RECENT LITERATURE

Edited by Bertram G. Murray, Jr.

NEW JOURNAL

1. Ringing and Migration. Edited by Colin J. Bibby. Published by British Trust for Ornithology.— Readers of *Bird-Banding* will be interested to learn of the publication of this new journal, which first appeared in 1975. Present plans call for annual publication. The stated purpose is to promote the publication by amateur ringers of short, interesting, and stimulating reports of their work, even if only partially completed. Papers that are long, dull, or by professionals will be considered for publication, but they will have a lower priority. Amateurs are to be encouraged by a more sympathetic review and a shorter time between submission and publication than are perceived to exist with the more professional journals. Some papers are reviewed in this issue, and others will be reviewed in the future. Subscription details are available from the B.T.O. (Beech Grove, Tring, Herts HP23 5NR, England).—Bertram G. Murray, Jr.

BANDING AND LONGEVITY

(See also 7, 8, 14, 26,42)

2. Longevity Records V. W. Rydzewski. 1974. *Ring,* 7(78): 112-117.

3. Longevity Records VI. W. Rydzewski. 1974. *Ring,* 7(79): 141-145.

4. Longevity Records VII. W. Rydzewski. 1974. *Ring,* 7(80): 169-171.— Rydzewski continues his useful compilations of various longevity records from ringing schemes around the world. Lists V and VI contain supplemental records to lists that Rydzewski has previously compiled. V contains records from Australian, Great Britain, German, New Zealand, Swedish, Swiss, and U.S. banding programs, whereas VI contains records from Australian, Danish, Great Britain, German, Dutch, Norwegian, New Zealand, South African, and Swiss banding schemes. List VII is concerned primarily with southeast Asian bird records supplied by H. Elliott McClure but also contains supplemental information from Australian, Finnish, Dutch, Swedish, and U.S. banding records.

The very few U.S. records (3) listed by Rydzewski are reported or extended in the recent paper by Kennard (*Bird-Banding,* **46**(1): 53-73, 1975). At least one of Kennard's records needs correction. The banding and recovery dates for the Blue-faced Booby (*Sula dactylatra*) are precisely the same as those for the species listed next, the Red-footed Booby (*Sula sula*). In fact, the cited source (*Ring,* **77**: 91, 1973) gives the proper dates for the Blue-faced Booby, the correct band number (41-720687) and correct elapsed time, 22 years, 10 months, and 13 days.

Several other seabird longevities greater than those listed by Kennard and missed by him (not too surprisingly, because some of the sources are relatively obscure) have been published. One was of a Noddy Tern (*Anous stolidus*) slightly more than 24 years 11 months old, banded and recaptured on Manana Island, Oahu (*Elepaio,* **33**(10): 113, 1973). Another greater longevity record was that of a Red-footed Booby with an elapsed time between banding (as an adult) and recapture of slightly more than 20 years. The bird was banded at Mokapu Point, Oahu, and recaptured on Moku Manu Island, Oahu, just offshore from Mokapu Point (*Elepaio,* **31**(10): 98, 1971).

I am aware of two greater longevity records for Black-footed Albatross than were listed by Kennard; perhaps there are others. Robbins (U.S. Dept. Int., Spec. Sci. Rept., Wildlife No. **85**: 46, 1966) reported a Black-footed Albatross captured 22 years after banding, and, since very few of this species breed before five years of age, it was assumed to be at least 27 years old. Another Black-footed Albatross banded as an adult on Midway Island in June 1946 was recaptured 12 March 1972 at the same locality (*Elepaio,* **33**(4): 43, 1972) for an elapsed time of not less than 25 years, 7 months. If the bird was a breeder when banded it must have been not less than 30 years old.

Another point that might be made about Kennard's paper is that although he used Rydzewski's latest list for longevities of North American birds (*Ring*, **7**(77): 91-96, 1973) extensively, he failed to consult an earlier list of North American bird longevities previously produced by Rydzewski (*Ring*, **3**(34): 177-181, 1963). This list covers a number of species not listed by Kennard and in some instances gives greater longevities than the more recent list.

Birds with particularly long elapsed times between banding and recovery listed in Rydzewski's "V" to the year, month, and day, and country under whose banding scheme are as follows: *Ardea cinerea*, 25-4-21, Germany; *Ciconia ciconia*, 26-0-25, Germany; *Anas platyrhynchos*, 23-3-3, Sweden; *Pandion haliaetus*, 24-9-27, Sweden; *Buteo buteo*, 25-4-?, Germany; *Milvus migrans*, 23-8-25, Switzerland; *Haematopus ostralegus*, 35-11-16, Germany; and *Sterna paradisaea*, 28-11-18, Germany.

Particularly long-lived birds in "VI" are: *Gavia arctica*, 27-0-0, Germany; *Diomedea bulleri*, 24-0-?, New Zealand; *Sula serrator*, 20-8-26, New Zealand; *Threskiornis aethiopicus*, 21-1-6, South Africa; *Pernis apivorus*, 28-10-26, Germany; *Vanellus vanellus*, 19-11-23, Holland; *Recurvirostra avosetta*, 24-6-3, Denmark; *Thalasseus sandvicensis*, 23-7-3, Holland; and *Sterna striata*, 21-0-19, New Zealand.

Especially long-lived birds in "VII" include: *Puffinus pacificus*, 14-1-10, Australia; *Anas platyrhynchos*, 41-7-18, Holland (Rydzewski notes that this record is possibly erroneous); *Limosa lapponica*, 17-11-10, Sweden; and *Turdus pilaris*, 18-0-7, Finland.

Among those listed above which occur in "North America" and for which there are no records listed by Kennard are *Gavia arctica*, *Puffinus pacificus*, and *Thalasseus sandvicensis*. It should be kept in mind that at least some of the longevities extracted from Rydzewski's lists above are minimal because some of the birds were banded as adults and are species that certainly do not breed in their first year, e.g., *Gavia arctica* and *Diomedea bulleri*. Although many of the birds listed above were banded as pulli, Rydzewski lacked information on age at banding for a considerable number of others.

