Color of Iris in Common Grackle.—On May 2. 1952, there was trapped and banded (#583-71627) in Arlington, Virginia, an adult female Common Grackle *(Quiscalus quiscula)*. The color of the iris was unusual for an adult bird. Dr. Alexander Wetmore identified the color of the iris as pallid Neutral gray (Ridgway), with a hint of yellow in the right eye. In Bent's Life Histories of Blackbirds, etc., Museum Bulletin 211, page 379, it is stated: "'The young Purple [Common] Grackle have brown irides, which by the absorption of the pigment, change to gray and lemon, ivory or white.'—As the iris of the adult is pale lemon color, or almost white, it appears that the brown iris is confined to the youngest birds and that the gray iris marks a transition stage of adolescence." Dr. Wetmore stated that the color of the iris of this bird was a partial retention of the juvenile condition.—Arthur H. Fast, 4924 Rock Spring Road, Arlington 7, Virginia.

RECENT LITERATURE
BANDING

(See also numbers 17, 18, 31, 75.)

1. The New French Organization for Migration Research. (La Nouvelle Organisation Francaise de Recherches sur les Migrations.) R.-D. Etchécopar. 1957 (?). *Bulletin du Centre de Recherches sur les Migrations des Mammifères et des Oiseaux*, **9** (1954-1955): 1-94. In 1954 French banding was centralized in the Museum National d'Histoire Naturelle, 55 rue de Buffon, Paris (V^{e}), under the direction of the Research Center for Mammal and Bird Migration (C.R.M.M.O.). Its Director describes here its facilities, its methods of recording and reporting banding data, its projects, and special programs. The latter include studies of migration routes in the western Mediterranean, migrations of pigeons and doves, and of the development of French heronries.

The last half of the report gives complete raw data for the recoveries reported in 1954 and 1955, a splendid 45-page list representing 95 species, and uncluttered by returns or recoveries of short time and distance, which are summarized briefly for each species. One cannot help being impressed by the high rate of recovery achieved by this, as well as other European programs, in comparison to our own. The large numbers of small passerines recovered, as high as 2 per cent in some species, of course reflect the lamentable hunting and trapping of these birds in Europe for sport and food. But when we see 10 per cent recovery of doves and of herons, 30 per cent and greater in waterfowl, we are forced to the conclusion that at least two, perhaps three times more Europeans than Americans who kill or find banded birds report them. I wonder why?—O. L. Austin, Jr.

2. The Australian Bird-Banding Scheme. R. Carrick. 1956. *Commonwealth Scientific and Industrial Research Organization* (hereafter abbreviated to *C.S.I.R.O.), Wildlife Research*, **1**(1): 26-30. "A national bird-banding scheme was launched in 1953 by the Wildlife Survey Section, C.S.I.R.O., with headquarters at Canberra. It aims to gather data on migration and other aspects of bird biology for economic purposes and fauna conservation as well as for their intrinsic scientific value. A brief history is given of bird-banding schemes abroad and of previous work in Australia. . . . Most of the independent projects [in Australia] have merged with the national scheme."—O. L. Austin, Jr.

3. First Annual Report of the Australian Bird-Banding Scheme, October 1953 to June 1955. R. Carrick and Noel Turnbull. 1956. *C.S.I.R.O. Wildlife Research*, **1**(1): 31-39. The Australians banded 6073 birds of 49 species in this period, from which 85 recoveries in 15 species were reported. Wisely "only those recoveries which extend or usefully confirm existing knowledge of the species are reported in full," in this case 19 from 7 species, of which the most interesting are 7 of the wide-ranging circumpolar Giant Petrel *(Macronectes)*. —O. L. Austin, Jr.

4. Second Annual Report of the Australian Bird-Banding Scheme, July 1955 to June 1956. R. Carrick and Noel Turnbull. 1956. *C.S.I.R.O. Wildlife Research*, **1**(2): 114-130. In this period the Australians banded 12,500 birds of 107 species and received 708 "recoveries" of 39 species. The table of bandings and recoveries by species shows the latter to be abnormally high (22

recoveries from 47 wrens *(Malurus)* banded, 104 from 208 magpies *(Gymnorhina)* for instance) until one notices that the Australians are not differentiating returns and repeats as such, but are lumping them with recoveries.—O. L. Austin, Jr.

5. Third Annual Report of the Australian Bird-Banding Scheme, July 1956 to June 1957. R. Carrick, Noel Keith, and K. Keith. 1957. *C.S.I.R.O. Wildlife Research,* **2**(2): 145-163. Reports the banding of 12,552 birds of 69 species and the "recovery" of 1048 birds of 38 species. As a large number of these are returns in our sense, taken at the banding place after a migration, and some are repeats of strictly sedentary species, the reported recovery percentages (8.8 per cent of all bandings since 1953) are not at all comparable with those of ours or any other scheme. Raw data for 71 recoveries, returns, and repeats of special significance are given.—O. L. Austin, Jr.

6. The Banding Programme on *Puffinus tenuirostris* (Temminck). 1. First Report. D. L. Serventy. 1957. *C.S.I.R.O. Wildlife Research,* **2**(1): 51-59. When he started his biological investigations of the "Mutton-birds" on the Furneaux Islands, northeast Tasmania, in 1947, Dr. Serventy instituted a banding program as an integral part of the study. The first bands he used, of copper, were so impermanent that by 1950 he changed to bands of monel, which have proved highly satisfactory ever since. By the end of the 1956 nesting season, he and his helpers had banded 18,121 birds, most of them fledglings. Returns show the species to exhibit site adherence very strongly; the young tend to return to their natal island, and breeding birds "show a strong tendency to return to the same site on the island to nest each season." Recoveries away from the breeding grounds have not been plentiful. The species is so highly pelagic that it seldom comes to human hands, except at its Tasmanian nesting grounds, where thousands of surplus young are harvested annually to be canned for market as "Tasmanian Squab" (delicious too!). So far only two recoveries have been reported from the species' wintering ground in the North Pacific, but these amply refute the long-held contention of Mathews and Iredale (1915) that North Pacific Short-tailed Shearwaters are a different breeding population and subspecifically distinct from those of Australia. For other results from this banding program see number 31.—O. L. Austin, Jr.

7. Banding activities at Falsterbo Bird Station 1954-1956. Report 8. (Ringmärkningsverksamheten vid Falsterbo fågelstation 1954-56. Meddelande från Falsterbo fågelstation 8.) Anders Enemar. 1957. *Vår Fågelvärld,* **16:** 20-36. (English summary.) This report deals with the improvements achieved, particularly in the working conditions of the cooperators with the occupation of the new building, and in the effectiveness of the work with many new traps of various types set in strategic positions. The banding table gives a total for the three years of 12,578 birds of 101 species. Of the total number of birds banded at the station 139 or about 1.1 per cent have been recovered. The way in which the list of recoveries is printed is commendable. International symbols are used instead of words, which makes it fully comprehensible and highly informative to any foreign reader. An episode is related of a Peregrine Falcon *(Falco peregrinus)* that stooped and killed a hen on a farm near the station. Instead of shooting the bird, the farmer called the bander on duty and the hawk was caught, banded, and released, a gratifying example of their neighbours' respect and understanding of their work enjoyed by the Falsterbo banders. —Louise de K. Lawrence.

8. Swedish recoveries of birds banded abroad. (Svenska återfynd av i utlandet märkta fåglar.) Bengt Danielsson. 1957. *Vår Fågelvärld,* **16:** 177-181. (English summary.) The list contains 39 recoveries of 11 species of birds banded in France, Britain, Holland, the Baltic countries, and Finland. The Ottenby recoveries of birds banded at Revtangen Bird Station in Norway furnish further proof that individual Dunlins *(Calidris alpina)* may migrate by widely separate routes in different years. One of the Black-headed Gulls *(Larus ridibundus)* incidentally revealed an active Russian bird-banding station at Puchtu in Estonia. A young Ruff *(Philomachus pugnax),* banded as a downy young near Uleåborg in Finland and retaken 36 days later at Ottenby, proved one of those rare recaptures that illuminate the problem of the migration routes and directions of juvenile birds—Louise de K. Lawrence.

9. Report of the Swiss Bird Observatory Sempach for the years 1955 and 1956. (Bericht der Schweizerischen Vogelwarte Sempach füe die Jahre 1955 and 1956.) Alfred Schifferli. 1957. *Der Ornithologische Beobachter,* **54:** 141-154. This report covers, in addition to banding activities, other work at Sempach, including the preparation of a book on nesting birds, census, nest records, education films, bird protection, rearing captive birds, stork research, educational programs to further ornithological knowledge in Switzerland, record of visitors, study of causes of death of birds submitted, library acquisitions, and sponsored field trips. This list makes the scope and character of the work at Sempach quite evident and, also, makes it clear that we have no comparable research stations here.

The banding data can be summarized as follows:

	No. Adults	No. Nestlings	Total	No. Species
1955	9,775	9,980	19,755	157
1956	14,686	10,481	25,167	168

The increase in 1956 is attributed largely to the use of nylon nets.—R. O. Bender.

10. Swiss returns for 1955 and 1956. (Schweizerische Ringfundmeldung für 1955 und 1956.) Alfred Schifferli. 1957. *Der Ornithologische Beobachter,* **54:** 155-173. This paper tabulates recoveries of birds banded in Switzerland or elsewhere and recovered in Switzerland during these two years. A table of the latitude and longitude of banding locations precedes the recovery table. The data disclose numerous recoveries of Swiss Starlings *(Sturus vulgaris)* from Spain and North Africa. Other noteworthy recoveries include a Barn Swallow *(Hirundo rustica)* banded 9 June 1956 recovered 5000 km. southward at 6°10′N. 1°30′E. in Africa on 24 October 1956, and a Tufted Duck *(Aythya fuligula)* banded 24 January 1955 in Luzern recovered 31 May 1956, 4000 km. northeast at Salechard, 66°35′N. 66°45′E. in Russia. Several recoveries demonstrate movements of Black-headed Gulls between Switzerland and Finland. Recoveries of small interest because they demonstrate well-known movements have been omitted.—R .O. Bender.

11. British Recoveries of Birds Ringed Abroad. E. P. Leach. 1958. *British Birds,* **51** (2) : 57-72. Much information on migration routes, places of origin of winter visitors, and some on longevity. A Dunlin *(Calidris alpina),* ringed as an adult in Sweden was taken 6 years later in Cornwall; 2 Knots *(Calidris canutus)* ringed as adults in Norway were taken 6 and 7 years later in England, and a Snipe *(Capella gallinago)* ringed as a chick in Iceland was shot 7½ years later in Ireland. A Curlew *(Numenius arquata),* ringed as a chick in Finland was taken 18½ years later in Ireland. Two Curlews from the same clutch banded 5 June 1950 were both recovered at Strangford Lough, Down, Ireland, one in September 1950, the other in December 1955. A "sad and curious record of an Arctic Tern" *(Sterna macrura)* was this: banded as a chick in Estonia 6 June 1956, on 9 September 1956 it "made repeated dives at a fisherman's bait while he was fishing for pike in a mill-pond [in Wiltshire], until at last it struck the top of the rod and broke its wing."—M. M. Nice.

MIGRATION

(See also numbers 22, 57.)

12. Migration at Falsterbo 1953. Report 10. (Fågelsträcket vid Falsterbo år 1953. Meddelande från Falsterbo fågelstation 10.) Staffan Ulfstrand. 1957. *Vår Fågelvärld,* **16:** 189-204. The fall migration in 1953, observed from 1 Aug. to 31 Oct., was normal compared with the five previous years. Exceptions existed, however, as in the case of the Honey Buzzard *(Pernis apivorus)* which appeared in three times greater numbers than any earlier record and the Wood Pigeon *(Columba palumbus)* of which 28,800 were observed flying over in one day.

A section of the report is devoted to the so-called "invasion" species, several of which were prominently represented. The most spectacular was the Coal Tit *(Parus ater)* which, during the end of September, "inundated" the whole countryside and of which 8000 were counted leaving Sweden in one day. In the discussion the author emphasizes the similarity of the migration pattern and the releasers of the drive in all birds moving from one place to another. He feels that it serves no particular purpose to differentiate sharply between the separate groups of

these moving birds as they often merge with one another. Such distinction can only be made between the early fall migrants, composed for the most part of insectivorous passerines, and the late fall migrants which, among others, comprise the true invasion species as well as the partial and short distance ("miniature") migrants.

