authoritative summation of the status of the birds on these comparatively little-worked islands. Most interesting to me is his description of Common Terns breeding at Curacao, the first definite evidence of *Sterna hirundo* nesting in the Caribbean, which has long been suspected but never before proved.

I have two comparatively minor criticisms of the work. The first is the author's overlooking an important source of data, the banding files of the Fish and Wildlife Service at Patuxent, which contain at least one Aruba record of terns, and I suspect more. The second is his tendency to accept sight records without careful enough valuation. He does list two species as hypothetical, the Bald Eagle and the Scissor-tailed Flycatcher, the latter a sight record of his own, but he also accepts 10 other species without specimen verification. Three of these, White Ibis, Thick-Knee *(Burhinus)*, and Black Noddy, are based on photographs and seem sound enough, but I for one would view the sight records on which the other 7 are based with considerable suspicion from the evidence presented. Of the lot, I'd be inclined to accept only those for the Peregrine Falcon, and to relegate to the hypothetical list those for the Cattle Egret, Carrion Falcon *(Milvago chimachima)*, Knot, Purple Martin, and Bay-Breasted and Mourning Warblers.—O. L. Austin, Jr.

59. The Kakapo *(Strigops habroptilus*, Gray) / A Review and Re-Appraisal of a Near-Extinct Species. G. R. Williams. 1956. *Notornis*, **7**(2): 29-56. This unique and little-known semi-nocturnal, practically flightless New Zealand parrot is apparently on the verge of extinction. That it probably is still extant is indicated by recurring reports, the most recent in early 1956, of tracks, "dusting holes," and feeding sign from its last stronghold, the wild, mountainous fiordlands of southwestern South Island. From the available literature (he appends an extensive bibliography), the author traces the Kakapo's past and present status and distribution in detail, summarizes the known details of its habits, its nesting, food, voice, and general behavior, and re-evaluates its current predicament in the light of this information.

Williams discounts destruction by introduced predators, parasites, or diseases as major factors in its decline. Its peculiar habits and structure show the species to be ultra-specialized for existence in its particular environment, primarily the edges of the mossy beech *(Nothophagus)* forests. "The distribution of sub-fossil remains indicates that the kakapo was a diminishing species before Man was able to exert any marked effect on the birds or their environment; so vegetational changes resulting from—but lagging behind—climatic changes may have been the primary cause of this diminution which was later accelerated by European settlement bringing about destruction of much of the forest—especially in the North Island."

If the species is to be preserved, Williams believes some should be caught and bred in captivity, and as many as possible liberated on a suitable island sanctuary. "A strictly 'let-alone' policy, even when combined with full legal protection against molestation, although uncontroversial—and even popular—is likely to be as ineffective as it is unventuresome."—O. L. Austin, Jr.

60. The birds of eastern Morocco from the Mediterranean to Berguent. (Les oiseaux du Maroc oriental de la Méditerranée à Berguent.) A. Brosset. 1956. *Alauda*, **24**: 161-205. This annotated list of some 270 species and subspecies is based on a study conducted from 1953 to 1956. Ecologically the region is divided into three zones which often merge abruptly into one another. The discussion on habitat selection is of special interest.—Louise de K. Lawrence.

61. The Great Spotted Cuckoo in the pine stands of the Estérel and the hills of Var. (L'Oxylophe *Clamator glandarius* (Lin.) dans les pinèdes de l'Estérel et de la côte Varoise.) Marc Laferrère. 1956. *Alauda*, **24**: 275-286. A description of the habitats, behavior, postures, voice, and habits, of this bird. The Magpie *(Pica pica)* is the species most parasitized by the cuckoo. Certain postures in the parasite and its victim show a curious similarity. For obvious reasons the habitat selection of the two species is the same.—Louise de K. Lawrence.

62. Does the Redpoll change its breeding area during the summer? (Wechselt der Birkenzeisig, *Carduelis flammea* (L.), sein Brutgebie während des Sommers?) Valto Peiponen. 1957. *Ornis Fennica,* **34**(2): 41-64. (English summary.) Presents evidence that in 1955, an "invasion" year, Redpolls bred in May fairly plentifully in southern and central Finland well south of the normal breeding area, and then moved northward in flocks of adults and young to the "fjeld" (alpine-birch) regions of Lapland, where numbers of them bred from mid-June into August. "A change in the breeding area of the type described above does not necessarily presuppose breeding in the spring further south than normal. The phenomenon as a whole may, theoretically, take place within the normal breeding area, the first breeding in the coniferous woods and the second in the fjeld region."—O. L. Austin, Jr.