Since the *Ring* is not widely available to banders who might like to know maximum recently listed longevities of species common to the Old and New Worlds, I have examined Rydzewski's series of lists and here list longevities for North American (sensu Kennard) breeding birds found elsewhere that are greater than those longevities listed by Kennard. I also include species (in parentheses) common to both Old and New World that do not appear in Kennard. The citation listed is the number of the *Ring* in which the record appeared and the page:

(*Gavia stellata*, 23-8-13, 76:63, Germany); (*Fulmarus glacialis*, 22-0-?, 76:63, Great Britain); (*Puffinus puffinus*, 19-11-29, 76:73, Great Britain); (*Oceanodroma castro*, 10-11-0, 79:142, Great Britain); (*Sula nebouxii*, 11-4-22, 79:142, Great Britain); *Morus bassanus*, 16-9-18, 79:142, Great Britain; (*Phalacrocorax carbo*, 19-8-15, 76:64, Great Britain); (*Bubulcus ibis*, 13-0-16, 75:40, South Africa); *Hydranassa tricolor*, 16-5-?, 77:92, U.S. (the age given in Kennard's paper may be merely a typographical error as the other data given are correct); *Plegadis falcinellus*, 19-10-27, 76:64, Soviet Union; (*Branta bernicla*, 5-5-11, 79:142, Norway); (*Anser albifrons*, 17-8-?, 76:74, Great Britain); *Anas crecca*, 13-6-?, 76:64, Great Britain; *Anas clypeata*, 20-5-7, 76:64, Soviet Union; *Aythya marila*, 13-0-13, 76:64, Iceland; (*Bucephala clangula*, 6-3-?, 76:64, Sweden; *Somateria mollissima*, 15-7-?, 76:65, Great Britain; (*Somateria spectabilis*, 5-9-?, 76:65, Denmark); (*Melanitta nigra*, 15-11-9, 76:65, Iceland); (*Mergus merganser*, 6-2-9, 79:142, Denmark); (*Mergus serrator*, 8-7-19, 80:169, Finland); *Accipiter gentilis*, 18-9-15, 78:113, Germany; *Buteo lagopus*, 10-10-12, 79:143, Norway; *Falco peregrinus*, 6-10-3, 34:178, U.S.; 15-6-3, 76:65, Sweden; (*Falco columbarius*, 10-7-20, 80:169, Finland); *Lophortyx californicus*, 7-1-12, 78:113, New Zealand; *Lophortyx gambelii*, 6-11-12, 34:178, U.S.; *Gallinula chloropus*, 11-3-?, 76:65, Great Britain; (*Charadrius alexandrinus*, 8-5-1, 79:143, Holland); (*Pluvialis squatarola*, 11-11-5, 76:66, Great Britain); (*Arenaria interpres*, 19-8-?, 76:66, Finland); *Capella gallinago*, 12-2-23, 79:143, Great Britain; (*Numenius phaeopus*, 6-6-6, 79:143, Denmark); *Calidris canutus*, 13-0-7, 79:143, Great Britain; (*Calidris maritima*, 8-0-21, 79:143, Great Britain); *Calidris alpina*, 19-9-10, 76:66, Norway; (*Calidris alba*, 11-0-0, 76:66, Great Britain); (*Stercorarius parasiticus*, 18-1-9, 79:144, Great Britain); (*Stercorarius longicaudus*, 5-11-15, 78:114, Germany); (*Larus hyperboreus*, 21-1-?, 76:67, Holland); *Larus marinus*, 19-11-6, 76:67, Finland); *Larus argentatus*, 31-11-10, 76:66, Holland; (*Larus canus*, 24-2-14, 76:66, Denmark); (*Rissa tridactyla*, 15-10-?, 76:67, Denmark); (*Gelochelidon nilotica*, 15-9-?, 76:67, Denmark); *Sterna dougallii*, 9-10-9, 76:67, Great Britain; (*Chlidonias niger*, 17-2-5, 76:67, Hungary); (*Alca torda*, 20-3-27, 76:67, Great Britain); (*Uria aalge*, 7-11-20, 34:179, U.S.; 32-1-3, 76:67, Germany); (*Cepphus grylle*, 13-11-4, 79:144, Great Britain); (*Fratercula arctica*, 15-8-3, 79:144, Great Britain); (*Columba livia*, 6-4-24, 76:67, Great Britain); (*Streptopelia chinensis*, 6-4-25, 80:169, Southeast Asia); *Tyto alba*, 17-10-29, 76:67, Holland; (*Otus asio*, 12-4-24, 34:179, U.S.); (*Asio otus*, 27-9-1, 76:67, Germany); (*Asio flammeus*, 12-9-13, 79:144, Holland); (*Aegolius funereus*, 15-11-12, 78:114, Germany); (*Alauda arvensis*, 8-9-2, 76:68, Czechoslovakia); *Riparia riparia*, 7-10-7, 76:78, Great Britain; *Hirundo rustica*, 15-11-18, 76:68, Great Britain; *Progne subis*, 5-10-27, 34:180, U.S.; (*Pica pica*, 14-11-25, 76:70, Norway); (*Corvus corax*, 15-11-17, 78:117, Germany); *Certhia familiaris*, 6-9-10, 80:171, Finland;(*Pycnonotus jocosus*, 11-1-19, 78:115, Australia); (*Troglodytes troglodytes*, 5-9-23, 79:144, Holland); (*Oenanthe oenanthe*, 7-0-15, 79:144, Great Britain); (*Motacilla flava*, 6-11-21, 76:78, Great Britain); (*Anthus spinoletta*, 8-10-23, 76:78, Great Britain); (*Lanius excubitor*, 5-9-2, 78:115, Germany); *Sturnus vulgaris*, 13-3-?, 34:181, U.S.; 20-0-18, 76:70, Belgium; *Passer domesticus*, 10-5-10, 75:41, South Africa; (*Passer montanus*, 10-0-20, 76:70, Belgium); (*Acanthis flammea*, 7-7-16, 79:145, Holland).

One particularly bad feature of Rydzewski's recent series of longevity lists is that some of the lists are numbered (like those cited above) and some are not. Numbers V, VI, and VII above, for example, are actually the 7th, 8th, and 9th lists in the series. For the convenience of those who would wish to have a ready reference I briefly cite here the previous lists in the series together with the general area covered. Roman numerals in parenthesis indicate the actual sequential order in the series. If another Roman numeral precedes that in parentheses, it indicates the number Rydzewski assigned to the list, all of which are entitled "Longevity Records," except for the first which is entitled "Longevity of Ringed Birds." The sequence is as follows: *Ring*, **3**(33): 147-152, 1962, (I)—covers earlier American, European, Australian, and New Zealand records; *Ring*, **3**(34): 177-181, 1963, II—covers earlier American records in much more detail than the preceding; *Ring*, **7**(74): 7-10, 1973, (III)—covers Australian and New Zealand records; *Ring*, **7**(75): 40-41, 1973, (IV)—covers South African records; *Ring*, **7**(76): 63-70, 1973, III(V)—covers more recent European records; and *Ring*, **7**(77): 91-96, 1973, IV (VI)—covers more recent American records.—Roger B. Clapp.