Another section deals with migration "waves," here called "avalanches," and their dependence on weather conditions. For such "waves" to hit the given point where the observer happens to be and thereby to alter the whole aspect of the report, a particularly fortunate combination is required of many environmental factors. Some birds are so sensitive to the weather situation that, on occasion, their daily rhythm changes and they become day instead of night migrants. Another interesting observation concerns "migration attempts" made by five sedentary species, which, however, never led to actual departure.

The report is well worth reading and the English summary is detailed and informative.—Louise de K. Lawrence.

13. The Technical Basis of Experimental Research on Bird Migration. Helmuth O. Wagner. 1957. *Ibis*, **99**(2): 191-195. Comments on the experimental techniques of investigating unrest before migration *(Zugenruhe)* by noting with special recording apparatus the nocturnal movements of caged birds. The author points out the necessity for careful control of all environmental factors in the test room, not only light intensity, but temperature, food, and, perhaps, air pressure as well.—O. L. Austin, Jr.

14. Experiments on Bird Orientation and their Interpretation. Gustav Kramer. 1957. *Ibis*, **99**(2): 196-227. Kramer briefly summarizes the experimental work done to date on orientation and re-evaluates the findings, particularly of Matthews' sun-arc navigation hypothesis for which he does "not think that a great deal of justification is left." (cf. Allen, *Bird-Banding*, **27**(1): 48-50), and answers at some length Matthews' main objections to his (Kramer's) more conservative suggestion on homing that "the sun's function was only that of compass, while the determination of position was an unknown procedure without relation to the sun."

Stated in its essence, for a bird to "home," it must first know where on the earth's surface it is (this is "orientation") and secondly it must be able to determine the true direction (not compass direction as Kramer and most other writers on the subject continue to say) from where it is to its "home" and to set its course accordingly (this is "navigation"). The possible ability of birds to orient themselves and to navigate by sun-azimuth, that is to determine their position and set their course by the sun's position regardless of the time of day, has been indicated by experiments in several species. I do not think these experiments "demonstrate" the ability as conclusively as Kramer implies, and no satisfactory explanation of the mechanism by which it may be accomplished has as yet been proposed. But as Kramer points out, any critic of the sun theories of bird orientation and navigation finds his arguments "burdened with an awkward weakness: no better hypothesis can be offered."—O. L. Austin, Jr.

15. Passerine Migration in South Scandinavia in the Autumn of 1954. I. C. T. Nisbet. 1957. *Ibis*, **99**(2): 228-268. This important study is based on an analysis and comparison of the records of the major bird observatories in the North Sea-Baltic area in September 1954. These "show a fairly simple relation between the initiation of migration and the clearance of depressions. Day-migrants (but not night migrants) avoided migrating in stable anti-cyclonic weather. Each species of day-migrant was concentrated markedly into a relatively narrow 'chanel' across the area. This canalization appears to be achieved by means of accurate navigation."

Nisbet demonstrates three distinct types of movements of night migrants, and thinks that "drift-migration" plays an important part in night migration through Scandinavia. He concludes: "The reactions of day-migrants to topography appears to protect the birds against unfavorable weather, and to stabilize their somewhat unreliable powers of orientation. There is no evidence that night-migrants navigate accurately at night, and they appear instead to derive the maximum benefit from meteorological factors. In either case the uncertainty of the birds' movements contrasts with the ultimate accuracy with which they migrate."—O. L. Austin, Jr.

16. Television Tower Casualties. Amelia R. Laskey. 1957. *Migrant*, **28**(4): 54-56. Daily early morning researches throughout the fall of 1957 under a 1000 foot TV tower at Nashville, Tennessee, resulted in finding 704 birds of 67 species. These included rare species and new extremes in arrival and departure dates. "Actually the casualties furnished more data on bird movements than the sight records of those of us who made field observations here during the same period. . . . Cold fronts with overcast skies and the accompanying north winds always brought a flight of migrants which was discernible in the increased number of casualties, but not always in the field." Visits to a radio tower 878 feet high with heavy cables from mid-section to the ground, and an equally tall TV tower with no cables, produced very few dead birds. The "newer type of television tower of 1000 or more feet in height, supported on each side by 12 or more cables extending from the top, is far more disastrous to night-migrating birds because the structure extends across a large acreage of sky."—M. M. Nice.

17. Migrations of the Oystercatcher in the Area of Britain: Results of Ringing. E. J. M. Buxton. 1957. *British Birds*, **50**(12): 519-524. *Haemotopus ostralegus* is long-lived; several birds ringed in a German colony were over 20 years old, while one was 27. Table I gives distances from birthplace of 159 recoveries of birds ringed as chicks and not yet 3 years old, while Table II lists recoveries of 17 adults, i.e., birds over 3 years old. One bird flew 960 miles from its birthplace in its first August. A map shows British recoveries of Oystercatchers ringed abroad, mostly in Iceland and the Faeroes. Most young Oystercatchers after they become independent apparently "move off quite fast up to about 1000 miles south of their birthplace, though the majority go from 200 to 400 miles only; thereafter they remain away until their third spring, and only then begin to move back to the neighbourhood of their birthplace, where they themselves will begin to breed in their third summer." Afterwards they tend to remain in this area.—M. M. Nice.

18. Seasonal Dispersal and Mortality in the Silver Gull, *Larus novaehollandiae* Stephens, and Crested Tern, *Sterna bergii* Lichtenstein, in Australia. R. Carrick, W. R. Wheeler, and M. D. Murray. 1957. *C.S.I.R.O. Wildlife Research*, **2**(2): 116-144. An analysis of 163 recoveries received from 9064 young Silver Gulls banded since 1950 and of 49 recoveries of 2814 young and 545 adult Crested Terns banded in the same period. The young Silver Gulls banded in eastern Australia first dispersed mainly northward about 250 miles, then went on to 500-800 miles from their birthplace (farthest record, 1,000 miles). In their second year they remained within 200 miles of their natal colony. Young and adult Crested Terns dispersed northward and southward from colonies in New South Wales. Most stayed within a 250-mile radius, but a few were recovered about 600 miles away. Color-banded adults nested 130 miles south of their previous year's nesting site, others were seen 50-100 miles north of it during the breeding season. The authors comment on the significance of these distribution patterns, and correlate them mainly with feeding habits. While they discuss causes of death, they make no estimates of mortality in either species.—O. L. Austin, Jr.

POPULATION DYNAMICS

(See also numbers 17, 18, 24, 48, 70.)

19. Mortality and Kill amongst British-ringed Teal Anas crecca. Hugh Boyd, 1957. *Ibis*, **99**(2): 157-177. Careful and thorough analysis of the banding and recovery data from the some 11,500 Teal banded in England and Wales between 1945 and 1955 shows the "mean annual survival rate of male Teal . . . is 0.507 ± 0.019 and that of females 0.430 ± 0.021. Survival in the year following the first September of life may be rather less." As practically all the British Teal banding is of migrant and wintering birds, no correlation with breeding dynamics was possible. The data do show that summer losses "are inversely proportional to those in the preceding winter: an unusually heavy winter kill is offset by a reduction in summer casualties, which include many natural deaths."

Boyd's observation on age- and sex-bias in both trapping and mortality are of particular interest. In England "cage traps seem to select older birds, rather

than those in their first year of life, and males rather than females. Duck decoys show no sex-bias and no clear selectivity by age. . . ." The higher mortality demonstrable in females, despite the higher recovery rate in males, parallels the findings of Hickey and others in American dabbling ducks. In explanation of this phenomenon Boyd suggests that "Reported causes of death of ringed Teal suggest that nearly all deaths are due to man, particularly in the months September to March. These reports exaggerate the proportions due to man, and the magnitude of winter losses, because losses due to man are nearly ten times as likely to be reported as those from other causes. The true proportion of losses attributable to man is probably about three-fifths for males and one-half for females. Losses from September to March account for about two-thirds of the annual total for males and rather more than a half of the female casualties." By this he apparently implies that the higher selective kill of males by humans in fall and winter is more than offset by a considerably greater mortality among females during the spring and summer when they are far more vulnerable to "natural" enemies than are the males. This seems quite logical and, despite the lack of confirmative figures from the breeding ground, I accept it.—O. L. Austin, Jr.

20. Studies of population densities of birds in coniferous forests. (Untersuchungen zur Siedlungsdichte der Vögel in Fichtenwäldern.) Herbert Bruns. 1957. *Ornithologische Mitteilunger*, **9**: 241-253. In this paper Dr. Bruns describes the results of studies conducted in coniferous woodlands in an effort to increase the density of bird population. The principal method employed was the installation of artificial nest-boxes. Previous papers have reported the results of similar studies in mixed and deciduous woodlands using the same techniques. The broad goal is to determine the feasibility of artificially increasing bird population densities to control calamitous insect infestations which, incidentally, are most severe in coniferous forests.

Following a brief introduction, Dr. Bruns reviews population densities in coniferous woods in various parts of Europe as reported in the literature. Although values are reported ranging from 0.5 to 9.0 pair per hectare including both hole-nesting and free-nesting species, I could not find the densities present in the test plots prior to the start of the experiments. Data are given, however, for free-nesting species for three of the plots and show 4-5 pairs per hectare.

In the next section of the paper, Dr. Bruns discusses the relative importance of climactic and other factors on population density. He concludes that food supply is not limiting, based on extensive experiments reported, and that the number of available nesting sites is the most important factor for the hole-nesting species. Since the present studies show much higher increases in density than was previously considered possible and since success appeared to be less dependent on the location of nest-boxes in sunny places, the author suggests that the better insulating properties of the sawdust concrete currently used could be an explanation.

A study of the optimum number of nest-boxes showed that an increase in population density is achieved at least to the point where only 35 per cent of the boxes installed were occupied. This effect is attributed to the need of the birds for a choice of sites and to the use of empty boxes as roosting places for males. Other factors discussed are the size of the woodland, timing of the nest-box installation, and the normal distribution of the species. In another section of the paper the data for individual species are summarized for two of the test plots. Data are tabulated in this paper for 16 test plots; 5 of pine and 11 of spruce. From 1 to 7 years are covered. Data are also tabulated for clutch sizes for five species.

It is impossible to cover all of the important findings reported in this paper in a brief review. The discussions, based on careful study of data on the factors affecting population density, are of particular importance. They cast strong doubt on the dependence of nesting population density on available food supply which has so thoroughly permeated recent biological thought.—R. O. Bender.

21. Dependence of Population Density of Birds on the Size, Shape, and Density of Smaller Forests. (Die Abhängigkeit de Siedlungsdichte der Vögel von Umfang, Gestalt und Dichte kleinerer Wälder). Fritz Dierschke. 1955. *Waldhygiene*, **1**(2): 38-43.

This new journal (publication began in 1954) deserves an introduction. Judging by the contents of the numbers I have seen, it is primarily devoted to forest pests and their biological control in the broadest sense. Of the 36 articles in volume 1, 12 deal with birds, 15 with ants (especially *Formica rufa)*, and three with bats. This reflects to some degree the interest of a coeditor, Dr. Herbert Bruns of the State Observatory for Bird Protection, Hamburg, and Institute of Applied Ornithology. (See also No. 20).

Dierschke investigated alder swamps ranging in area from ¼ to 20 ha. (1 ha. = approx. 2½ acres) to test the validity of rules enunciated by Peitzmeier (1950):

1. The smaller the forest, the denser the population.
2. The lighter (more open) the forest, the denser the population.
3. The larger the forest, the greater the absolute number of species.
4. The smaller the forest, the greater the relative number of species.

Regarding the effect of forest size in rules 1, 3, 4, the author concludes it is necessary to consider only comparable developmental stages of the same forest community. He also concludes that rule 2 does not always hold because it assumes a direct relation between openness and the amount of undergrowth. Peitzmeier gave no rule for the relation between the amount of edge and the density of population, but Dierschke's studies showed a positive relationship, particularly with the amount of edge within the forest.—C. H. Blake.