63. Observation of Waders, Especially of Little Ringed Plover, at Søndersø Lake, North Zealand, in 1954. (Iagttagelser af vadefugle, iaer Lille Praestekrave *(Charadrius dubius curonicus* Gm.) ved Søndersø Nordsjaelland, 1954.) Niels Th. Rosenberg and Bent Pors Nielsen. 1957. *Dansk Ornithologisk Forenings Tidsskrift,* **51**(2): 65-73. Describes the rapid discovery and appropriation of new territory by waders when the water level of a lake some 6 miles inland in North Zealand dropped abnormally low for the first time in 1954. The fact that the recent appearance of a biotope is so rapidly "discovered" by the birds seems to indicaate a passage of waders, fairly rich in species, across North Zealand. Some 15 species were observed on the exposed lake bed, and three of them, Ringed Plover, Little Ringed Plover, and Lapwing, bred there. In 1955 the water level of the lake was again normal, and no waders were observed during several visits to the lake.—O. L. Austin, Jr.

64. Taxonomic Status of the Bobwhite Quail in New Zealand. Kaj Westerskov. *Notornis,* **7**(4): 95-98. A careful comparison of New Zealand with American specimens substantiates the known history of the original New Zealand stock: "The Bobwhite Quail introduced to New Zealand, now only persisting in scattered populations in the Wairoa-Waikaremoana area, belong to the western prairie form, the Plains Bobwhite, *Colinus virginianus taylori* Lincoln. The introduced birds came from Kansas and/or the old Indian Teritory around 1900." Though the birds were liberated in many localities over a vast range from 36°S. to 47°S., they have become permanently established only between 38°S. and 39°S. where, the author points out, light conditions and day lengths are roughly similar to those of their area of origin (37° and 38°N.).—O. L. Austin, Jr.

65. The Past and Present Status of the Buzzard in the British Isles. N. W. Moore. 1957. *British Birds,* **50**(5): 173-197. A history of the occurrence of *Buteo buteo* from 1100 A.D. to the present time. Since the Buzzard feeds largely on rabbits, when myxomatosis spread from the Continent of Europe to Great Britain in 1953, the British Trust for Ornithology instituted a census of Buzzards the following year. Up to the early 19th century it was a very common and widespread species but, largely due to shooting by gamekeepers, it then declined until by 1914 it was confined to the extreme west of Great Britain. Since then it has regained much of its old range and has recolonized Ireland. In 1954 810 pairs were found on 5,857 square miles (15,171 sq. km.) and 357 nests were located. "Normal maximum density was about 1 or 2 pairs per square mile (0.4 to 0.8 per sq. km.)." "1955 showed a great decrease in breeding activity of Buzzards in all regions where Rabbits had become rare or extinct. Many, perhaps most, pairs did not breed at all. It was normal, i.e., comparable to 1954, in local areas where the Rabbit population was not affected, and where Rabbits had never been abundant." In 1956 the Buzzard population was distinctly smaller than in 1954, due apparently to food shortage and increased shooting by "poultry farmers and shooting men" on the assumption that with the scarcity of rabbits Buzzards would turn to poultry and game. Seven maps add to the value of this excellent paper.—M. M. Nice.

66. Some Observations on the Feral Pigeon in London. Terry Gompertz. 1957. *Bird Study,* **4**(1): 2-13. A fine study of a distinct avian population on which almost nothing has been written. Most ornithologists, the author

suggests, have a "contemptuous" attitude toward the pigeons that are so abundant in so many cities. Yet despite their familiarity and tameness, these are essentially "wild" birds adapting themselves successfully to a unique ecological niche, and as such are well worth a student's attention He presents excellent observations on their nesting, roosting, and feeding behavior and, through a color-banding program, on their distribution and their adaptation to the continuous changes in their man-made environment. He summarizes:

"1. The Feral Pigeon is directly affected in all its activities by urban man's behavior; in a great city man has made many differing environments for himself and the differences affect the Feral Pigeon's choice of breeding and roosting sites and also, to some extent, its feeding habits.