5. Mortality of Reed Warblers in Jersey. R. Long. 1975. *Ringing and Migration*, **1**: 28-32.—Adult *Acrocephalus scirpaceus* breeding on Jersey, Channel Islands, suffered a 44% annual mortality. Juveniles averaged 76% mortality between ringing and their second summer. These rates were calculated from 3,663 birds ringed over a 20-year period.

The figures make the Reed Warbler one of the longest lived of the European warblers and update the more accessible note previously published (*Brit. Birds*, **64**: 462-463, 1971) by Long.—Raymond J. O'Connor.

MIGRATION, ORIENTATION, AND HOMING

(See also 14, 36, 44)

6. On inertial navigation of birds. (Ob inertsialnoi navigatsii ptits.) V. A. Melnichuk and N. K. Solomonova. 1972. *Vest. Zool.*, **6**(1): 27-30. (In Russian with English summary.)—In a study on inertial navigation in birds the role of the vestibular apparatus was examined during homing and orientation trials in round Kramer cages equipped with electromagnetic counters. The authors found that if there were ground or sky reference points during homing, the birds navigated probably without involvement of the vestibular apparatus. When visible reference points were absent there was the possiblity that the vestibular apparatus was used. This conclusion was further suggested by the results of the orientation cage experiments, but the authors were reluctant to draw final conclusions because they said their experiments were carried out with a small number of individuals.—Sidney A. Gauthreaux, Jr.

7. Eastward migration of Blue-winged Teal. B. Sharp. 1972. *J. Wildl. Manage.*, **36**: 1273-1277.—This study is based on recoveries of 3,789 Blue-winged Teal (*Anas discors*) banded during July, August, and September in the prairie pothole region (Minnesota west of 95° W, North Dakota, Manitoba Saskatchewan, and Alberta) between 1955 and 1969, inclusive. Nearly five percent (183 birds) were recovered due east in New England, Ontario, Quebec, and the Maritime Provinces during the subsequent hunting season. The author suggests that there are two distinct components to the migration of the portion of the Blue-winged Teal population he studied. First, the young birds move eastward toward the Atlantic coast, and second, the birds then move southward toward their wintering grounds. An immature female banded in Minnesota on 11 September 1966 was retrapped in South Carolina on 3 October 1966, and was then shot in Colombia, South America, on 16 October 1966. Migration along an east-west axis in reponse to topographic features (coastlines, lakes) is known for other populations of European and North American waterfowl.—Sidney A. Gauthreaux, Jr.

8. Migration patterns and wintering localities of American Ospreys. C. J. Henny and W. T. Van Velzen. 1972. *J. Wildl. Manage.*, **36**: 1133-1141.—This paper discusses migration routes, wintering areas, and the location of non-breeding Ospreys (*Pandion haliaetus carolinensis*) during the nesting season. The analysis is based on the recoveries of birds banded primarily in the Middle Atlantic States and in New England, but some birds banded in Wisconsin and Michigan are included. Most of the birds appear to migrate to their wintering grounds in the West Indies and South America on a broad front, and most birds actually winter in the northern half of South America with relatively few in the West Indies. One-year-olds do not return to the United States, but an estimated 28 to 55 percent return to their general natal area as two-year-olds. The two-year-olds apparently do not breed and are estimated to represent only 5 to 10 percent of the Osprey population on the northern breeding grounds. Nest studies suggest that approximately six percent of the population on the breeding grounds consists of nonbreeders, well within the estimated percentages of two-year-olds that are present. The authors issue a caution to those engaged in nest studies of Ospreys. They point out that pairs of two-year-old birds will associate with nests and may even carry nesting materials, but they do not lay eggs or exhibit brooding behavior. These birds should not be included in counts of breeding birds with active nests.—Sidney A. Gauthreaux, Jr.

9. A radar study of the spring migration of the Crane (*Grus grus*) over the southern Baltic area. T. Alerstam and C. A. Bauer. 1973. *Vogelwarte*, **27**: 1-16.—In spring, most of the migrating Scandinavian Cranes crossed the Baltic Sea at its narrow point at Rügen, a distance of 75 km. Most of the Crane departures occurred between 0530 and 1400, with no nocturnal activity recorded. The frequency of Crane departures on many days showed two peaks of activity: one in early morning and a second, larger peak at mid-day. This type of activity pattern could be caused by some Cranes initiating migration shortly after sunrise, while others waited for the development of thermals to assist them along their migration. The only weather factor that had any obvious influence on the amount of migration was wind. The direction of the wind greatly affected the amount of migratory activity, with most departures occurring with winds more or less from the south. This selective migration on days with tail-winds allowed the birds with an air speed of 60 km/h to attain ground speeds of 80 to 115 km/h. The mean direction of migration was invariably shifted westwards with an easterly wind and eastwards with a westerly wind. Although the authors point out that a following wind would narrow the scatter of individual track directions relative to the scatter in heading directions, they feel that this same relationship between track and heading vectors indicates at least partial compensation for wind drift in the Cranes. Although the tracks and headings were measured and computed, respectively, there was no day-to-day comparison of the two. If there was compensation for wind drift, the mean heading from day to day should vary, but the mean track should remain the same. If there was no correction for drift, the headings should remain constant, but the tracks should vary from day to day.—Robert C. Beason.

10. Crane *Grus grus* migration over sea and land. T. Alerstam. 1975. *Ibis,* **117:** 489-495.—The flight techniques used by migrating Crane flocks over the sea differed from those used over land. Over the sea the flocks used active flapping flight, but over land they used passive thermal soaring and gliding flight between thermals. This difference in flight techniques produced a difference in ground speeds. The mean ground speed over the water was 77 km/h, but only 50 km/h over land. The Cranes appear to correct completely for wind drift when moving over land. The flocks maintained an almost constant track with a variety of wind conditions from day to day. Over the sea, the Cranes appeared to correct for drift only partially. However, in his analysis, Alerstam did not consider the differences between air speed and track speed. Therefore, what he considers to be 68% compensation for drift may be only 50% or less. The reduced ability of Crane flocks to orient over the sea is attributed to a lack of visual landmarks on the water. Visual landmarks allow the Cranes to orient over land and compensate for drift.—Robert C. Beason.