22. Homing and life expectancy in the Chaffinch. (Om ortstrohet och medellivslängd hos bofink *(Fringilla coelebs)*, några resultat av en undersökning med hjälp av färgringsmärkning.) Bertil Anvén and Anders Enemar. 1957. *Vår Fågelvärld*, **16:** 161-177. (English summary.) This investigation was conducted with color-banded birds and its results largely support those obtained by other workers, notably Bergman's in Finland. Methods and calculations are discussed in detail.

Territorial constancy in male Chaffinches is greater than in the females and young birds. Of the old males that survive the winter, almost all return to or near the old territory. Very cold weather in the spring may sometimes delay or deviate returns.

The mean life expectancy of the adult Chaffinch proved to be 2.5 years and tallies rather well with Bergman's value of 2.7 years. This is an unusually high average for passerine birds and may conceivably have evolved as a compensatory factor counterbalancing the heavy losses which this species commonly suffers by depredation of its open nests. The author even points out the importance of this source of food in the feeding biology of crows, jays, and squirrels. The Chaffinch lays four to five eggs in the clutch and is normally single-brooded, but nesting attempts after nest destruction regularly occur until late in the summer. Its reproductive capacity can therefore not be considered low, although no more than an average of one to two young are fledged by each pair in the season. This seems to me a well worked out contribution to the knowledge of mortality rates and life expectancy in birds.—Louise de K. Lawrence.

23. Some Preliminary Data on the Population Dynamics of the Takahe *(Notornis mantelli*, Owen). G. R. Williams. 1957. *Notornis*, **7**(6): 165-171. A useful and significant summation and analysis of the information available to date on productivity and survival in this small population so recently rediscovered. While the data are still insufficient "for the preparation of a reliable life table," the author is able to draw from them some salient observations. During the past 9 years in which the population has been "intermittently" observed and studied, 36 pairs produced 15 chicks that left the nest. As "1 bird, then, produces 0.20 chick per year to the stage of leaving the nest," and assuming "that over the last eight years there has been a mean stable population (though the extreme long-term trend may well be towards extinction); and that the breeding age is one year . . . the maximum replacement rate must be 20%—that is if *all* chicks leaving the nest survive to breed." While no information is at hand on first year mortality, "we can at least be sure there is some and that it may be considerable. If only 50% of the young birds survive to breed then the replacement rate would be, of course, 10%, as would then be the annual adult mortality . . . [which] implies an average expectation of further life of between 9 and 10 years."—O. L. Austin, Jr.

NIDIFICATION AND REPRODUCTION
(See also numbers 20, 50, 51, 52, 55, 60, 71, 72, 73)

24. A Study of the Breeding Biology of the European Starling (*Sturnus vulgaris* L.) in North America. Brina Kessel. 1957. *American Midland Naturalist*, **58**(2): 257-331. An intensive study carried on for 6 years at Ithaca, N. Y. The "nesting territory includes a 10- to 20-inch radius about the nesting hole. . . . They often have communal singing perches and feeding areas." Male and female build, incubate, and feed the young. A very interesting study was made of the date of the laying of the first egg, as seen in Tables 4-6. "The date of the laying of the first egg for the first brood varies from mid-March on the Gulf Coast to mid-June on the Labrador Peninsula. Day-length appears to be the primary factor influencing the date of egg-laying, but annual variations in egg-laying dates in a given locality appear to be due largely to temperature differences. The minimum threshold for incitement of rapid gonad development appears to be about 40 to 43°F, and birds must be exposed to this mean environmental temperature for a minimum of seventeen days before they will lay eggs." Dates of first eggs at Ithaca, 42°N. lat., ranged from April 11-27, median April 21. "The average temperatures for the last third of March at Ithaca correlate closely with the egg-laying dates each year: When temperatures at the end of March are above an average of 40°F, egg-laying occurs markedly earlier than it does when temperatures are in the 30's (table 5)." The nesting Starlings in this region were apparently all residents.

Incubation lasts 12 days, fledging usually 21, and young are independent 4-8 days later. Careful descriptions supplemented by photographs, sketches, and tables, are given of the growth and feather development of the young. Success of 532 nests was 78.6 percent, and of 1094 eggs 76.1 percent. Five pages are devoted to post-juvenal and post-nuptial molt.

A few Starlings breed when only one year old, especially females. "In 1950, five, or 14 per cent of the banded female nestlings of the preceding year returned to their place of hatching and bred in their first year. Most of the females that raise first broods successfully in this region nest again, but second broods are smaller than first broods and the young leave the nest in poorer physical condition. Among the 260 nestlings fledged in 1951 56.5 percent were females. By winter the sex ratio of first year birds is even, and in adult populations there is a significant preponderance of males.

Very interesting data and calculations are given on survival and mortality. Fifty percent of the breeding birds returned to nest the following year. It is calculated that 20 percent of fledged young survive to breed, a figure similar to that found by other workers for various passerine species. The paper concludes with an excellent summary of 3 pages and a 4 page bibliography. Dr. Kessel shows herself thoroughly familiar with what has already been published on her subject, both in this country and abroad. All in all, a notable contribution to life history studies.—M. M. Nice.

26. Crossbills breeding in frost and snowstorm. (Ynglende Korsnaeb i frost og snestorm.) Ernst Torp Pedersen. 1957. *Naturens Verden*, **Dec.** 23-27. 30-32. Red Crossbills *(Loxia curvirostra)* breed every year in Denmark in small numbers, but in years when coniferous seeds are abundant they invade regions planted with evergreens in great flocks. The data for this paper cover 121 Danish nestings.

Pairing occurs in early winter but the birds continue flying in flocks with each pair keeping together within the flock. Around the first of the year, courtship feeding and flight and display singing become prevalent. Aggressive and escape movements are included in the courtship displays, in which the fluffed pink-colored rump is a conspicuous feature.

The nests are built mostly in conifers. Construction occupies 8 to 10 days. The most substantial nests, which take the longest time to build, are found in the early months of the winter. Egg-laying occurs from December through April and reaches its peak during February, the year's coldest month.

The clutch consists of 3 to 4 eggs; the smallest clutches are usually laid during the earliest part of the winter. Incubation begins with the first egg and is performed by the female alone. The periods of attentivity are long. Only rarely the female leaves the nest for short periods and, in the meantime, she is

supported by the male which regurgitates balls of cone seed mash into her throat. The average incubation period for each single egg is 13 days, but whole clutches usually take 20 days to hatch.

The young hatch naked, but within a few days they are covered with gray-black down. They remain in the nest 16-18 days. Both parents feed them cone seed mash by regurgitation and the female broods them until they are fairly well feathered. All this is performed in the same slow rhythm as during incubation. An experiment with captive birds brought out the interesting fact that only after she was relieved from the toil of picking the seeds from the cones could the female manage to keep her brood of four well-grown nestlings sufficiently well fed without help from the male. In the wild, nestlings were never found with empty crops at any time, despite the prolonged intervals between the feedings. The author's argument seems well founded that the high caloric value of the coniferous seed mash on which the nestlings are raised produces enough energy to keep them warm and alive even though they may occasionally be left unprotected in the most severe winter weather.

This careful and well-documented study, which is illustrated with strikingly good photographs by Eric Hosking, is a significant contribution to the nesting biology of this elusive species.—Louise de K. Lawrence

27. Observations on the Breeding Habits of the Crossbill (*Loxia curvirostra* L.). (Ynglebiologiske iagttagelser over Lille Korsnaeb *Loxia curvirostra* L.).) Hjalmar ostergaard Christensen. 1957. *Dansk Ornithologisk Forenings Tidsskrift*, **51**(4): 168-175. (From the English summary.) This study, based on observations of some 50 nests in Central and West Jutland from 1932 to 1955, seems to agree in most essential details with those of Pedersen (see number 26). The only important disagreement I note is Christensen's claim that "no actual incubation takes place before the clutch is completed," though "The female is firm on the nest from the day when the first egg has been laid . . . and till the young become almost fledged."—O. L. Austin, Jr.

28. Temperature Regulation in the Nesting Mounds of the Mallee-Fowl, *Leipoa ocellata* Gould. H. J. Frith. 1956. *C.S.I.R.O. Wildlife Research*, **1**(2): 79-95. Mallee-Fowls spend the better part of the year in caring for their mounds, and, at times, especially in hot weather, the work may be very taxing. In 1952-53 the author and his assistants made regular visits to three mounds and watched the birds' activities from blinds. Soil thermographs were buried in the egg chambers and in the surrounding soil. The following year experiments were set up which included a natural mound, an "artificial mound" constructed like a natural mound, and a "control mound" built entirely of soil. It was found that most of the heat came from fermentation, but that later in the season solar heat played the chief role. "The deliberate increasing of the amount of solar heat reaching the eggs was important for about 15 percent of the total incubation period; during the rest of the year keeping the eggs cool was more important." —M. M. Nice.

29. Experiments on the Control of Temperature in the Mound of the Mallee-Fowl, *Leipoa ocellata* Gould (Megapodidae). H. J. Frith. 1957. *C.S.I.R.O. Wildlife Research*, **2**(2): 101-110. A table summarizes activity at mounds throughout the season as recorded in 29 all-day watches from blinds. Males averaged 7 hours a day at the mounds in spring, 13 in summer, and 10 in autumn, while females averaged 4.2, 3.1, and 6.5 hours respectively. Throughout three seasons males averaged 5.3 hours per day digging in the mounds, females 2.2. After the morning digging is over, the female leaves, "but the male stations himself nearby and remains there throughout the day ready to deal with chance changes in weather."

In 1955 two nearby mounds similar in size were selected; one was equipped with apparatus controlled from a blind that was capable of quickly heating it from below, while from the other, as soon as two eggs were laid, the fermenting organic material was removed and replaced with sand. The birds altered their procedures in response to the artificial temperatures, "changing almost immediately from one seasonal behaviour to another." It is believed that temperature is detected by the tongue. The birds try to keep it at about 92°F. (33°C.).

"In very hot weather and in very cold weather the mound is heaped high, in the former case to reduce the effect of the sun's rays, and in the latter to conserve the internal warmth . . . High air temperatures stimulate the response to increase the height of the mound; and moderate air temperatures stimulate the response to open the mound. The opening of the mound then stimulates the bill-probing activity for internal temperature detection: a high internal temperature leads to immediate closure of the mound, and a low internal temperature to delayed closure . . . The frequency with which the birds visit their mounds varies with the season; at certain times of the year the male Mallee-fowl seems to know that the mound can safely be left unattended for days on end. The type of opening of the mound characteristic of spring differs from the autumn opening not only in the time of day at which it is carried out and the period during which the mound is left opened up, but also in the way the digging-out is done."

These two papers are an admirable example of imaginative, scientific and conscientious research, making a very important contribution to our knowledge of the behavior of these extraordinary birds.—M. M. Nice.

30. Breeding and Movement of Wild Ducks in Inland New South Wales. H. J. Frith. 1957. *C.S.I.R.O. Wildlife Research*, **2**(1): 19-31. The erratic semi-arid climate of inland Australia has apparently encouraged the development of irregular breeding seasons and movement patterns in most of the 10 species of waterfowl studied. A few species are sedentary and have regular breeding seasons, but most are "completely nomadic and breed whenever and wherever conditions may be suitable. There is a similar division of habits among individuals of the same species." The author shows how comparatively little is known of much of the potentially duck-producing interior, pleads for a "general survey of the water areas and their value for ducks," and warns that "Conservation efforts will be largely defeated unless they are very wide in scope, and allow for conditions in neighboring states."—O. L. Austin, Jr.