"2. The Feral Pigeon owes part of its success as a city breeding species to urban man's need to feel some other form of life dependent on him. Since there are many more people who enjoy feeding the Feral Pigeon than there are who dislike its habits of excreting on and from buildings on which it lives, officials' attempts to reduce the number of the species meet with little success.

"3. With one exception, the Feral Pigeon's general pattern of behavior is similar in all essential respects to that of the Rock Dove. The exception is the difference in the attitudes of the Feral Pigeon and the Rock Dove to man; this reflects the contrast in man's behavior to these two representatives of the same species."

This paper proves that one doesn't have to go to the ends of the earth to produce good ornithology. Indeed, some of the best—and most neglected—opportunities for observation and research are in our own back yards!—O. L. Austin, Jr.

FOOD

(See also Number 26)

67. Unusual feeding behavior of the Common Heron and the Greenshank. (Nicht alltägliche Nahrungsaufnahme von Graureiher *(Ardea cinerea)* und Grünschenkel *(Tringa nebularia).)* Wolfgang Petonke. 1957. *Ornithologische Mitteilungen,* **9**(2): 34. A fisherman on the Grossen Binnensee watched the Heron alight on water about 20 feet deep and, after swimming a bit, fly off with a fish (chub or roach) weighing perhaps half a pound. The Greenshank was observed catching small fish in a shallow lagoon in two ways: (1) it chased a school of small fish into water plants and, striking right and left from above, seized a small fish *(Acerina cernua)* about 2 cm. long which it carried to the shore to swallow, and (2) it stretched out its head and neck and ran through a swarm of fish with its bill partly open on the surface of the water. It used this method in water free of vegetation, where it caught mostly chub *(Idus melanotus)* 3 to 4 cm. long.—R. O. Bender.

68. Cherries as food for Nestling Starlings. (Kirschen als Futter für nestjunge Stare.) Hans Löhrl. 1957. *Ornithologische Mitteilungen,* **9**: 23-24. By counting the number of cherry stones regurgitated by young starlings *(Sturnus vulgaris)* the author obtained data on the number consumed in raising several broods. A typical sequence follows. At the age of 6 days a few stones were present, at 11 days 161, at 12 days 210, at 14 days 300, and at 18 days 438, after which the young left the nest. The number of young is not stated. It was observed that cherries were not brought at successive feedings but were interrupted by 2 to 3 feedings with animal food. The latter was mostly harmful insects, but a few useful beetles *(Carabus)* were fed. The cherries were never brought intact. Observations of starlings gathering cherries showed that they pecked at the fruit and, in one case, of 40 cherries pecked at only 7 were carried away. Hence, the number fed represents only a part of the damage done.

A comment on this paper by W. Von Neuenstein in *Ornithologische Mitteilungen,* **9**: 114 points out from his observations that starlings are "individualists" with regard to feeding cherries to nestlings, one pair feeding large numbers and another pair at the same place and time feeding very few. A further comment by Gustav Volkmann in *Ornithologische Mitteilungen,* **9**: 34 records 246 cherry stones from one nest box, 357 from another and 321 from a third. The nearest cherry tree was 200 m. distant.—R. O. Bender.

69. A brief study of the use of food by the Jay and the Crossbill. (Ein Kleinversuch über den Futterverbrauch des Eichelhähers und Kreuzschnabels.) F. J. Turcek. 1957. *Ornithologische Mitteilungen*, **9**: 9-11. This paper reports the measured consumption of acorns *(Quercus sessilis)* by the Jay *(Garrulus glandarius)* and of pine seeds *(Pinus sylvestris)* by the Crossbill *(Loxia curvirostra)*. The Jay, which had been raised for research purposes, was given whole, unhulled acorns from the 1956 crop from 9 to 18 October, ad libitum, and pure water. The room temperature was 20°C. The Jay weighed 140 g. at the beginning and 139 g. at the end of the experiment. Its body surface calculated as weight$^{2/3}$ x K = 10 was about 270 cm^2. The Jay consumed an average of 17 acorns per day for an average daily use of 35.083 g. of pure seed substance. This calculates to 24.3% of its body weight, or 0.25 g. per g. of body weight or 0.13 g. per cm^2 of body surface. These acorns contained 62.6% of dry substance (determined by four days drying in an electric oven). Calculated to a dry basis, the Jay consumed from 15.8 to 25.1 g. per day, averaging 22.0 g. This is equivalent to 15.7% of the body weight, or 0.157 g. per g. or 0.08 g. per cm^2 of body surface. There are also notes on the manner in which the Jay opened the acorns.