11. Weight-changes at Hesselo in nightmigrating passerines due to time of day, season and environmental factors. F. D. Petersen. 1972. *Dansk. Orn. Foren. Tidsskr.,* **66:** 97-107.—In the spring of 1963, 1966, and 1971, Robins (*Erithacus rubecula*), Redstarts (*Phoenicurus phoenicurus*), Reed Warblers (*Acrocephalus scirpaceus*), and Lesser Whitethroats (*Sylvia curruca*) were mist-netted and weighed in an attempt to show how the weight of migrant birds resting on Hesselo changed during the day, how this change was related to different environmental factors, and how weight changed in relation to the length of resting time. All species examined showed an increase in weight during the day, and the increase in weight was larger under clear skies than under overcast skies. For the Robin the rate of increase in weight was positively correlated with the rate of emigration, and the mean weight of the birds leaving the island was larger than the mean weight of the birds remaining. In contrast to these results, Rabol and Petersen (see *Bird-Banding,* **45**(3), 1974, review no. 2) found that a lack of food with no weight increase and a high degree of crowding produced large rates of emigration, even diurnal departures in some nocturnal migrants.—Sidney A. Gauthreaux, Jr.

12. Comparison of the overcast and a starry sky orientation in night migrating passerines. F. D. Petersen and J. Rabol. 1972. *Dansk. Orn. Foren. Tidsskr.,* **66:** 113-122.—The authors examined the orientation of nocturnal migratory restlessness in Emlen-funnels under clear and overcast skies during seven spring and autumn periods from 1968 to 1971. All the individual mean vectors of the orientation of nocturnal migratory restlessness from a single night were combined to generate a single night's sample mean vector. When the sample mean vectors from clear and overcast nights were compared, they were found to be in close directional agreement, but the degree of concentration of the single night sample mean vectors was greater in the group exposed to starry skies. The concentration of the individual mean vectors in the sample mean vectors was also found to be significantly greater in the clear-sky group. Furthermore, the birds under starry skies showed a greater amount of nocturnal restlessness.
The results suggest that nocturnal migrants can take up a compass direction under conditions of overcast, thus supporting the finding of Wiltschko, Hock, and Merkel (*Z. Tierpsychol.,* **29:** 409-415, 1971), but the authors do not specify whether the birds could see the position of the setting sun (twilight) or horizon glows.—Sidney A. Gauthreaux, Jr.

POPULATION DYNAMICS

(See also 8, 15, 25)

13. A study of territorial stability of open-nesting passerine populations by radioactive tagging. (Izuchenie territorialnogo konservatizma otkrytognezdyashchikhsya vorobnykh ptits metodom radioaktivnogo mecheniya populyatsii.) A. Ilenko, I. Ryabtsev, and D. Fedorov. 1975. *Z. Zhurn.,* **54**(11): 1678-1686. (In Russian with English summary.)—On five areas near Moscow 469 individuals of 16 common passerine species were collected between April and

June 1973, from nesting territories, previously treated by the radioactive isotope, Strontium 90. Analysis of concentrations of residue of this isotope in bones (tarsi) determined the numbers and percentages of alien immigrants breeding in local territories. It was found that 8% or more of those collected were recent immigrants, the highest proportion being that of the Scarlet Grosbeak (*Carpodacus erythrinus*), 69%. Concentrations of isotope residue were much higher in fledglings than in adults.—Leon Kelso.

14. Population structure of the Great Tit in the Leningrad region. (Struktura populyatsii bolshoi sinstsy v leningradskoi oblasti.) O. Smirnov and G. Noskov. 1975. *Ekologiya,* **1975**(6): 79-83. (In Russian.)—This paper summarizes the results of trapping and color marking of 5,000 *Parus major* in this area from 1958 to 1973. There were 2,300 repeats. The area was mapped according to biotopes: (1) that suitable for nesting with an adequate food supply in summer and winter; this was the most densely populated; (2) not suitable for nesting or food supply, which was occupied only during migration; (3) attractive for nesting but with a poor food supply, where nest boxes were accepted, and (4) rich in food supply but poor for nesting (mid-city areas). Trapping records showed multiple shifts of individuals during the first year of life, when yearlings comprised 73% of the population. The juvenile population was 85% in late summer. The most general use of all biotopes was during fall migration.—Leon Kelso.

NESTING AND REPRODUCTION

(See also 14, 23, 25, 37)

15. A study of breeding Lapwings in the New Forest, Hampshire, 1971-74. R. Jackson and J. Jackson, 1975. *Ringing and Migration,* **1**: 18-27.—*Vanellus vanellus* breeding on an unused airfield in southern England averaged 3.9 eggs in first clutches, 3.4. eggs in second clutches. Second clutches were more frequent when first clutches had poor success, and eggs hatched per pair ranged in annual average only over the range 3.6 to 3.8, despite variation in hatching success of from 67% to 90% over these same years. Corvids and holiday makers were equally destructive of eggs. Chick growth was sigmoidal and apparently dependent on weather conditions, although whether this was due to exposure or food shortage is not considered. Chick mortality was high, averaging 77% over the first 30 days following hatching.

This is an interesting study of a difficult species, the more commendable for being performed by non-professionals.—Raymond J. O'Connor.

16. Asynchronous hatching and chick mortality in the Herring Gull *Larus argentatus*. J. Parsons. 1975. *Ibis,* **117**: 517-520.—Parsons had previously reported (*Nature,* **228**: 1221-1222, 1970) that Herring Gull chicks hatched from small eggs survive less well than do chicks from large eggs. But the third egg of a typical clutch is considerably smaller than the first two and usually hatches last because incubation is started before clutch completion, so the survival effect might reflect sibling competition rather than egg size as such. Parsons tested this by swapping eggs around so that "c" eggs were first to hatch in their new clutch; "a" eggs were similarly shifted to be last-hatched. Mortality of "c" chicks fell from 28.3% to 10.6% on swapping and that of 1 "a" chicks rose from 8.6% when first-hatched to 18.5% when last-hatched. The experiment thus shows that both egg size and sequence of hatching influence the survival of the young.—Raymond J. O'Connor.