31. Duration of Immaturity in the Short-tailed Shearwater, *Puffinus tenuirostris* (Temminck). D. L. Serventy. 1957. *C.S.I.R.O. Wildlife Research*, **2**(1): 60-62. For a history of the banding of this species on its breeding grounds in Tasmania see number 6. One of the more significant results of this work is the discovery that the species does not breed until comparatively late in life. Three individuals, banded as nestlings, first nested at 5, 6, and 7 years of age, respectively. Breeding adults arrive on the nesting grounds and leave in April. "Immature birds (pre-breeders) return to the island on which they were reared at, usually, 3 years of age. These, and the 4-year-old birds, visit the rookeries between January and mid-March. The non-breeding 5, 6, and 7-year-old birds arrive with the breeding adults in November and cease visiting the rookeries by mid-January." In a recent letter Dr. Serventy informs me that returns taken during the past breeding season (1957) have confirmed these findings, and have shown that males breed for the first time a year or two later than females do, details of which he will present in a paper I trust by now in press. Researches of this sort are of immense importance in determining the annual harvest of young the species can withstand and still supply enough of an annual recruitment to replace the annual losses in the breeding stock.—O. L. Austin, Jr.

32. The Incubation Patterns of Birds. Alexander F. Skutch. 1957. *Ibis*, **99**(1): 69-93. The author presents a simple, compact synopsis of avian incubation patterns based on observable differences in division of labor between the sexes and time spent on the eggs. This resolves the hitherto complex welter of patterns into an understandable semblance of order and facilitates his observations on their probable evolution and significance. He considers incubation by both sexes the primitive method, from which developed the "practically every feasible pattern" that birds subsequently adopted. He comments on the presence and absence of brood patches in male passerines, and on the relation to incubation pattern of a species' color, its environment, song and territory, and sex-ratio. He concludes that "many modifications . . . especially those involving the participation of the sexes, appear to be non-adaptive, and to persist because they do not decrease reproductive efficiency." A useful and thought-provoking presentation of this most complex and basic aspect of bird biology.—O. L. Austin, Jr.

33. Adaptations in the Kittiwake to Cliff-nesting. Esther Cullen. 1957. *Ibis*, **99**(2): 275-302. Mrs. Cullen lists a surprising number of differences in observable habits and behavior between the Kittiwake *(Rissa tridactyla)*, which nests on narrow cliff ledges, and the ground-nesting gulls of the genus *Larus*. She assumes, quite logically, that "the Kittiwake is probably derived from a ground-nesting gull and the change to cliff-nesting was presumably an anti-predator device." The differences she notes are of two main types; behavior patterns and morphological features preserved by other gulls which have been lost as of little importance where predator pressure is relaxed (alarm-call rarer, tendency to remain on nest as predators approach, weak attacks on predators, failure to disperse droppings and egg-shells, young not "cryptic" in behavior and appearance, clutch-size reduced from three to two eggs), and those which have been altered or acquired in adaptation to the new life. "Signal and non-signal movements have been altered: some have been modified, like the beak hiding or the nest-building movements, others have been lost, like several anti-predator devices on the aggressive upright posture. There also seem to be a few new acquisitions like the black neck-band of the young and the collecting of mud."

Unquestionably such morphological differences as color pattern in the young and the Kittiwake's longer sharper claws are now innate and inherited. Presumably also part of the species' present genetic make-up are such behavior differences as the head-turning in the young and their failure to run when attacked. "Yet others, such as the social collecting of material, may be due to a complicated interaction of acquired and inherited factors." Mrs. Cullen's postulation that "experience may be able to modify a [behavior] pattern" without its becoming heritable strikes me as the one point in her otherwise excellent thesis that needs further substantiation.—O. L. Austin, Jr.

34. New observations on the reproduction of the Crag Martin. (Nouvelles observations sur la reproduction des Hirondelles de rochers.) Jean Strahm. 1956. *Nos Oiseaux*, **23**: 257-265. Summarizing the results of 5 years of observation of Crag Martins *(Ptyonoprogne rupestris)* in Switzerland and France, the author gives data for the number of nestings per season, two in locations having a southern exposure and one in others; frequency of feeding; percentage of time the young are brooded, although the age of the young at the time is not stated; and behavior when the young are leaving the nest. The nesting routine was frequently interrupted by the appearance of a Sparrow Hawk *(Accipiter nisus)*. The Crag Martins dominated the House Martins *(Delichon urbica)* that nested in the same colonies although outnumbered by them. They were also intolerant of all other bird species approaching the nesting site. After the end of the nesting season when they were assembling in pre-migratory flocks, they lost their territorial instinct and became sociable.—R. O. Bender.

35. A case of polygamy in the Barn Swallow. (Ein Fall von Polygamie bei der Rauchschwalbe.) Hermann Mohr. 1958. *Ornithologische Mitteilungen*, **10**(1): 7-9. In 1953, two pairs of Barn Swallows *(Hirundo rustica)* nested about 6 meters apart in a cow barn near Wetzlar, each successfully raising two broods. The next year the two males (presumed to be the same as the previous year—they were apparently not banded) fought vigorously and more or less continuously for 8 days, after which one of them disappeared. His female continued to rebuild and improve her previous year's nest. On 20 May both nests contained full clutches, the widowed female's nest containing five eggs. Both clutches hatched and the first male fed the young in both nests. Each female fed only her own young. Each nest contained one infertile egg. Seven young were fledged from the two nests. At the end of July each female started a second nesting; four eggs hatching in each nest and the male again fed both broods. Two young were fledged from the first nest and one from the second.—R. O. Bender.

36. Variations in size and shape of eggs of the velvet scoter, *Melanitta fusca* (L.). Jukka Koskimies. 1957. *Archivum Societatis Zoologicae Botanicae Fennicae 'Vanamo,'* **12**(1): 58-69. A statistical analysis "of measurements of 82 clutches and 681 eggs from 1952 to 1955, including clutches of 2 to 4 successive years from 25 marked females." Each female consistently laid eggs of constant length, breadth, and shape, even over the entire 4-year period.—M. M. Nice.

37. Polymorphic variability in clutch size and laying date of the velvet scoter, *Melanitta fusca* (L.). Jukka Koskimies. 1957. *Ornis Fennica*, **24**(4): 118-128. A statistical analysis of 128 clutches and 104 laying dates of 37 female Velvet Scoters marked and observed from 1948 to 1956 in a sanctuary in southern Finland. "The highly significant differences between the clutch size of individual females . . . are probably not caused by differences of age of the laying females nor by constantly differing environmental influences. It seems probable that they are due to hereditary factors. There is a correlation between clutch size and laying date, the earliest clutches being the largest. . . . It is suggested that the individual clutch size and the individual laying date are genetically linked. . . . The correlation of clutch size and laying date results in roughly simultaneous hatching of all clutches regardless of their size. This should also theoretically be expected, if natural selection is thought to operate on breeding seasons by adjusting the rearing period to suit the most favorable season of the year."—O. L. Austin, Jr.

38. Broken Eggs in Peregrine Eyries. D. A. Ratcliffe. 1958. *British Birds*, **51**(1): 23-26. From 1951-56 in 13 out of 59 eyries of *Falco peregrinus* in inland haunts in Scotland and Wales, "one or more eggs were either broken or disappeared, with no evidence of human or other outside interference." From 1945-50 there was only one such instance among 35 eyries. Once the author saw the female eating two of her 3 eggs, and he suggests that this is the explanation, although "the reason for this peculiar behaviour is even more obscure."— M. M. Nice.

39. Photographic Studies of Some Less Familiar Birds. LXXXV. Pygmy Owl. Kai Curry-Lindahl. 1958. *British Birds*, **51**(2): 72-74. Fine photographs from Sweden of *Glaucidium passerinum*. It is mainly a diurnal species, most active at dawn and dusk. The female incubates, eggs hatching in 28 days and young fledging in 28. Voles, mice, shrews, small birds, lizards and insects make up the food. "Of the birds, tits (*Parus* spp.), for example are usually caught when they are asleep, but birds as well as insects may also be taken in flight." In fall and winter food may be stored in the nest-hole. In Norway studies in winter showed that of 416 vertebrate items, 154 were rodents, 131 shrews, and 131 birds. The Pygmy Owl "sings" from dusk till darkness and again at dawn, "sounding for all the world like a chiming clock."—M. M. Nice.

40. Nesting Associations of Redshank and Lapwing. (Der Rotschenkel als Brutnachbar des Kiebitz.) H. Bub. 1957. *Die Vogelwelt*, **78**(3): 95-96. Although Redshanks (*Tringa totanus*) do not always nest near Lapwings (*V. vanellus*), when the nests are associated they are from 3-20 meters apart. Bub used this as a technique for finding Redshank nests after he had spotted the notoriously easier to find Lapwing nest.—Frances Hamerstrom.

41. Communal Nesting of the Fieldfare — Great Grey Shrike and Fieldfare — Kestrel. (Brutgemeinschaft Wacholderdrossel — Raubwürger und Wacholderdrossel — Turmfalk.) Hansgörge Hohlt. 1957. *Die Vogelwelt*, **78**(2): 48-53. "Nesting associations of Fieldfares (*Turdus pilaris*) and Great Grey Shrikes (*Lanius excubitor*) are not attributable to chance. Either species may seek the vicinity of the other, however most commonly the Fieldfare selects the vicinity of the shrike." The close association of nests may help both species as both fight off plundering members of the *Corvidae*. Kestrels nested near Fieldfares for six years. Fieldfares sometimes created some disturbance, but the Kestrels even tolerated the Fieldfare hopping around on the nest branch. A 6-year study.—Frances Hamerstrom.

42. Breeding Biology of the Lesser Grey Shrike. (Zur Brutbiologie des Schwarzstirnwürgers (*Lanius minor*)). Eberhard Hantge. 1957. *Die Vogelwelt*, **78**(5): 137-147. In a Lesser Grey Shrike population near Heidelberg, of 34 nesting attempts 35 percent were successful. Renesting is practically the rule; only 15 percent of first nestings were successful. *Lanius excubitor* and *L. senator* also nested in the area studied and their territories were respected by *L. minor*. Lesser Grey Shrikes showed the highest degree of social tendencies, almost nesting colonially. They arrived paired or in groups in spring. Threat flights and associated calls ceased after egg-laying. Eggs were laid at noon or in the

afternoon. Males were not seen incubating, but helped with nest building. Incubation period: "The first young hatch 15 days after the laying of the last egg. Hatching may take over 24 hours . . . extending incubation of some eggs to 16 days." Nestlings of renestings stayed in the nest 18 and 19 days respectively. Weights and wing measurements of 29 adults are given, song and behavior are discussed. An informative paper.—Frances Hamerstrom.

43. Nesting Associations of Redshanks and Lapwings. (Brutgemeinschaft Rotschenkel—Kiebitz.) Otto von Frisch. 1957. *Die Vogelwelt*, **78**(5): 153-155. Von Frisch presents an excellent tabulation of 21 neighboring Redshank *(Tringa totanus)* and Lapwing *(V. vanellus)* nests. The range is 2 to 25 meters apart, the mean distance being 7 meters. The author found no Redshank nest that was not near a Lapwing's in his intensively worked study area. Lapwing incubation started about 14 days earlier.—Frances Hamerstrom.

44. Wheatear, Jay, and Nuthatch, nesting in or on houses—some examples of unusual nesting sites. (Stenskvätta *(Oenanthe oenanthe)*, nötskrika *(Garrulus glandarius)* och nötväcka *(Sitta europea)* häckande på eller i hus — några exempel på ovanligare boplatsval.) Viking Olsson. 1957. *Vår Fågelvärld*, **16:** 43-51. (English summary.) The author found several Wheatear nests under tile roofs of buildings in various localities in Sweden and suggests that this is an adaptation which bears watching.

Jays usually build their nests in trees and bushes, but sometimes also on ledges of cliffs. A nest was found inside a barn tucked into the angle formed by a beam and the roof.

The nesting of a Nuthatch in the wall of an old granary with the entrance through a knothole, just large enough to let the birds through, brought out some interesting facts: Not squirrels which were earlier suspected, but the birds themselves fill the surplus room of the cavity with bits of wood apart from the nesting material, which is composed chiefly of pieces of pine bark. Since the knothole in the wall needed no remodeling or cementing of cracks, the Nuthatch applied the clay which it uses for this purpose (compare the pitch of *Sitta canadensis)* on the inside and right above the doorway, where it formed a protruding "bulge."—Louise de K. Lawrence.