The Crossbill was fed wingless pine seeds during 10 days, ad libitum, together with pure water. The cage temperature was 20°C. It weighed 35 g. at the beginning and 35.2 g. at the end of the study. Its body surface was 106 cm^2. Daily usage varied from 16.446 to 32.569 g. of seeds; an average of 32.509 g. If 1 g. contained 230 seeds, the daily consumption was 1,085 seeds equivalent to the content of 20-54 whole cones. Food consumption was 13.5% of body weight. Converted to a dry weight basis (the seeds averaged 82% dry weight) the daily consumption became on the average 4.34 g.; 12% of the body weight, 0.124 g. per g. of body weight and 0.041 g. per cm^2 of body surface. The energy content of the seeds based on analyses and literature reports was 4,628 g-cal per g. of dry substance. Daily energy consumption was calculated at 20,085 g-cal, or 573 g-cal per g. of body weight or 190 g-cal per cm^2 of body surface.

Based on this limited study and on previous researches with mice, the author states that, at least with smaller mammals and birds, energy consumption is essentially constant per g. of body weight and moves around a value of 600 g-cal per g. It is to be hoped that the author will continue these studies.—R. O. Bender.

SONG

(See Numbers 26, 61, 73)

BOOKS AND MONOGRAPHS

70. Arctic Birds of Canada. L. L. Snyder. 1957. Univ. of Toronto Press. X + 310 pp., 72 species illustrated in black-and-white by T. M. Shortt, and their [Canadian] ranges mapped. $4.75. Written in layman's language, this volume deserves the serious attention of anyone interested in the species or the area it treats. Text covers additional names (including Eskimo), status, habitat, characteristics, and remarks. There is much well-organized, concisely written information. Treatment is diagnostic. Existing information has been carefully appraised and summarized, while matters unknown or needing further study are pointed out. An appendix gives data on species that, for the most part, occur only occasionally in the area covered.

The range maps differ from those in most bird books. Included on them are summer range, breeding areas (solid black), extralimital occurrences, limits of subspecies, limit of winter range, and estimated southern limit of arctic form. Thus the breeding stations of social-nesters clearly show within the total summer range. For others, the plotting of their known breeding areas may indicate (a) places having similar ecological aspect, (b) variation in breeding habitat used by any given species, or (c) the travels of naturalists. Contrary to the belief of many persons who never have been there, the Arctic is very varied. Some persons may be surprised to note the small amount of known breeding area of many species upon so vast a portion of the earth. Students of the Arctic, or anyone interested in the species covered, may study these maps with profit. They should be especially intriguing to the student of bird migration. No doubt more breeding

areas will be blacked in for some of the species when competent naturalists have reported *adequately* on more of the area this book encompasses.

T. M. Shortt has his own approach to illustrating—a good one. Anyone who has been in the Arctic will have nostalgic memories on viewing such drawings as the jaeger's-eye view of manned kayak, the sea and ice; the cairn in the Iceland Gull picture; Dovekies scattered over the sea; or a scavenging Raven keeping an eye on an Eskimo camp. Some of Shortt's drawings for the R. H. Pough *Western Bird Guide* (see No. 71) were disappointing. Flying birds as small as woodpeckers and orioles were done with the far wing very much smaller than the near one. This attempt to give "depth" (exaggeration of perspective) is illogical. The present illustrations are much better; even the relative "color values" in these uncolored drawings are superior.

Snyder sets forth his own ideas and speculations on taxonomy and other matters; the results are stimulating and thought-provoking. His alternatives as to status and possible summer range of *Anser albifrons gambelli* might have been different if he had read a useful but inadequate paper by Twomey (1956. *Carnegie Mag.*, **30**(2): 41-45). In a letter, Snyder mentioned these errata: blacked-in area indicating breeding of *Anser albifrons* on Melville Peninsula (p. 59) is based on inadequate report; Ross' Goose picture (p. 70) should be captioned "left, adult; right, young"; and Sabine's Gull caption (p. 224) should read "left, adults in summer; right, young."