17. Age, egg-size and breeding success in the Herring Gull *Larus argentatus*. J. W. F. Davis. 1975. *Ibis,* **117**: 460-473.—Davis attempts in this paper to disprove the suggestion of Parsons (*Nature,* **228**: 1221-1222, 1970) that selection for increased egg-size was operating in *Larus argentatus* colonies as a result of a relationship between egg-size and chick mortality. Ringed females of known age laid earlier relative to their laying date the previous year the younger they were. Clutch volumes laid by the same pair in different years were highly correlated, and more so than were the volumes of eggs laid at particular points in the laying sequence. First-laid eggs (*a*-eggs) were larger on the average than *b*-eggs, and *c*-eggs were markedly smaller than *a*-eggs or *b*-eggs. Young females showed an increase in egg-volume with age but older females showed a decrease with further increase in age, although this conclusion depends on compiling data from several females of different ages. Chick mortality rates altered with age and were greater in *c*-chicks than in the other chicks. The survival rates of chicks of different hatching-weight classes varied between years. In 1970 survival increased with hatching weight, but in 1972 this effect applied only to weights below a threshold. Comparable effects were obtained with respect to survival time and to growth rates, but *c*-chicks of a given hatching-weight class survived for shorter periods than did other chicks of the same hatching weight. There were a number of seasonal effects in the parameters mentioned, leading to greater chick production in the earlier than in the later half of the nestling period.

Davis claims that selection for increased egg-size as postulated by Parsons does not exist and produces a model of changing age structure for his study population (on Skokholm Island, off the coast of Wales), which would result in the patterns he found. His model allows a plausible accounting of several of his results, but only to the extent of predicting the direction of changes between years. Because most of these effects depend on data for only two years (and hence only one change), I feel one can allow it to be merely an interesting idea. It would, however, be of value to see it tried out on data from other gull colonies. Finally, one should not accept Davis's conclusions on the importance of the egg-size effect without first considering the implications of Parsons' more recent experiments (see review 16).—Raymond J. O'Connor.

18. The role of environmental factors in the growth of tern chicks. E. K. Dunn. 1975. *J. Anim. Ecol.*, **44**: 743-754.—This paper reports an analysis of the effects of a number of weather variables on the growth of *S. hirundo*, and *S. sandvicensis* chicks off the Northumberland coast of England. These effects would be mediated by the foraging capacities of the adults under the weather conditions specified. Considerable variation in the importance of different variables and of the (unmeasured) level of food supplies occurred between species and between years. Part of this variation was due to different weather conditions prevailing in the three seasons. Variance in growth rate explained ranged from 39.6% down to 1.6% for the various species-year categories. For Sandwich Terns Dunn found significant regression equations but with only small (1.6 to 6.4%) proportions of the total variance taken up by the explanatory variables. A possible explanation for this independence of weather conditions might be the flight stability conferred on this species by its large body size. For Common Terns Dunn found increasing windspeeds increased chick growth, for winds below 6 knots, but decreased it thereafter; rain had a depressive effect on growth. This latter effect was a result of the adults brooding the chicks during rain, thus halving the foraging rate. For Roseate Terns increasing windspeed had always a depressive effect on chick growth, and more severely so than in Common Terns. One possible explanation for this is that the species is at the northern edge of its range when in Britain, and it may consequently be less well adapted to the climate of temperate latitudes.

This is an interesting analysis, which should be read alongside Dunn's earlier study (*Nature*, **244**: 520-521, 1973) of the fishing behavior of Common and Sandwich terns in different weather conditions. The abstract is mildly misleading at two points, and the paper itself is best read in its entirety.—Raymond J. O'Connor.

19. Changes in incubation patch and weight in the nesting House Martin. D. M. Bryant. 1976, *Ringing and Migration*, **1**: 33-36.—Loss of feathers from the brood patch in *Delichon urbica* in Scotland began about 12 days before the start of laying and was complete in females by the laying of the first egg. The patch remained bare through the interval between broods and through the nestling period. In some adult females regrowth had not begun at the time of southward migration. In males the loss of feathers was not complete and regrowth commenced slightly earlier than in females. Body weight in females about to lay was about 3 g heavier than the average female weight. The females spent more time away from the nest at this stage of the nestling cycle, apparently because of the extra feeding required for this weight accumulation.—Raymond J. O'Connor.

BEHAVIOR

(See also 6, 12, 32)

20. Notes on the behavior of Bonelli's Eagle. (Notes sur l'éthologie de l'Aigle de Bonelli, *Hieraaëtus fasciatus.*) C. Vaucher. *Nos Oiseaux,* **31**(5-6): 101-111. (In French).—Vaucher observed interspecific interactions and hunting behavior of adult eagles in mountainous breeding habitats in France and Spain, primarily during May 1964-67. He spent about two days with each of a dozen pairs per year. Interspecific interactions with 13 other raptors and 3 species of corvids were noted. Most extensively observed were aggressive encounters with groups of Griffon Vultures (*Gyps fulvus*). The eagle would single out one vulture in a group of 30 to 40 circling near the aerie and make several attacks, culminating in an attempt to grasp the vulture's naked head. His observations of several caracasses and a vulture bloodied after an attack indicate that such attacks may be fatal to the Griffons. Lammergeyers (*Gypaetus barbatus*) and Golden Eagles (*Aquila chrysaetos*) responded by counterattacking.

Hunting behaviors included direct attacks from stationary observation posts and stoops from soaring vantage points. The attacks, delivered in the manner of a large falcon, were frequently initiated from distances of 500 to 1,000 m from the prey. Red-legged Partridges (*Alectoris rufa*) were prominent in a diet of primarily avian prey; several mammals and reptiles have also been recorded as prey. Vaucher's excellent photographs add significantly to the highly qualitative presentation.—Paul B. Hamel.

21. The organization of dusting components in Bobwhite Quail (*Colinus virginianus*). P. Borchelt. 1975. *Behaviour,* **53**(3/4): 217-237. (English with German summary.)—Components of dustbathing in 12 males and 12 females of *Colinus virginianus* are analyzed. A sequence of acts (entering dust, pecking, scratching, squatting, rubbing head and sides, plumage ruffle shaking, tossing dust) in addition to eating and drinking is defined. Time considerations of 1 vs 5 days of dust deprivation are compared. Frequencies of 8 "components" showed significant increases with longer deprival of dust. "These results are discussed in terms of a lipid regulation model which suggests that dustbathing serves to remove lipid substances from the plumage." Further thought on this paper could envision some relationship here to the mystery of "anting" and the application of other substances to the feathers.—Leon Kelso.

22. Acuity of echolocation in Collocalia hirundinacea Aves: Apodidae), with comments on distributions of echolocating swiftlets and Molossid Bats. M. Fenton. 1975. *Biotropica,* 7(1): 1-7.—Echolocation in birds was not too tardy in following its discovery in bats. Experimentally, acuity is judged by performance in total darkness through an obstacle course in a mine tunnel in Papua, New Guinea. The swiftlets successfully avoided rods 10, 4, and 1.5 mm in diameter in ratios of 73, 67, and 55%, respectively. So far as known, *Collocalia brevirostris, C. luciphaga, C. maxima,* and *C. vanikorensis* echolocate, but *C. esculenta* does not. "When individuals of this species were disturbed . . . they flew about the tunnel, blundering at random into walls, ceilings, and people and produced none of the clicks associated with echolocation." Emitted clicks were tape recorded, with those of two species of bats available for comparison.—Leon Kelso.