45. Which Birds Nest in Artificial Nest Pockets? (Welche Vogelarten brüten in künstlichen Nisttaschen?) Werner Keil. 1955. *Waldhygiene*, **1**(2): 44-45. Artificial nest sites, "pockets" of long twigs, were provided at the Vogelschutzwarte Frankfurt am Main. Nine species have used them: 35.5 percent were Wrens *(T. troglodytes)*, 15.5 percent Robins *(Erithacus rubecula)*, 12.9 percent Blackbirds *(Turdus merula)*. Use by other species did not exceed 8.1 percent. The Dunnock *(Prunella modularis)* and the Wren used only those made of pine and the Short-toed Creeper *(Certhia brachydactyla)* only those of broom. The provision of such sites for open nesters could well be investigated in this country. See: K. Mansfeld, *Vogelwelt* **64:** 50 (1939) and A. Pohecker, *Forsttech. Informat.* No. 65: 96 (1954).—C. H. Blake.

46. Artificial Nest Sites for Bush-nesting Birds. (Erfolge mit künstl. Niststätten für buschbrütende Vögel.) Johannes Staude. 1956. *Waldhygiene*, **1**(7): 229-230. Notes some species additional to Keil's list (see No. 45) and refers to providing bark for Tree Creepers and to brush heaps.—C. H. Blake.

47. Two additional cases of mixed broods of Great and Blue Tits. (Zwei weitere Fälle von Mischbruten der Kohl—und Blaumeise.) Hubert Weinzierl. 1958. *Ornithologische Mitteilungen*, **10:** 31. In one case there were 6 young Great *(Parus major)* and Blue Tits *(Parus caeruleus)* in which the Great Tits were many days older, although the number of each was not stated. In the other case there were 8 young Great Tits and 7 young Blue Tits; here all the young were nearly fledged. In both cases the adults caring for the young were Great Tits. The author believes that, due to a shortage of nesting sites, Great Tits had dispossessed the smaller Blue Tits after they had begun laying.—R. O. Bender.

48. The Nesting of the Long-tailed Tit. David and Elizabeth Lack. 1958. *Bird Study*, **5**(1): 1-19. This detailed summary of the nesting habits and behavior of *Aegithalos caudatus* is based on four seasons of intensive observations by the

authors supplemented by field notes of other ornithologists in Great Britain and Sweden and the voluminous B.T.O. nest record cards. It contains a wealth of information on placement of nests, dates of laying of first and "repeat" clutches, and on size of clutch in relation to weather conditions. "The frequency with which three or four parents feed one brood is attributed to the high rate of nest destruction, the restricted breeding season and the absence of territorial behavior. Young were raised from only 16% of the Wytham nests [studied by the Lacks] . . . losses were highest during incubation."—O. L. Austin, Jr.

BEHAVIOR

(See also numbers 22, 33, 34, 71, 85, 90, 91)

49. Flocking Behaviour in Capercaillie, *Tetrao urogallus* (L.), and Blackgame, *Lyrurus tetrix* (L.). Jukka Koskimies. 1957. *Papers on Game Research,* **18:** 1-32. Helsinki; Finnish Game Foundation. A valuable study based on 2 years' collecting from the whole of Finland 2,340 "sample" birds, representing over 20,000 individuals. Examination of the wings showed species, sex, and age, while the collector recorded date, locality and size of flock. Until early autumn both species feed on the ground on berries and shoots of low shrubs. But in winter "both species feed in trees, the capercaillie exclusively on pine-needles [and shoots], the blackgame on buds and catkins of birch, and to a lesser extent on alder, rarely on pine needles. With the falling of the leaves "cryptic cover-taking characteristic of the early autumn changes to overt escape behaviour"; the birds now prefer the tree tops, and begin to associate in flocks, which in both species tend to segregate according to sex. The colder the weather, the more northern the latitude, the greater is the tendency to flock formation.

Dr. Koskimies agrees with Allee's (1951) thesis that "sociability in some form is a basic feature common to all animals." He concludes that "*there is no evidence that the flocking behaviour in the two tetraonid species studied was of any direct ecological survival value.* Its general characteristics suggest that it is merely an expression of the specific sociability of these birds."—M. M. Nice.

50. Contribution to the knowledge of the winter biology of the Swedish Blackbirds. (Bidrag till kännedomen om svenska koltrastars *(Turdus merula)* vinterbiologi.) Ingvar Wäreborn. 1957. *Fauna och Flora,* **6:** 217-239. This paper deals chiefly with a study of the Blackbird roosts in the city of Lund in southern Sweden. In the fall when the leaves were still on the trees the birds roosted widely dispersed in parks and gardens, but later concentrated in localities, such as cemeteries, where evergreen hedges and trees afforded better shelter. The establishment of territory caused their dispersal in the spring. The peak of the nightly flights occurred about sundown. During February, the coldest month, the greatest number of birds occupied the roosts. In the January-March period congregating into the roosts at night took much shorter time than in the fall and spring. The author calculates that about 40 percent of the Blackbirds winter within the borders of Sweden, the rest being "long distance" migrants. An interesting section discusses how and when the Blackbird became a garden nester.—Louise de K. Lawrence.

51. Notes on the Wren in the Aran Islands, Ireland. Edward A. Armstrong. 1958. *British Birds,* **51** (1) : 29-35. In his extensive studies of *Troglodytes troglodytes,* the author has found that behavior differs according to availability of food. In "fertile areas," as in Great Britain and the Continent, the male tends to be polygamous, to build many nests, and to sing for a prolonged period with maxima in April in June; second broods are common. In "bleak habitats," as on St. Kilda, the male tends to be monogamous, to build few nests, to sing little, and to help feed the young in and out of the nest; second broods are uncommon. The Aran Island Wrens show an intermediate type of behavior, but tend more to the fertile than to the bleak area pattern.—M. M. Nice.

52. Flight copulation of the Swift *(Micropus apus).* (Zur Flugkopula des Mauerseglers.) H. Mester and W. Prünte. 1957. *Ornithologische Mitteilungen,* **9:** 226. This note contains a detailed description of copulation in flight observed several times during May and June, 1957.—R. O. Bender.

53. Prey seizure by Herons. (Zum Beuteerwerb der Reiher.) Joachim Scheven. 1957. *Ornithologische Mitteilungen*, **9**: 230-1. The author describes an incident observed in southern Tunisia in May, 1957 in which he found a Little Egret *(Egretta garzetta)* entangled with a snake. The snake, which was firmly held by one of the Egret's feet, was about 90 cm. in length but was not further identified. The snake had wound itself twice around the heron's neck and was holding its entire head under water. Both animals were almost drowned. The snake was killed and the Egret released. The incident is cited in support of an earlier published observation *(Ornithologische Mitteilungen*, **9**: 113) that herons seize prey with their feet although the positions described in this note are by no means conclusive evidence that the initial seizure was made with a foot. Some years ago in the Everglades of Florida, I flushed a Great Blue Heron which had a rather large slender snake wrapped round its neck. Since it was not seen prior to taking flight from behind a screen of vegetation and was not visible on alighting, the origin and outcome of the struggle is unknown.—R. O. Bender.

54. Corvidae resting on the backs of large Mammals. (Various.) 1958. *Ornithologische Mitteilungen*, **10**: 32. Another series of short notes reporting instances of Ravens, Magpies, and Jackdaws resting on the backs of cows, deer, horses, and pigs. In some instances they were reported as acting as though they were removing parasites.—R. O. Bender.

55. Behavior Studies of the Green Woodpecker. (Verhaltensstudien an Grünspechten *(Picus viridis)*.) Dieter Blume. 1957. *Die Vogelwelt*, **78**(2): 41-48. Imitation of the soft, falling call notes of the Green Woodpecker caused females to lead the observer to the nest hole, facilitating census. Stuffed decoys in the vicinity of the nest were attacked regardless of sex; dislodged decoys were attacked on the ground; heads alone were attacked, decapitated bodies were ignored. Decoys were most often attacked on the back of the head, the eyes, and at the base of the neck. When the nest hole was scratched with the feet of a decoy, the young responded by emerging and begging food from the decoy's bill.—Frances Hamerstrom.

56. Raptors as Incubators and Foster Parents. (Griefvögel als Bruthelfer und Adoptiveltern. Theodor Mebs. 1957. *Die Vogelwelt*, **78**(2): 61-63. Duck eggs placed in nests of the Buzzard *(B. buteo)* and the Kite *(M. milvus)* were hatched successfully. One duckling became imprinted upon its foster parent, a Kite.—Frances Hamerstrom.

ECOLOGY

(See also numbers 20, 21, 41, 63, 73, 91)

57. Effects of unusual spring weather on Scarlet Tanagers. Richard H. Manville. 1957. *The Wilson Bulletin*, **69**(1): 111-112. Unseasonably cold weather in May 1956 in the vicinity of New York City resulted in a scarcity of larger insects, the major diet of Scarlet Tanagers *(Piranga erythromelas)*. As a result many dead and starving tanagers were observed on the ground, and local aid societies were swamped with inquiries. Hordes of warblers, which were also present, were apparently unaffected. By June conditions were back to normal and the tanagers were back in the treetops. This affords an excellent example of a minor change in the environment having a major effect on an organism.—Glen E. Woolfenden.

WILDLIFE MANAGEMENT

(See also numbers 6, 19, 20, 21, 30, 31, 45, 49, 63, 70, 79)

58. Introduction of Exotic Game Birds in Georgia. Robert A. Norris. 1956. *Oriole*, **21**: 1-6. Eight species of foreign game birds have been introduced into Georgia. The four Old World species were all unsuccessful—thousands of Migratory Quail *(Coturnix coturnix)* apparently migrated southeastward and perished at sea. Three Middle American species disappeared, but the Chacalaca *(Ortulis vetula)*, of which 42 were released in 1923 on Sapelo Island, has established itself. Climatographs show fair correspondence between the home of this species and the climate of Savannah, Georgia, but this was not true of the native

haunts of two of the tropical species introduced. The author urges that if any more species are to be introduced, their habits, climatic needs, and biotic associations be carefully studied. A bibliography of 16 titles is given, many of them treating of the general subject.—M. M. Nice.

59. The Coturnix Quail in Tennessee. Leonard A. Due and C. E. Ruhr. 1957. *Migrant,* **28**(4): 48-53. Two thousand *Coturnix coturnix japonica* were released in Tennessee in September 1956, and 12,865 in 1957. Fourteen of the first batch were recovered by 8 Jan. 1957, from 10 to 400 miles from the point of release. The authors report the incubation period as 15 days and add: "Young may be flying and on their own at 12 days of age." European sources, however, give the incubation period of this species as 17-18 days; the young flutter at 11 days and fly well at 19; soon afterwards they are independent. Since these quail are about the size of Meadowlarks *(Sturnella magna)* and resemble them to quite an extent in gait and plumage, it is greatly to be feared that many of the latter will fall victims to hunters' guns. *Why cannot game departments spend their money in improving conditions for our native birds?*—M. M. Nice.

60. The Value of Renesting in Game Birds. Kaj Westerkov. 1957. *New Zealand Department of Internal Affairs, Wildlife Pub.* No. 8: 1-12. Studies in Europe, North America and New Zealand have shown that approximately two-thirds of the nests of Ring-necked Pheasants *(Phasianus colchicus)* and Grey Partridges *(Perdix perdix)* on farm lands are destroyed, and that on about half of these the incubating female is killed. The majority of the birds renest once or twice; this staggers the hatch over longer periods, thus minimizing the effects of unfavorable weather. Renesting also appears, "at least in some of the monogamous game birds," to help correct the unbalanced sex ratio, due to the heavy loss of nesting hens. Examination of the wings of 6,065 young partridges in hunters' bags in Denmark and the United States showed that of the birds hatched early in the season 53 percent were hens, but of the late-hatched birds 60 percent. A similar increase in female percentage in the latter part of the breeding season has been found in rabbits, rats, and domestic fowl.—M. M. Nice.