Some persons may want to compare Snyder's with another recent work. For pan-arctic (not Canadian only) treatment—but mainly of range and habitat—see Hans Johansen's "Revision und Entstehung der Arktischen Vogelfauna" (1956. *Acta Arctica*, fasc. 8: 98 pp., a few maps). This, the first installment, covers loons through ptarmigan.

This reviewer would have preferred having the map symbol explanations and geographical "arbitrary limits" covered in Snyder's book done in larger size and as frontispiece, for quick reference. At very least, the map portion behind the symbols (p. 4) should have been deleted for clarity's sake. This is minor criticism of a book that is well written, illustrated, and produced.—Ralph S. Palmer.

71. Audubon Western Bird Guide. Richard H. Pough. 1957. Doubleday and Company, Inc., Garden City, N. Y., xxxvi + 316 pp. 32 col. pl. + 138 text figs. $4.95. This is a companion volume to the author's previous two pocket books on the eastern birds, the *Audubon Bird Guide* and the *Audubon Water Bird Guide*. While it may prove a useful field guide for the eastern bird-watcher, well versed in the eastern birds and making his first trip west, for the western beginner it leaves much to be desired, as the only species figured in color and described fully in the text are the 203 exclusively western ones. The other 411 (the book covers 614 species) "are so well described in the eastern Audubon Bird Guides that only their ranges are included here." For pictures and descriptions of everything he might encounter, the western tyro must thus carry all three volumes afield. The Peterson western guide is much handier for field use, since—despite its lesser bulk—it covers all species regularly found west of about the 100th meridian.

In glancing through the extralimital ranges of the species with which I am most familiar, I noted a few minor errors that more careful checking of the recent literature would have prevented. For instance, the Short-tailed Albatross never bred on Wake Island, and Kittlitz's Murrelet and the Whiskered Auklet have never been taken in Japan. These particular errors are of ancient vintage, and all have been pointed out in available literature during the last decade. But once errors of fact get into print, it's almost impossible to make the corrections stick. Corrections seldom get the prominence of the original, to which later authors keep referring.

I am mortified to find here the perpetuation of an error of my own that I corrected in a later publication. In my "Birds of Korea" (1948) I laboriously and erroneously translated the Japanese name for shearwater, "mizunagadori," as "calm water bird." The Japanese language is full of homonyms whose exact meanings cannot be determined from the phonetic kana used for writing bird names. Japanese friends pointed out my mistake after the work appeared—my translation of "mizu" (water) and "tori" (bird) was correct, but the "naga" in this case is not from the common adjective meaning long, or calm, but from

a less widely used verb meaning to mow or shear. Having no native name for a shearwater, when the Japanese made up their official list of common bird names, they simply translated the English one into Japanese. (They did the same thing for Man-O'War Bird, Ivory Gull, Black-naped Tern, and sundry other species.) My error was doubly unfortunate for, poetic as "calm water bird" is, shearwaters are typically birds of rather rough seas! Kuroda and I gave the correct translation of mizunagadori in our "Birds of Japan" (1953), but here is "calm water bird" cropping up again, and I'm afraid I'll be embarrassed by encountering it far, far, far into the future. I doubt that when the three Guides are issued in a single cover the publishers will countenance the added expense of making such corrections.

Like its two predecessors, the book is attractively produced. I consider Terry Shortt's line drawings clear and adequate for their purpose, but for a contrary opinion see No. 70 above. Don Eckelberry's plates are nicely drawn, and the color reproduction seems quite faithful, but several of the plates in my copy were a bit fuzzed in printing.—O. L. Austin, Jr.

72. The Birds of the London Area Since 1900. R. C. Homes and others. 1957. Collins. London. VIII & 305 pp. 40 phot., 6 maps. 30 shillings. Another notable book in the New Naturalist Series. This is written by a Committee of the London Natural History Society, a group made up largely of amateurs. The 1200 square mile area covered is a circle of 20 miles radius from St. Paul's Cathedral. Close building extends for 10 miles; this area is called Inner London; it contains several large parks and many open squares and gardens. Eight other habitats are treated in separate chapters, as suburbs, river valleys, commons, woodlands, agricultural lands, etc. Three chapters deal with the physical setting, migration, and roosts. Important factors influencing bird life in the last half century are the increases in human population and in reservoirs, gravel pits, and sewage farms.