ECOLOGY

(See also 13, 14, 18, 43, 46)

23. Breeding time of birds in relation to latitude. T. Slagsvold. 1975. *Norwegian J. Zool.,* **23**(3): 213-218. (In English.)—In Finland a greater variation in length of breeding season by early egg-laying species as compared to late nesters is prevalent. There is an average retardation of 1.5 to 2 days per additional degree of latitude northward. Spring growth of vegetation is retarded 3 to 3.15 days per degree of latitude. There is only the suggestion that both trends may be related to later and shorter springs northward.—Leon Kelso.

24. On distribution and abundance of wheatear species in South Caucasus. (O razmeshchenii i chislennosti massovykh vidov kamenok (*Oenanthe*) v yuzhnoi zakavakaze.) M. Tarasov. 1975. *Vest. Zool.*, **1975**(5): 7-10. (In Russian with English summary)— Six species (*Oenanthe oenanthe, O. isabellina, O. finschi, O. pleschanka, O. hispanica,* and *O. xanthoprymna*) of arid areas were analyzed according to available biotopes between 1969 and 1971. Alkaline semidesert, stony sagebrush, sagebrush-grass-steppe, montane wasteland, piedmont cliffs and rocky slopes were occupied by certain species, according to the availability of rodent burrows (of *Meriones* and *Citellus*), which were used for nesting. Exceptions were *O. isabellina* (Isabelline Wheatear), which is adapted to all habitats, and *O. oenanthe*, which favored the higher altitudes, largely subalpine.— Leon Kelso.

25. Quantitative relations between hole-nesting and open-nesting species within a passerine breeding community. O. Kogstad. 1975. *Norwegian. J. Zool.*, **23**(4): 261-267. (In English.)—A 9 ha coniferous forest area, was supplied with varying numbers of nest boxes over an eight year perod. As the numbers of hole-nesters increased, the number of open-nesting species decreased. Comparison with a control area of 110 ha lacking nest-boxes showed the same relationship. The apparent increase in the ratio of hole-nesters to open-nesters suggests that some competitive interaction exists between the groups, but beyond that the interpretation is in doubt.—Leon Kelso.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(See also 8, 29, 45)

26. A reward band study of mallards to estimate band reporting rates. C. J. Henny and K. P. Burnham. 1976. *J. Wildl. Manage.*, **40**(1)- 1-14. —Reward bands ($10) were placed on 2,122 juvenile Mallards (*Anas platyrhynchos*), and 11,490 others received conventional bands (controls) during regular banding operations (July to September 1972 and 1973) at 76 sites in 16 states of the United States and 5 provinces of Canada. The ratio of conventional (control) bands to reward bands applied was approximately 9:1 in the U.S. and 4:1 in Canada. The purpose of this study was to investigate further band reporting rates, which are important in estimating waterfowl harvest by hunters. Specific questions to be answered were: (1) Is the estimate of the current band recovery reporting rate accurate? and (2) Does the reporting rate vary among locations in North America?

The reporting rate for band recoveries was found to be dependent upon three major factors: (1) the intensity of the banding effort in the region (frequency of banded birds in the population of the region), (2) the distance banded birds were recovered from the banding site, and (3) band collecting activities of conservation agencies (usually near banding sites). Total band reporting rate in 1972 and 1973 was approximately 34% within 32 km of the banding site and 45.2% at distances greater than 32 km. At all distances from the banding site, there has been a moderate decline (of 6 to 10 percentage points) in the total band reporting rate in the last two decades. Band reporting rates were generally higher in western areas than in eastern areas.

The authors examined additional Mallard recovery data from 1957 through 1973 and presented their recommendations for adjusting band recoveries to account for the nonreporting of bands during this period.—Wayne R. Marion.

27. Range improvement practices and Ferruginous Hawks. R. Howard and M. Wolfe. 1976. *J. Range Manage.*, **29**(1): 23-37.—For both recent practices in rangeland management, which have been changing rapidly, and a summary of previous and new information on *Buteo regalis*, this paper is a "must" for any future compendium on Western American raptors. The additional research on its food habits is especially extensive and detailed.—Leon Kelso.

CONSERVATION AND ENVIRONMENTAL QUALITY

(See also 45)

28. Organochlorine pesticide residues in small migratory birds, 1964-73. D. W. Johnston. 1975. *Pestic. Monit. J.*, **9:** 79-88.—A total of 908 individuals of 19 species, which were killed at television towers or tall buildings during migration, was analyzed for ΣDDT (p, p′-DDT, p, p′-DDD, and p,p′-DDE), dieldrin, and PCBs in adipose tissue, liver, and brain. Within species comparisons between males and females, adults and immatures, and northbound and southbound migrants were inconclusive. ΣDDT concentrations were highest in adipose tissue, but these have been declining since 1970. Species feeding on or near the ground tended to have greater ΣDDT burdens. While all but one sample (a single individual) contained DDE, only 60 of the 128 samples contained dieldrin, and none contained PCBs.—Bertram G. Murray, Jr.

29. Bird hazards to aircraft. G. van Tets. *Austral. Nat. Hist.*, **17**(6): 187-190.—In over 800 avian airstrikes in Australia and New Guinea birds of less than 2 lbs. weight comprised 94% of the victims; 2 to 8 lbs., 4%; over 8 lbs., 2%. Apparently, the probability of strikes decreases with plane altitude, while simultaneously the likelihood of severe damage to planes increases with altitude in those strikes that do occur. "There is still no simple solution to the problem of bird-strike hazards to aircraft, and it is unlikely that there ever will be."—Leon Kelso.