61. Wild Ducks and the Rice Industry in New South Wales. H. J. Frith. 1957. *C.S.I.R.O. Wildlife Research,* **2**(1): 32-50. In irrigated rice-growing areas Grey Teal *(Anas gibberifrons)* and Black Duck *(Anas superciliosa)* "periodically cause some damage to crops but only a small part of the population is involved, and the attacks are usually confined to those areas in the crops where growth is unsatisfactory for other reasons. The Wood Duck [*Chenonetta jubata*] . . . on some occasions does appreciable damage to isolated or neglected crops. The amount of damage caused by ducks is correlated with climatic conditions; and it is concluded that wild ducks are, on the whole, a very minor pest to the rice-growing industry." The author recommends "timely patrolling and shooting in the rice fields themselves" when the ducks first appear as a control measure, and cleaner cultivation of the crops to remove the "weeds and patchy growth" that attract the ducks.—O. L. Austin, Jr.

62. Biology of the Red-crested Pochard. (Zur Biologie der Kolbenente.) Georg Steinbacher. 1957. *Die Vogelwelt,* **78**(3): 82-88. Steinbacher discusses Red-crested Pochards *(Netta rufina)* kept on a large pond since 1953 and wild populations. Field marks are badly confused in the literature. Distribution has shifted. Red-crested Pochards need eutrophic waters, rich in nutrients. Sex ratio, molt, phenology and food habits are mentioned.—Frances Hamerstrom.

CONSERVATION

63. Biological Control. Jost Franz. 1957. *Germany, International Magazine of the Federal Republic,* **2**: 33-35. Scientists at the Institut für Schädlingsbekämpfung in Darmstadt have recently carried out successful experiments in "microbiological pest control (i.e., utilization of bacteria, fungi, protozoa, viruses) on two insect pests. Against the sawfly *(Neodiprion sertifer* (Geoffr.)), which damages plantations of young pines, a virosis was found very effective in Germany and Canada. "The artificially disseminated virosis affects only the species of sawfly mentioned. . . . So all the other natural enemies of the pest are preserved . . . and they even aid in the further dissemination of the disease." In the case of the

cabbage butterfly *(Pieris brassicae* L), now disseminated throughout the world, a bacterium *(Bacillus thuringiensis)*, "pathogenic to various caterpillars, but not to useful insects," is sprayed with an aqueous solution upon the cabbage plants and in 6 days the caterpillers are dead.

"The problem presented by the toxic residues of chemicals in foodstuffs has recently become very acute." The microbiological procedures are selective, hygienically harmless and very likely permanent in effect. "No development of insect strains resistant to disease has ever been observed." A total of about 12 insect pests throughout the world has been successfully combatted with microbiological methods, but so far cheap mass production of pathogenic microorganisms has not been developed.

Another example of biological control is described by J. H. Holloway, "Weed Control by Insect," 1957, *Scientific American*, **197**(1): 56-62: the introduced St. John's Wort or Klamath Weed, *Hypericum perforatum*, which had taken over 250,000 acres of range land in the Pacific Northwest, was effectively controlled by the introduction of four of its insect enemies from Europe with no detrimental effects on other vegetation, since all the insects were specific to this one plant. The wiping out of rabbits in Australia, Europe, and England by myxomatosis is a striking example of selective biological control.

In contrast to these admirable, scientifically executed programs, we see in this continent and abroad the ever-increasing use of powerful pesticides that destroy most animals and surely endanger human beings. Again and again it has been shown that indiscriminate spraying of DDT destroys beneficial insects, fish, birds, and much other wildlife. Nevertheless, the United States Department of Agriculture is launched upon a campaign to broadcast a far more deadly poison—dieldrin—at 2 lbs. an acre over some 20,000,000 acres in the South in an effort to kill the fire ant. Three billion pounds of formulated pesticides are dispensed annually over our country and, moreover, we are exporting large quantities to other countries.

The *Sport Fishing Institute Bulletin* for January 1958 discusses "Super Insecticides—Space-Age Pollutants": "This entire problem of super-pollution by space-age chemicals and radioactive wastes needs to be brought into proper focus very soon. Only a broad-scale biological research program can meet the urgent needs of the day. The chief threat to survival of our society lies within, not outside our borders. The real enemy is the fifth column of intellectual mediocrity. We believe that the key role of the *biological scientists* must become recognized and encouraged at the outset of the space age. Otherwise, our Nation may become so polluted by poisonous compounds discovered by *chemical scientists* that whole regions may become uninhabitable. In that event, there will be little left to protect with the missiles and rockets being developed by *physical scientists and engineers.*"—M. M. Nice.

64. Science, Industry, and the Abuse of Rights of Way. Frank E. Egler. 1958. *Science*, **27**(3298): 573-580. An impressive and well documented presentation of the totally unnecessary destruction of wild life habitat on rights-of-way that "comprise an acreage greater than all six New England states combined." At present most of this is being absolutely mismanaged and conservation values are being "permanently lost." If herbicides are used selectively and intelligently, a stable stand of low native shrubs can be maintained at little cost—a joy to look at and a haven for wild life. Mr. Egler emphasizes "the urgent need for scientists to abandon their traditional impartiality and to provide professional guidance in the integration of their discoveries into our way of life."—M. M. Nice.

PARASITES AND DISEASES

65. Coccidiosis in Birds. (Die Coccidiose der Vögel.) Erich Scholtyseck and Wilfried Przygodda. 1956. *Die Vogelwelt*, **77**(6): 161-175. Incidence of coccidiosis *(Eimeria* and *Isospora)* is tabulated and discussed by groups: doves, ducks, raptors, and passerines. Nine species of coccidia were found in the 1,381 birds of 146 species examined. Incidence of infection was highest in summer and autumn. Infection was lower in captive birds (9%) than in wild birds (31%). An extensive bibliography is given.—Frances Hamerstrom.

66. Birds in Relation to the Arthropod-borne Zoonoses. M. C. Williams. 1957. *Ibis*, **99**(2): 303-306. This description of the virus diseases, mainly strains

of encephalitis which affect man and in which birds are involved, and which are receiving increased attention from public health authorities both in this country and abroad, concludes: "Happily, the studies on birds and the arthropod borne encephalitides do not suggest that the control measures to be adopted for these zoonoses should involve the slaughter of wild birds. . . . At present, mosquito control, and perhaps some form of vaccination of human beings and domestic animals, seem to offer the best methods of preventing these diseases."—O. L. Austin, Jr.

ZOOGEOGRAPHY

67. The Birds of the Andover Region. Oscar M. Root. 1957-1958. *Bulletin of the Massachusetts Audubon Society,* **41**(9): 459-467, **42**(1): 5-15, (2): 79-87, (3): 119-125. Tiny Massachusetts, not equal in area to a 90-mile square and barely twice the size of Los Angeles County in California, has for some decades been famous as a bird-golf links—and in no portion more than in Essex County, its northeastern corner. Essex County with its 320,000 acres (exactly 500 square miles) contains some 543,000 inhabitants (1955 estimate) or about 1.7 persons per acre, who live in 7 incorporated cities and 25 towns. Though it ranks high among the Atlantic coastal regions as a training ground during migrations and winter to prepare the novitiate for constructive field ornithology elsewhere, the accent has been on "shoestring" routes carefully laid out to ensure maximum score cards, and much of the County had been birded but superficially, if at all. Inevitably some questionable estimates of status existed, especially of the relative abundance of summer resident birds. For instance, the Hermit Thrush doesn't summer in tidal or fresh-water marshes, fields, or open scrub country, the usual birders' haunts, and it was not until Root's investigations that the species' status as a common summer resident became accepted.

Root elected to concentrate, 1942-1957 inclusive, on an area of some 72 square miles in the northwestern portion of the County containing some 100,000 inhabitants. It is our good fortune that his territory is 60 to 70 percent forests of the mixed deciduous-coniferous province of New England, substantial sections of which are at or near maturity. As compared to eastern Essex County, the region seems poorly represented in fresh-water marshes and other than deep water, or sour, ponds. Salt-water tidal associations are present, but of only nominal importance. The check-list of 249 species is based on a "blanket" coverage of the region.

Valuable, particularly 50 years hence, are the studies on topography, temperature and precipitation, storms and hurricanes, mild winters, available previous ornithological history, conservation, breeding-bird censuses, location of especially good birding areas, a summary of annual, May, and Christmas counts, and the bibliography. Invaluable are the evidences of changing flora and bird life as the observer leaves eastern Essex County and travels westerly and, altitudinally, higher. Less than 20 miles west of the Atlantic Ocean the Myrtle Warbler appears as a regular summer resident. Root's own statement on locating 10 Northern Waterthrushes after mid-June suggests his definition of the species as an "uncommon summer resident" is a bit conservative. Comparatively unknown is the bird life in the next 45 miles westerly to Fitzwilliam, New Hampshire (nominally more northerly), where Myrtle Warblers and Magnolia Warblers are common summer residents throughout, and, even at lower altitudes, Winter Wrens summer and the Olive-sided Flycatcher may be found in as many as five locations. At 1900 feet, the Junco is numerous.

Root's paper shows evidence throughout of the work of a painstaking ornithologist, careful to the most minute detail. It is gratifying to observe the absence of even the names of the eight species calmly stated as excluded from the list because of uncertain identification. He establishes a high standard for the combination of binoculars, ability, and conscience in field work. He IS a human being and, as such, privileged to omit or include material erroneously, and to make important mistakes. I have not as yet discovered any instances. I might point out that, in addition to hearing a King Rail on May 26, 1957, I saw the bird in flight.—Wendell Taber.

68. Folk-Names of Canadian Birds. W. L. McAtee. 1957. *National Museum of Canada, Ottawa, Bull.,* 149, Biol. Ser., **51**: 1-74. 25 cents. This attractive and delightful little book is taken from a large manuscript on "American Bird Names, Their Histories and Meanings," on which the author worked for 40 years.

Folk-names are given in English, French and Gaelic with the localities where used indicated. As to sources, "Among employees of the National Parks Branch of the former Department of the Interior and the Royal Canadian Mounted Police, a campaign for names, organized by Hoyes Lloyd, yielded tremendous returns." These were supplemented by much help from several Canadian ornithologists and by extensive search in books on Canadian and British birds from the 16th to 20th centuries.

No scientific names are given and, as the 1957 A.O.U. Check-List is only partially followed, one is sometimes puzzled as to what species is meant. Apparently Sparrow Owl means Pygmy Owl, Common Ringed Plover is Semipalmated Plover, and White-rumped Petrel is Leach's Petrel. The Storm Petrel, to which 5 lines are devoted, is now on the hypothetical list of the latest Check-List.

The multitude of folk-names, the unexpectedness of many of them, and the annotations as to their meanings make fascinating reading, both for the light thrown on the characteristics of the birds and on the relationships of the "common people" to the birds. The book makes an important contribution to an all too little regarded aspect of bird study. It is most warmly recommended to all who are interested in birds.—M. M. Nice.

69. Ten years of Ornithologische Mitteilungen. (10 Jahre "Ornithologische Mitteilungen.") Heinrich Dathe and Günther Niethammer. 1958. *Ornithologische Mitteilungen,* **10**(4): 1-3. On the appearance of the first number of the tenth volume of this journal, the two leading papers take note of the occasion. A few months ago, I wrote to the editor, Dr. Herbert Bruns (see also No. 20), asking for information regarding the history of *Ornithologische Mitteilungen* with the thought that the readers of *Bird-Banding* might find it of interest. He very graciously sent me a brief history which recounted many of the same facts contained in these two short papers.

Ornithologische Mitteilungen is a journal of and for the field ornithologist. Unlike many similar journals, it has succeeded in maintaining a high standard of scientific accuracy and careful reporting as well as good literary quality in its major papers. It is notable for excellent, sometimes outstanding, photographs. It is printed on good quality paper and contains surprisingly few typographical or other errors. Throughout its issues there have appeared a series of excellent papers on "applied" ornithology most of which have been concerned with the economic value of birds particularly from the standpoint of insect control. "Biological Control" as opposed to chemical methods is receiving a lot of attention in Europe and might well receive more attention here.