Inner London is estimated to support 40 to 50 breeding birds per 10 acres in contrast to 20 in Great Britain as a whole. During this century 37 species have bred, 9 of them new acquisitions, with only 1 loss—the Rook. Many of these birds are largely dependent on bread, especially Feral Pigeons and House Sparrows, as well as wintering gulls. Chief enemies are cats and rats. The grey squirrel, introduced from America in 1905, was eliminated in the 1930s. Atmospheric pollution is credited with causing disease in the birds as well as reducing the amount of plant and insect food.

Two thirds of the book is devoted to the systematic list which includes 245 species. "During this century 110 species are known to have nested in the Area, and about 100 still do so, or are believed to do so, annually." "Feral domestic pigeons have been a feature of London's bird-life at least as far back as the 14th century." Large numbers are trapped and killed, but this only results "in more food and suitable nesting sites being available for younger birds, which soon restore the level of the population." In some parks House Sparrows "will take food from visitors, often perching on the hand." "They have been seen entering the wards of the Central Middlesex Hospital, perching on the beds and collecting scraps of food from the floors and even from plates."

Magpies, Carrion Crows, and Jays have all increased in response to lessened persecution. Black-headed Gulls acquired the habit of frequenting buildings for food about 1917. "Now in winter it is hardly possible to look up in any London street for five minutes or so without seeing a black-headed gull cruising over, while in some districts they also come down for food in suburban gardens."

"One of the most spectacular changes in London bird life in this century has been the growth of the starling's habit of roosting in the centre of the Metropolis. The packed ledges in and around Trafalgar Square and the dramatic aerial evolutions as the birds arrive are now familiar and famous, but fifty years ago the habit had scarcely begun." In summer most of the birds roost in trees in parks or squares, but as soon as the leaves fall they flock to the buildings. "The chosen trees or buildings are most often in the best lit and busiest streets." Trapping of 5,000 Starlings in Trafalgar Square has shown most of them to be residents. Driving the birds from one site merely moves them to another.

These are but a few samples of the wealth of biological and ecological information to be found in this notable volume. Besides its value for all serious orni-

thologists, it will serve as a foundation for and stimulus to further studies by local observers.—M. M. Nice.

73. The Comparative Biology of the Meadowlarks (*Sturnella*) in Wisconsin. Wesley E. Lanyon. 1957. *Publications of the Nuttall Ornithological Club*, Cambridge, Massachusetts, No. 1., pp. 1-67, 31 plates. This excellent study of the relationship between *Sturnella magna* and *S. neglecta* on their overlapping breeding ranges in Wisconsin sheds a great deal of welcome light on a perplexing subject and should settle for all time a taxonomic controversy that has lasted for almost a century. Particularly important is Lanyon's spectrographic analysis of the distinctive songs of the two species, which he found "though geographically variable in rhythm and pattern," to retain their "basic characteristics in widely separated localities throughout the north-central States." He determined the call notes "to be inherited or, if learned, learned during the nestling period," while "Primary song was found to be learned rather than inherited." His evidence shows "males of either species are potentially capable of learning and rendering primary song of the other species." Thus "the phenomena of 'hybrid song' and bivalent repertory of primary song can no longer be offered as evidence of the hybridization of these species."

With this most recent argument for making the two groups conspecific disposed of, he is able to resolve the issue quite simply: Though the two species are very close morphologically, and practically identical in breeding behavior and breeding biology, the respective populations nesting side by side in the zone of overlap "appear to be effectively isolated reproductively. . . . The literature contains no clear case of hybridization of Eastern and Western Meadowlarks in the wild and no such evidence was found in this study." Thus there can be little question that the two populations must be regarded as specifically distinct.

The mechanics by which the apparent reproductive isolation has been established and is being maintained is not as yet entirely clear. Lanyon presents strong evidence of habitat preference between the two species, *magna* preferring more moist areas, *neglecta* the drier ones, which suggests "environmental moisture may be a major proximate factor in limiting Meadowlark distributions." But he considers that while this differential habitat preference reduces the number of interspecific contacts, it "constitutes only a partial isolating mechanism." He believes "the major barrier restricting random mating of these species . . . to be behavioral" and "marked differences in the call notes of the males . . . to be the determining factor in species recognition and hence in maintaining the Eastern Meadowlark and Western Meadowlark as good species."