PHYSIOLOGY

(See also 11, 18)

30. Aspects of circulatory physiology of montane and lowland birds. C. Carey and M. L. Morton. 1976. *Comp. Biochem. Physiol.*, **54A:** 61-74.—This paper reports an extensive survey of some organ weights and hematological parameters in several montane and lowland populations of 35 species of North American birds. Size measures analyzed were body weight, heart and lung weights, and tarsometatarsal length, as well as relative measures derived therefrom. Hematological parameters studied were red blood cell count, hemoglobin concentration, hematocrit, and derived measures. Montane species averaged higher than lowland species on most parameters (heart weight 11%, lung weight 34%, red blood cell count 23%, hemoglobin concentration 17%, and hematocrit 7%) but not on body weight or tarsus length. Regression analysis showed lung and heart weights to be higher in montane than in lowland species, even when weight differences were allowed for and when comparison of congeneric species or of conspecific populations confirmed the taxonomic independence of the effect. However, comparison of American Goldfinch (*Spinus tristis*) populations in winter and summer showed a winter increase in blood characteristics comparable in size with the increase with altitude. It is therefore unsafe to attribute the observed physiological differences to adaptation to oxygen deficiency rather than to the reduction in ambient temperature also associated with a montane situation. Finally, species migrating seasonally between high and low altitudes are shown to retain the high altitude parameter values appropriate to continuous residence at these altitudes.

There is much more in this interesting paper than can be summarized here. Like most good research it raises more questions than it answers.—Raymond J. O'Connor.

31. Caloric intake of nestling Double-crested Cormorants. E. H. Dunn. 1975. *Auk*, **92**(3): 553-565.—Topics covered in this paper include feeding frequency and food consumption, digestive efficiency, and energetic equivalents of the fish eaten. Feeding frequency per chick declined with nestling age, although not significantly so, and, in the first half of the nestling period. with brood size, although again the correlation was weak. Meal weights increased sigmoidally with age, levelling off about 60 percent of the way through the nestling period. Digestive efficiency increased slightly with age, although measurements were not possible over the first 10 days when semi-liquid foods are fed to the chick by regurgitation. Caloric values of prey fish averaged 1.14 kcal/g fresh weight. The data were combined to calculate the energy uptake of nestlings throughout the nestling period. This budget showed that energy intake at no time exceeded that estimated for free-living nonbreeding adults.

This paper shows clearly that energy intake cannot be adequately estimated from biomass intake. Variation in the energy content of foods fed the young at different ages and in the digestive efficiency of the young can prove significant factors. The paper is also useful for its determinations of the caloric content of various fish species as these average well below the 1.42 kcal/g fresh weight calculated for fish by Ricklefs in a recent review (*Publ. Nuttall Ornith. Club*, **15**: 157, 1974).—Raymond J. O'Connor.

32. The effect of intraocular ablation of the Pecten oculi of the chicken. V. Brach. 1975. *Invest. Ophthalmol.*, **14**(2): 166-168.—The pecten of 20 leghorn chickens was "unilaterally ablated" by microelectric surgery. Although the pecten was totally destroyed in 13 of the 20, the retina remained histologically normal. All the subjects retained the pupillary reflex and could pick up food and avoid objects when the control eye was covered. The intraocular pH of five averaged 7.35 in those operated on and 7.56 in controls. It is suggested that the pecten's function is not nutritive but instead "may be related to intraocular pH regulation."—Leon Kelso.

33. Sugar concentrations in nectars from hummingbird flowers. H. Baker. 1975. *Biotropica*, **7**(1): 37-41.—The conclusion in two recent papers (Percival, *Biotropica*, **6**: 104-129, 1974; Watt, Hoch, and Mills, *Oecologia*, **14**: 353-374, 1974) that sugar concentrations in hummingbird flower nectar tend to be unusually high is contradicted, with elaborately detailed evidence.—Leon Kelso.

34. Variation in body weight, fat-free weights and fat deposition of Starlings in New Zealand. J. D. Coleman and A. B. Robson. 1975. *Proc. N.Z. Ecol. Soc.*, **22**: 7-13.—Seasonal variations in live weight, fat content, liver size, and gizzard content weight were studied in a New Zealand population of *Sturnus vulgaris*. Adult weights were largest in winter and least in summer; first-year weights were largest in spring. Males were heavier than females on the average. Liver weights also varied seasonally, more or less in parallel with total weight. Fat content was highest in winter in both sexes and, within age and seasonal groups, correlated with fat-free weights. Gizzard contents varied in a complicated fashion with season, probably because of age-specificity of foods of different water content.

The results largely parallel those reported for other populations of this species.—Raymond J. O'Connor.

35. Seasonal differences in resting metabolic rate of *Turdus merula*. H. Biebach. 1975. *Die Naturwissenschaften*, **62**(8): 398-399.—Two groups of European Blackbirds were kept for one year at 22° and 12°C under seasonally normal photoperiods. Oxygen consumption was determined at night during seven periods of the annual cycle at 22°, 15°, 0°, and —20°C. At all test temperatures, birds in both groups responded similarly. At lower test temperatures, metabolism was elevated to a greater extent during summer (long days) than in winter (short days). Biebach attempts to relate these seasonal differences directly to a photoperiod effect on resting metabolism (short days lower resting metabolism). Unfortunately, the resting metabolism does not show a significant seasonal difference so that the only indirect conclusion really supported in this study is that insulation varies between summer and winter. The author still uses BMR, a concept not applicable to birds. The figure contains incomplete information about the indicated measures of variance (are these statistics graphed around the mean, or to each side, etc.?).—Carl W. Helms.

36. Migratory fattening—Endogenous control and interaction with migratory activity. P. Berthold. 1975. *Die Naturwissenschaften,* **62**(8): 399.—During the fall migratory period, the fat reserves (body weight) of 10 Garden Warblers (*Sylvia borin*) were reduced by the restriction of food supply. In comparison with 10 control birds, weight was reduced to apparently normal late fall levels (from nearly 30g to below 20g) for a period of about two weeks. Upon restoration of *ad libitum* feeding, weight did not "overshoot" control levels nor was the period of higher weight related to the migratory condition lengthened. There was also no reduction of nocturnal activity. Berthold concludes that the temporal course of migratory fattening is under endogenous control. This rather simplistic conclusion deserves further investigation.—Carl W. Helms.

MORPHOLOGY AND ANATOMY

(See 39)

PLUMAGES AND MOLTS

(See also 42)

37. A model to explain molt-breeding overlap and clutch size in some tropical birds. M. S. Foster. 1974. *Evolution,* **28**: 182-190.—Foster draws attention to the paradox that many tropical species molt while breeding yet lay small clutches. Why do these species not divert the energy used in the molt to an increase in clutch size? Foster's suggestion is that the molt-breeding cycle overlap allows the breeding season to be extended sufficiently to get an extra nesting attempt in, and that the extra nestings are of selective advantage in the high predation *milieu* of the tropics. Calculations based on reasonable assumptions about typical durations of breeding attempts and molt show that species with a small clutch and overlap leave more offspring than do species with a clutch size one egg larger and no overlap, provided only that egg or nestling mortality is high enough. The exact levels vary with clutch size.