During the immediate postwar years, Dr. Bruns, then a candidate for his Ph.D., began to publish and issue "*Ornithologische Mitteilungen*" as a local journal for field ornithologists. In spite of tremendous difficulties in obtaining and keeping the necessary permits for paper and other supplies and for printing itself, the paper continued and grew and, under pressure from its readers, expanded its coverage to include notes from all of Germany, both East and West. As both commentators have noted, this was a most remarkable achievement for one man having other responsibilities.

The journal contains, in addition to papers, a section for field notes, reviews of notable ornithological papers appearing in other journals, some of which are difficult to obtain in this country, notes on ornithological meetings and gatherings and, as an unusual item, a listing of ornithological notes appearing in non-ornithological papers, mostly newspapers. It encourages membership of its readers in ornithological societies. This journal can be highly recommended to those subscribers to *Bird-Banding* who can read German.—R. O. Bender.

70. The Sixth Annual Water Bird Census (1955-1956) in French Switzerland. (Le sixiéme recensement hivernal (1955-1956) des oiseaux d'eau en Suisse romande.) Paul Géroudet. 1956. *Nos Oiseaux,* **23:** 314-323. This census counted a total of 77,308 water birds of 31 species on five lakes. Of these, 58,793 were of three species: Black-headed Gull *(Larus ridibundus)* 23,398, Coot *(Fulica atra)* 20,352, and Great-crested Grebe *(Podiceps cristatus)* 15,043. A great majority (65,925) of these were on Lake Léman. Totals terminating in a specific digit do not imply that kind of accuracy; they were arrived at by adding individual counts. There are interesting comparisons of the avifauna of Lakes Léman and Neuchâtel and a series of maps showing the distribution of nine

species on Lake Léman. Sex ratios are reported as follows: Mallard *(Anas platyrhynchos)* 58.1% males, Pochard *(Aythya ferina)* 79.5% males, Tufted Duck *(Aythya fuligula)* 45.1% males (low in comparison with previous counts), Goldeneye Duck *(Bucephala clangula)* 22.9% males, Goosander *(Mergus merganser)* 40.1% males.—R. O. Bender.

71. Birds of southwestern Europe. (Fåglar i sydvästra Europa.) Sven Mathiasson. 1957. *Fauna och Flora*, **6**: 240-260. (English summary.) This ornithological travelogue of a journey through the Rhine and Rhone valleys, across the Pyrenées into Spain, furnishes not only detailed lists of birds, but also some valuable notes on behavior and ecology. The highlight was the display of a pair of Flamingos *(Phoenicopterus ruber)*. Slightly goose-stepping and with stretched neck swinging his head from side to side, the male approached the female who adopted a crouching pose, neck drawn into a tight S-form. In this way they moved around in circles until the male touched the tail of the female with his breast and then mounted. Other highlights were a summering Rough-legged Buzzard *(Buteo lagopus)* hunting in a field south of Karlsruhe and a House Sparrow *(Passer domesticus)* at the Camargue Preserve, nesting in the midst of a colony of Bee-eaters *(Merops apiaster)* in one of their cavities.—Louise de K. Lawrence.

72. The Camargue and the Coto Doñana. E. M. Nicholson, I. J. Ferguson-Lees and P. A. D. Hollom. 1957. *British Birds*, **50**(12): 497-519. "Among the coastal regions of southwest Europe, two are outstanding for the wealth of their bird life and as surviving fragments, on a grand scale, of habitats which have largely been destroyed elsewhere." The ecology and avifauna of the two regions are described and maps and many fine photographs given. The Camargue in Provence is easily accessible, but this is not true of Coto Doñana in Spain. Fortunately both are in excellent hands and are being vigorously guarded. There are, however, disturbing increases of certain species: Jackdaws *(Corvus monedula)*, Herring Gulls *(Larus argentatus)*, and Tawny Owls *(Strix aluco)* which prey upon the attractive little Scops Owls *(Otus scops)*. Jackdaws "dash in and take eggs of herons and other species which have temporarily left their nests exposed, especially when flushed by intruders. Owing to this situation it is possible for a bird-watcher, perhaps without realizing it, to leave a colony which he has visited more thoroughly stripped of eggs than if it had been pillaged by some of the most ruthless human egg-collectors."—M. M. Nice.

73. An Ecological Sketch of the Coto Doñana. J. A. Valverde. 1958. *British Birds*, **51**(1): 1-23. A fascinating and well-documented study with many photographs of this region of dunes and marshes in the delta of the River Guadalquivir, Spain. The plant and animal life of the different environments is discussed and many data given as to the food of various species, especially herons and the many birds of prey. It is a wonderful picture of abounding life, of plenty of predators and plenty of prey. Of the latter, "pairs which have lost their clutches lay a second, third or fourth." Stone pines *(Pinus pinea)*, planted by man, have enriched the environment for both birds and mammals, but the recent introduction of eucalyptus is unfortunate, for these "plantations are noteworthy for their extreme poverty of fauna." We are greatly indebted to the three great Spanish families who own Coto Doñana for their enlightened and vigilant protection of this magnificent nature preserve.—M. M. Nice.

74. A sea-bird census in Stockholm during the winter 1954-55. (Sjöfågelbeståndet i Stockholm under vintern 1954-55.) Kjell Engström and Ch. Ehrström. 1957. *Vår Fågelvärld*, **16**: 1-14. (English summary.) At intervals of about one month, six counts were undertaken, beginning in November and ending in April. Data were obtained from 18 species ranging from swans and ducks to grebes and coots. The ice conditions along the east coast, which changed with the mean temperature variations, appeared to be the factor having the strongest influence upon the movements of the birds. Cold weather and extending ice formation drove the waterfowl into the sheltered and still open water in the heart of the city, while the gulls migrated southwards for the most part. Nine diagrams demonstrate this graphically. Compared to an earlier count in 1938, most species showed notable increases.—Louise de K. Lawrence.

75. Little Owl, Little Gull, and Black Kite in northern Sweden. (Minervas uggla *(Athene noctua)*, dvärgmås *(Larus minutus)* och brun glada *(Milvus migrans)* i Norrbotten.) Stig Lundberg. 1957. *Vår Fågelvärld*, **16:** 14-20. (English summary.) The small owl hit a window during a snowstorm and established thereby the most northerly record for its species in Sweden. It is unknown in Norway and Finland. The Little Gull apparently crossed over from Finland where it breeds regularly and established itself in a small colony, providing the first breeding record for northern Sweden. Two young Black Kites, taken from the nest during the second breeding season of this species in the north, were raised in semi-captivity, then banded and released. Both were recovered the same year, one being killed in Finland in late September and the other in the Pyrenees in November.—Louise de K. Lawrence.

76. Egrets at Ulmarra, N.S.W. Michael Sharland. 1957. *Emu*, **57**(5): 295-301. These notes on the herons and other birds of the great swamps in the Ulmarra district, New South Wales, are of interest mainly for the evidence they contain of the establishment and slow spread of the imported Cattle Egret *(Bubulcus ibis)* which was first recorded as breeding there in 1954.—O. L. Austin, Jr.

77. Remarks on the Taxonomy, History and Distribution of the House Sparrow Introduced into Australia. Bryan L. Sage. 1957. *Emu*, **57**(5): 349-352. *Passer domesticus*, first introduced there in 1863, is now "The commonest bird throughout the cities, towns, and cultivated areas of Australia (except Western Australia)." Just when the species adapted its breeding season to the southern hemisphere summer, the author is unable to determine, though he is able to document its inexorable spread from the literature. Comparison of a small series of five adult birds collected recently in Australia with the large series in the British Museum shows "on plumage characters and most measurements, these five birds do not differ from typical *domesticus*. The average wing measurement of 72 mm., however, is considerably less than the average for European birds . . . it would seem that there may have been a decrease in the average wing-length . . . since the introduction of the species 94 years ago." It would be desirable to check this apparent change by a more adequate series of Australian birds.—O. L. Austin, Jr.

78. Concerning the House Sparrow in Brazil. (Vom Hausspatzen *(Passer domesticus)* in Brasilien.) Helmut Sick. 1957. *Die Vogelwelt*, **78**(1): 1-18. The spread of the House Sparrow in South America is hard to document, having been accelerated by repeated introductions, some made in a spirit of meanness, some to combat noxious insects, and some for sentimental reasons—to introduce birds from the Old Country. They are now considered pests in Brazil, damaging chiefly gardens and fruit. Parasites, enemies, competition with other species, life history and control are discussed.—Frances Hamerstrom.

79. The Distribution and Status of Wild Geese in Ireland. Robert F. Ruttledge and Robin Hall Watt. 1958. *Bird Study*, **5**(1): 22-33. Six maps show where and in what numbers six species of geese winter in Ireland. The authors gathered most of the data themselves during a 10-year survey, 1946-1956, and have added other essential details from the literature. In assessing the effects of recent large-scale bog-drainage operations for turf-development schemes, they "do not see any very serious effects resulting. . . . In some bogs the disturbance has already driven the geese away, but such instances have been in the less extensive bogs. Where development has been on a large scale . . . these [bogs] are of such vast area . . . about 20 by 25 miles, that for many a year there will remain plenty of undisturbed ground available to the geese, even if eventually they are driven to the mountain valleys."—O. L. Austin, Jr.

EVOLUTION

(See also number 33)

80. The suborder Charadrii in arctic and boreal areas during the Tertiary and Pleistocene, a zoogeographic study. Sten Larsen. 1957. *Acta Vertebratica, Nordiska Museet and Skansen* (Stockholm), **1**(1): 1-84, 15 maps.

The author discusses the evolution of the shorebirds from a theoretical standpoint, principally in regard to the climatic changes that have taken place in the northern hemisphere during the Cenozoic. The suborder is thought to have arisen toward the end of the Cretaceous. The superfamily Charadrioidea of Peters' Check-List is believed to have developed from a tropical lowland ancestor and to have diverged during Tertiary times into three basic stoacks, the Recurvirostridae, Rostratulidae, and Charadriidae. Ecoclimatic factors provide reasons for changes in geographic range, and the suborder is divided into cold, temperate, and warm groups.

The title of the paper is somewhat misleading. Only two pages are devoted to the fossil record of the Charadrii, and no reference is made to discoveries since 1949, although our knowledge of fossil shorebirds has increased at least 10 percent since that date. No mention is made of the theories, popular in Europe, of shifting of the poles or of continental drift.—Pierce Brodkorb.

SYSTEMATICS

(See also numbers 6, 68)

81. A Serological Analysis of Some Anatid Classifications. William B. Cotter, Jr. 1957. *The Wilson Bulletin*, **69**(4): 291-300. Serology includes the study of reactions of blood components to foreign substances such as proteins. The author used several refined techniques on three separate protein systems (ovalbumin of the egg, serum albumin, and serum gamma globulin of the blood) of the Greylag Goose *(Anser anser)*, Pekin Duck and Mallard *(Anas platyrhynchos)*, Muscovy *(Cairina moschata)*, Wood Duck *(Aix sponsa)*, and Mandarin *(A. galericulata)*. His results have validated the conclusions of Delacour and Mayr in their uniting the genera *Cairina* and *Aix* in the tribe Cairinini. Delacour and Mayr based their conclusions on ecological preferences, behavior, and plumage of the downy young.—Glen E. Woolfenden.

82. Classification of Weaver Finches. (Die Klassifikation der Webefinken [Estrildidae]). H. E. Wolters. 1957. *Bonn. Zool. Beitr.*, **8**(2): 90-129. The author places this group as a family between the Ploceidae and the Fringillidae (Carduelinae) but leaves open the question of including the Viduinae as a subfamily of Estrildidae. He recognizes 119 species placed in 31 genera. Many matters of detail in position of genera and relations of certain species are still unsettled. Two species, *Estrilda melpoda* and *Spermestes cucullata*, have been introduced from Africa to the New World; others might be, but let us hope not. —C. H. Blake.