I concede that the behavioral differences Lanyon stresses are of great importance in maintaining reproductive isolation between the two species, but I reject as not proved his claim that "It seems unlikely that either genetical or mechanical mechanisms are involved." Most significant in this regard is the evidence that the one certain case of "mixed pairing" (in the wild) proved unstable, and that the one known case of "mixed mating" (in captivity) was abortive. This certainly suggests that genetic and possibly mechanical differences are indeed involved.

The final solution to the problem lies neither in the museum nor in the field, but in the laboratory. Here is an excellent opportunity to apply the hybridization and cytological techniques developed in Japan by Yamashina and Makino. I'll wager a life subscription to *Bird-Banding* against a worn Meadowlark tail feather that if hybrid offspring between *magna* and *neglecta* are ever reared successfully in captivity they will prove only partially if at all fertile, and that the strongest factors keeping the two populations distinct will be revealed by a comparative study of their chromosomes.—O. L. Austin, Jr.

74. The Technique of Photographing Birds. John Warham. 1956. Focal Press, Ltd., London. 199 pp. illus. $4.95. This book by a well-known British-Australian bird photographer should be useful to anyone interested in taking still pictures of birds. The first chapter deals at length with equipment—types of cameras and the features which make them particularly suitable, and such accessories as the proper tripod, exposure meter, and hide (the blind to American bird photographers). The second takes up step by step the entire process of bird-at-the-nest photography from finding the nest to setting up the hide with relation to the subject, "gardening" (adjusting or otherwise altering the foliage around the nest), and so on. The next four chapters have to do with photographing birds

at the nest under difficult circumstances (for example, when nests are high in trees or below ground), getting close to birds that are not nesting, using flash equipment and coping with related problems, and working in the tropics. All the chapters are carefully organized and contain a wealth of detailed information.

The seventh and final chapter strikes this reviewer as being wholly unique as it comprises tables to assist in photographing 69 species of British birds. The birds are in two groups, the first for the beginner in bird photography. For each of the 69 species there are data on (1) the number of working days a photographer may have, (2) how far from the nest to set up the camera when using different lenses, and (3) the maximum exposure times; there are also (4) a brief description of the nest and eggs and some hints about gardening and what may be expected by way of the occupants' behavior, and (5) a brief description, with accompanying drawing, of the species' physical appearance and a statement of the species' average length. The entire presentation bears evidence that bird photography is indeed becoming highly refined!

Mr. Warham's fine book is for all bird photographers, potential, amateur, and professional, because it is aimed at all levels of skill. Even the most experienced photographer is certain to find some worthwhile suggestions in its pages. Among the profuse illustrations is a selection of superb photographs by the author, Eric Hosking, Allan D. Cruickshank, and other prominent bird photographers. Each and every picture should serve as an inspiration to those who hope to bring their camera work to a higher stage of perfection.—Olin Sewall Pettingill, Jr.

75. The Least Tern in the Mississippi Valley. John William Hardy. 1957. *Publications of the Museum, Michigan State University*, Biological Series, **1**(1): 1-60. This comprehensive study of the inland population of the Least Tern, *Sterna albifrons athalassos*, is based mainly on the author's field observations of a colony of some 30 pairs that nested on a sandbar in the Ohio River during the summer of 1953. While its emphasis is understandably on nesting habits and behavior, Hardy has covered such other salient features as distribution, ecology, and population dynamics quite adequately both from his field experience and the available literature.

The study is particularly valuable because most of the previous work on the species has been done on populations breeding on salt water coastal beaches, and the differences in the respective ecologies of the two groups are striking. For instance, Hardy considers "the presence of sand bars, the existence of favorable water levels, and the availability of food are the three most important factors in determining location of nesting colonies." For coastal colonies freedom from predators and human interference is by far the most important criterion; sand bars are too ubiquitous to be limiting, food is practically always available, and changing water levels are a constant threat everywhere rather than a limiting factor. Whereas the start of the inland group's breeding season is apparently governed by spring flood conditions which frequently delay it well into the summer, coastal birds are seldom if ever so delayed. However, coastal birds regularly lose more eggs and young during storm-driven high tides than the inland birds do in occasional floods. From the little evidence available, the nesting success of the inland group is very low, perhaps lower than that of the coastal birds, but far more accurate data are needed before any definite conclusions can be drawn on the demography of either group.

In view of its increase over the past three or four decades and the ease with which it can be studied on its nesting ground, it is surprising how little serious work has been done with the Least Tern. The literature is pitifully scant. Hardy lists only 55 titles, all but four or five of which are little more than short, minor notes, and offhand I can think of only one significant omission in his bibliography. He overlooked E. A. Bergstrom's publication of my 21-year-old Least Tern return (*Bird-Banding*, **23**: 72), which I must admit is a hard one to find, buried as it is in a note on general tern longevity. He would have found the record, however, had he checked the Patuxent files as he should have for banding data on distribution and longevity.

I was a bit amused by Hardy's failure to trap any of the adult terns in his colony, and his complaint that the "automatic" trapping method we developed in our work with the larger terns on Cape Cod "was not successful for trapping Least Terns." Though we never published it, we learned more than 25 years ago that, as he points out, the Least usually runs out from under the trap before

taking flight, instead of hopping straight up from the nest as the Common does. We also found, however, that adult Leasts can be taken easily on their nests by operating drop traps manually with pull-strips from a blind. It is slower work than our stringless method with the Commons and Arctics, but it is lots surer and much more efficient in a small colony.

Hardy has laid an excellent foundation for future studies on the species, and I hope his paper stimulates others to carry on more intensive investigations of the species' biology. The gaps in our knowledge of it are many, and it is hard to think of a species where more of interest and value is waiting to be learned for less effort, or in more pleasant surroundings.—O. L. Austin, Jr.

76. The Bird Biographies of John James Audubon. Selected and edited by Alice Ford. 1957. Macmillan, N. Y. x+282 pp. 12 ill. in color. $10.00. Audubon's "Ornithological Biography" was published in 5 volumes from 1831-1839, followed by a somewhat different edition in 7 volumes from 1840-1844. "With readability, value, and interest for a rule of thumb, but not with the conventional manual in mind, the present editor drew the best from the two original Audubon editions" (p. ix). From the 508 species treated by Audubon, Miss Ford selected 80; she omitted all the descriptions and some of the rhapsodizing, while "paragraphs and sentences were divided and occasionally transposed."

Miss Ford calls Audubon an "incomparable observer." He did have incomparable opportunities, but he also possessed a lively imagination. Because he had seen males of some species feeding their mates, he seems to have leaped to the conclusion that this was the proper pattern for most birds—at least small birds—and he happily penned sentimental life histories that bear little resemblance to reality. His eulogies, for example, over the "courage and care" of the male Ruby-throated Hummingbird for his mate and young are nothing short of ridiculous.

If it were worth while to publish such a book, it is a pity that the editor, who is a historian of art, did not have an ornithologist check her manuscript. This would have saved her from designating as Say's Phoebe the Phoebe that nested in Pennsylvania. Here, also, her changing the text has made Audubon say "several" of the brood of five Phoebes which he marked with a "silver thread" were caught the following season nesting nearby. The *two* that Audubon claimed as returning were extraordinary enough and entirely out of line with subsequent experiences with banded nestlings in this and other countries. I feel that we are justified in being a little skeptical that even two returned, let alone "several."

Audubon is much overrated both as observer and as artist. He was far from being what the publishers claim—"the greatest bird and animal painter who ever lived." He was fascinated by birds; he loved to sentimentalize over them and he certainly loved to shoot them.

The illustrations from original water colors belonging to Harvard University are well reproduced; most of them have an archaic look in comparison to the work of present-day painters of birds.—M. M. Nice.

77. John James Audubon (1785-1951) An Evaluation of the Man and his Work. Robert Cushman Murphy. 1956. *The New York Historical Society Quarterly*, October: 315-350. An enthusiastic appraisal of Audubon's character and achievements, his abounding energy, his brilliance, his faults, and his great contribution towards making people aware of nature. Dr. Murphy speaks of the "Ornithological Biographies" as "surely replete with information that compilers of later works have not used." He does not tell us how we are to separate the grains of fact from the mass of fancies in which they are imbedded. The article is illustrated by numerous halftones from original water colors including one showing a *rattlesnake* up a tree robbing a Mockingbirds' nest.—M. M. Nice.