FOOD

(See also numbers 39, 53, 57, 62)

83. The food requirement in captivity of a Great Tit and a Lesser White-throat for larvae of the Fir Bud Moth *(Cacoecia murinana)*. (Der Nahrungsbedarf der Kohlmeise und Klappergrasmücke an Raupen vom Tannentriebwickler *(Cacoecia murinana)* in Gefangenschaft.) F. J. Turcek. 1957. *Ornithologische Mitteilungen*, **9**: 229. This is another of Turcek's fine "little studies" on the quantitative food consumption of birds. In this one he fed fir bud moth larvae to an adult male Great Tit *(Parus major)* and an adult female Lesser Whitethroat *(Sylvia curruca)*. The larvae weighed on an average of 0.337 grams per 10 individuals and were offered to the birds at short intervals in groups of about 10 on a Petri dish. Within a 90-minute period the Great Tit ate 54 larvae weighing 1.82 g., or about 10 percent of its body weight (19 g.). In the same length of time the Lesser Whitethroat ate 51 larvae weighing 172 g. or about 16 percent of its body weight (11 g.).

Assuming a consumption of 30 larvae per hour (allowing time for finding and consuming them) for a 10-hour day, the daily consumption calculates to be 300 larvae. This means a weight of about 10 g. of larva or about 50 percent of the body weight of the tit and 90 percent of that of the whitethroat. The author considers these numbers to be entirely speculative. Carrying these calculations further and considering the density of the larva on fir trees in the Slovakian Mountains, Turcek estimates that it would take a tit 13 days to strip a single

fir tree of larva during a period of heavy infestation. It would, therefore, require a population density of about 200 tits per hectare to check a severe infestation. R. O. Bender.

84. Food study of the Hawfinch. (Fütterungsversuche am Kernbeisser.) F. J. Turcek. 1957. *Ornithologische Mitteilungen,* **9:** 254. This paper reports on the consumption by a captive male Hawfinch *(Coccothraustes coccothraustes)* of the fruits of *Prunus serotina* and *Prunus padua.* Over a 10-day period it consumed an average of 374.5 fruits of the former having a total dry weight of 5.7 grams or 11 percent of the bird's body weight. Only pure water was offered in addition to the fruit. No body weight loss was found during the test period. When the test was conducted with the fruits of *P. padua,* the Hawfinch lost an average of 3 g. of body weight per day so the test was discontinued after 3 days. An incidental note reports that cracking the seed the Hawfinch opens requires a pressure of 10 atmospheres.—R. O. Bender.

85. Comparative Studies on the Feeding Biology of Some Finches. (Vergleichende Untersuchungen über die Ernährung einiger Finkenvögel.) Gisela Eber. 1956. *Biologische Abhandlungen,* **13/14:** 1-60. Careful, detailed observations in the field and laboratory on 15 species of finches. Among the subjects dealt with are daily rhythm of feeding, choice of foods throughout the year, behavior in gathering food, and anatomical studies of bill and tongue structure, hyoid bone, and intestinal tract.—M. M. Nice.

86. On Bud-eating by Some Finches. (Zum Knospenfrass einiger Finkenvögel.) F. J. Turček. 1957. *Waldhygiene,* **2**(3): 76-79. (With English summary.) The author lists the kinds of buds eaten at various times of year by a number of finches and brings out that a particular species of bird may eat only terminal buds of one kind of plant and only lateral buds of some other kind. He points out that this budding may not necessarily be harmful to the plant, either because some pruning is desirable or because the buds themselves may be insect infested. A captive Hawfinch was not able to maintain its weight on a diet of buds alone.—C. H. Blake.

87. On the recognition of bird damage to cultivated plants. (Zur Erkennung von Vogelschadbildern an Kulturpflanzen.) Karl Mansfeld. 1958. *Ornithologische Mitteilungen,* **10**(1): 3-7. This short paper, illustrated with photographs, discusses methods for identifying the birds responsible for damage to fruits and grains. Photographs illustrate the characteristic damage caused by each. Damage by insects and mammals is also shown and discussed.—R. O. Bender.

88. A Buzzard *(Buteo buteo)* consumes a mushroom. (Ein Mäusebussard als Pilzverzehrer.) Dr. Kumerloeve. 1957. *Ornithologische Mitteilungen,* **9:** 227. Dr. Kumerloeve reports an observation made by Ludolf Herbst of a buzzard carrying a large mushroom which it later ate on the ground. The mushroom which was very large was not identified. The observation was made in August 1954 near Bredelen which followed a winter with a low mouse population.—R. O. Bender.

89. Raptor Food Habits near Darfeld, Westfalen. 1955-1956. Rupfungs-und Gewöllaufsammlung bei Darfeld/Westfalen 1955/56.) R. März and I. Weglau. 1957. *Die Vogelwelt,* **78**(4): 105-115. Annotated food lists from pluckings and pellets of *Strix aluco, Asio otus, Tyto alba, Athene noctua, Accipiter nisus, A.gentilis,* and *M.milvus.* Nest sites of these raptors are mapped. More than half the prey items of a Barn Owl were insectivores.—Frances Hamerstrom.

SONG

90. A Comparative Study of the Calls of Emberiza spp. (Buntings.) R. J. Andrew. 1957. *Ibis,* **99**(1): 27-41. Recent advances in the techniques of recording sound waves are contributing greatly to our understanding of bird vocabularies. Analysis of sound spectrograph records of the calls of 10 species of European buntings made both in the field and in the laboratory permit the author of this paper to classify the notes of each species into general categories of type and usage. From these he is able to show homologies between them specifically that indicate their probable development and evolution.—O. L. Austin, Jr.

BOOKS AND MONOGRAPHS

91. The Nuthatch. (Der Kleiber.) Hans Löhrl. 1957. Die Neue Brehm-Bücherei. A. Ziemsen Verlag, Wittenberg Lutherstadt. 66 pp. The Nuthatch *(Sitta europaea)*, a vivacious, sedentary, cavity-plastering species, was the subject of an intensive study by Dr. Löhrl, chiefly in the Ludwigsburg area. Some of Löhrl's ornithological activities, including work with Nuthatches, were interestingly described by Drury *(Bird-Banding,* **28:** 194 ff., 1957). In this booklet an introduction to the species in question is furnished in sections on appearance and body structure; distribution of racial groups in Europe and Asia (the author doubts, with good reason, that the Indian "*Sitta castanea*" and *S. europaea* belong to the same species); related European and Eurasian species (including the Corsican Nuthatch, a relative of *Sitta canadensis*, on both of which, incidentally, the author has conducted special studies); biotope and density (in parks with old trees, especially where oaks are present, there may be as many as 1-2 pairs per hectare, even if the birds are dependent on natural cavities); and types of stance and locomotion. Sleeping habits are touched upon: in contrast to titmice the Nuthatch, like woodpeckers, spend the night in holes even in the summer season.

Other workers, including Bussmann, Henze, and Steinfatt, have written on the breeding biology of this species, but no one else has investigated the nature of its territoriality nearly so thoroughly as the present author. From 1953 to 1955 all the breeding pairs in the study area were color-banded. Within their territories the birds store collections of seeds; in severe winters these stores are of critical importance. The territories, which include nesting places as well as food sources, are thus maintained the year round. At Ludwigsburg these defended areas are generally 1-2 hectares in extent, sometimes less. Neutral zones occur in relatively unfavorable stands of trees and often provide initial "footholds" for juvenal males which, after mid-July, began to sing and set up their own territories. Young males are joined by females in late summer (the sex ratio seems balanced); mutual intolerance between males increases, the yearlings becoming aggressive by mid-September. An old pair occupying choice habitat may be attacked from several sides, in which case the female may defend one side. The autumnal struggles cease with the advent of damp, cold weather. By now the modest holdings of the young have been expanded somewhat. In late February or early March the struggles are revived. Sometimes a pair is driven out of the territory. The author discusses different types of antagonistic behavior, which may include violent fights between males. This section was particularly impressive to the reviewer, whose studies of nuthatches have concerned social, nonbelligerent species *(Sitta pygmaea* and *S. pusilla)*.

Breeding biology is organized under 16 subheadings. A few of these are: Plastering the nest cavity (by bringing in pieces of mud and hammering them with her bill the female "rounds out" the interior of the cavity and, where necessary, restricts the size of the entrance); incubation period and behavior during incubation; care of nestlings (glass walls were substituted at nest boxes so that the observer, in an annexed blind, could view the feeding of young and other activities from a distance of 30 centimeters); and fledging period. Later sections cover food and foraging; types of song, call notes, and other sounds; losses and causes of death; and methods of investigation. The author might have included comparisons with other species of nuthatches, but had he done so the originality, balance, and coherence which mark this study might have become less apparent. A general summary would have been helpful. Thirty-one photographs by the author add to the value and attractiveness of the booklet, and there is a list of 17 selected references. This is an excellent account whose scientific meat and naturalistic flavor cannot, alas, be captured in a short review.—Robert A. Norris.

92. Paths Across the Earth. Lorus and Margery Milne. 1958. Harper and Brothers, New York. xi + 216 pp. $3.75. This attractively-printed volume is intended as a popular summary of migration and other movements of animals. In contrast to most technical papers, it discusses a wide variety of forms, including not only birds but mammals, fish, insects, and even plants and bacteria.

Most specialists in any one field will find something new to them about other fields, though as the book does not include a bibliography, tracing down details on some points may not be easy. For the general public, the breadth of coverage and the Milnes' light, smooth style make this an admirable introduction to the subject.

Like most wide-ranging compilers, the Milnes have trouble with some of the technical details. They include a sound, brief outline of modern theories on navigation by birds, even mentioning recent work on celestial navigation. While they use the Evening Grosbeak and Cattle Egret to good advantage to illustrate how species may make more or less permanent extensions of their ranges, the timing indicated for these two examples is somewhat inaccurate. The discussion of natural limitations on the indefinite increase of the progeny of one pair of birds (in this case, the Bee Hummingbird of Cuba) suggests, in rather unclear phases, that small birds may normally live to be 5 years old, which is certainly twice the average for small passerines; it is not unlikely that the average life span of this small hummer is nearer 1 year than 2, counting from time of leaving the nest. The statement that over 100,000,000 birds have been banded is truly remarkable, and must include domestic poultry for something like 85% of the total, which is highly misleading (the total for the U. S. and Canada is just reaching 8 million; the British scheme passed 1 million within the past 2 years; and it is doubtful whether any other scheme has passed the million mark).—E. Alexander Bergstrom.

93. The Mute Swan in England/Its History, and the Ancient Custom of Swan-Keeping. Norman F. Ticehurst. 1957. Cleaver-Hume Press Ltd., pp. i-xiii, 1-133, ill. Price 35/-. This remarkable book is concerned with the unique history of the domestication of the Mute Swan in England. The author has drawn on a rich record of "swan rolls," laws, and ordinances (only one possessor of swan rolls refused him access) to give an interesting account of the probable origin and practice of swan-keeping, the gradual development of law and order in the practice, and finally a grand summary of the known marks, their necessity, origin, and ownership.

The reader is entertained to an intriguing resumé of the known references to swans in the 13th century, a delightful collection of excerpts from old manuscripts dealing with the use to which these swans were put, and some records of the abundance of swans in the period from the 14th to the 17th centuries. The laws, ordinances, and customs are dealt with in detail from "The Act for Swans," 1482 to the "Swan-Upping total for 1941," per Richard Turk, King's Swanherd. The book contains an interesting plate of an early 17th century manuscript and many extracts from other original manuscripts.

On the whole the work has more to offer the antiquarian and social historian, but naturalists should, nonetheless, find in its pages much of interest and certainly much to stimulate the inquiring mind.—Richard G. Allan.

NOTES AND NEWS

The annual meeting of the Northeastern Bird-Banding Association will take place on Saturday, October 4, at Drum in Farm, South Lincoln, Mass. (on rt. 117, a little west of rt. 128 and a little north of the Mass. Turnpike). There will be a formal program; anyone interested in banding is welcome.

Dr. William H. Drury, Jr., Director of the Hatheway School of Conservation Education of the Massachusetts Audubon Society (based at Drumlin Farm) was designated as delegate of the NEBBA to the International Ornithological Congress in Finland.

Representatives of the four regional banding associations plan to meet on the evening of Wednesday, October 15, at New York, in the course of the A.O.U meeting there.

Inquiries about the three sizes of mist nets stocked by the NEBBA should be addressed to E. Alexander Bergstrom, 37 Old Brook Road, West Hartford 7, Conn.