Foster presents the results of simulations for both single-brooded and double-brooded species, and both support her argument. However, if my reading of her text is correct, her graphs for the double-brooded case need amendment, as she appears to have made no allowance in her model for fledgling mortality during the molt period for the non-overlap case. That is, breeding success for the non-overlap case is assessed at a point 10 weeks (the assumed molt period) earlier than in the overlap case. The effect of this correction is to strengthen the predictions of her model, by allowing a greater range of mortality rates to favor the overlap species. It is interesting to note essentially the same idea, albeit less well-developed, in a paper by Fretwell, Bowen, and Hespenheide (*Ecology,* **55**: 907-909, 1974), published about the same time as Foster's. One must also wonder whether molt might not be less costly in energetic terms in the tropics, if carried out in warm weather there. If so, the adjustments demanded of clutch size to permit overlap would be minimized. We really do need a lot more study of avian physiology in the tropics.—Raymond J. O'Connor.

ZOOGEOGRAPHY AND DISTRIBUTION

(See 44, 46, 48)

SYSTEMATICS AND PALEONTOLOGY

38. Dinosaur polyphyly and the classification of Archosaurs and birds. R. Thulborn. 1975. *Australian J. Zool.,* **23**(2): 249-270.—The thesis that birds were derived from "theropod dinosaurs" is accepted. A new classification of Archosaurs and birds is presented whereby the theropod ancestors of birds are transposed to class Aves; other dinosaurs are left in the reptilian subclass Archosauria. This purportedly emphasizes a dinosaurian ancestry for birds "but still manages to retain the stability of conventional classifications." One theorist (Ostrom, 1974) suggests that "enlarged feathers developed on the forelimbs of 'proto-*Archaeopteryx*' as devices to trap insect food." This, the writer admits, leaves the reptilian-avian boundary to rest upon relatively minor anatomical distinctions.—Leon Kelso.

39. The "Owlet" of Sao Tome Island. (Le "Scops" de l'Ile de Sao Tomé, *Otus hartlaubi* (Giebel).) R. de Maurois. 1975. *Bonn. Zool. Beitr.*, **26**(4): 319-355. (In French with English summary.)—The collection of additional specimens of this species, recently regarded as extinct, or insufficiently distinct to be worthy of recognition, occasions 36 richly printed and illustrated pages. This should affirm the present popularity of owls and confirm another valid species in the world list. Comparisons with other related species are emphasized, and many osteological details are described and illustrated. "More peculiar is the fact . . . that the skin is bare all along the tarso-metatarsus on its back side. . . . Nevertheless, if the unfeathered skin along the back side of the tarsus is of some phylogenetic significance . . .the author suggests that the inclusion of a new sub-genus *Soter* . . . may be justified: there are several cases of related species on both west and east sides of Africa; and the similarities between them and Asiatic forms, despite biogeographical dispersion, may not be due to mere convergence." However, bareness on the *back* of the tarsus may be conditioned by humidity of the nest cavity floor in contact as the bird crouches there during late months of growth, particularly so in the case of yearling individuals. This was found to be evident in the American *Otus asio*.—Leon Kelso.

40. Evolutionary and taxonomic relations between Black-eared and Pied Wheatears. (Evolyutsionnye i taksonomicheskie vzaimootnozheniya mezhdy chernopegoi kamenkoi, *Oenanthe hispanica*, kamenkoi-pleschankoi, *O. pleschanka*.) E. Panov and V. Ivanitskii. 1975. *Z. Zhurn.*, **54**(12): 1860-1873. (In Russian with English summary.) —These allopatric, open country species are in contact over a broad area, particularly around the Black and Caspian seas. Their relationship is elaborated for possible application to other, similar cases. Evident is some hybridization, limited by time of spring arrival and nesting choice, or niche. A restricted population on Mangyshlak Peninsula shows long-standing hybridization, which has led to progressive absorption and disappearance of a previous form (*hispanica*). This may have been favored by absence of ecological barriers and similarity of vocal and nuptial behavior. Of the mixed population, *hispanica* is 3%; *pleschanka* is 73.6%. The remainder (23.5%) comprise "phenotypic hybrids of 6 different color variants." The specific distinctions of *hispanica* are regarded as confirmed despite the frequent hybrids.—Leon Kelso.

EVOLUTION AND GENETICS

(See 13, 37, 38, 40, 43)

FOOD AND FEEDING

(See also 27)

41. Comparative feeding ecology of the Varied Tit, *Parus varius* and *P. v. owstoni*, Igu Islands. H. Higuchi. 1975. *Tori*, **24**(97/98): 15-78. (In Japanese with English summary.)—A study notable for the variety of animal, mostly insect, foods detailed. During the winter food storage is resorted to, even in captivity. The chief item chosen is a "nut" *Castanopsis cuspidata*.—Leon Kelso.

BOOKS AND MONOGRAPHS

42. Naturalist's Color Guide: Part I, The color guide; Part II, the color guide supplement. Frank B. Smithe. 1975. New York, American Museum of Natural History.—Part I, 23 unnumbered pages, including 86 color swatches; Part II, 229 p. Part I, $9.00; Part II, $5.00.—When I received my copies of "Naturalist Color Guide," I felt as if I was at last the possessor of the decoder ring for which I sent in my cereal boxtops. Now this may seem like a facetious way to start a serious review, but I believe it explains my enthusiasm for this Guide. First, let me describe what the "Naturalist Color Guide" is. It consists of two volumes, one a small looseleaf notebook mainly of pages of color chips and a second backup reference text. Volume one contains 86 chips, each representing a different color, arranged along the margins of eight pages. On several pages each color is identified by a "Munsell" notation. The Munsell notation is measured by a recording spectrophotometer, which measures the spectro-aspects of color in terms of wavelengths of light and in terms of the relevant reflectance or energy recorded for each wavelength. From this, one can derive a notation of the color in three units, hue, value and chrono. Hue refers to the position of the color in a scale of 10 color ranges that include red, yellow, blue, green, and so on. Value refers to the position of the color in a scale of light and dark. Chrono is the intensity of the hue included in the color, either very intense, highly saturated color or weak or grayish color. This is very helpful because one can then assign a numerical value to a color description and also can provide a similar value to a color chip, such as are included in the first volume of the "Naturalist Color Guide." If the chip fades through the years, reference to the notation can indicate at least how the color was first prepared and what was its original value. These brief reference pages and the marginal color chip pages are packaged in the looseleaf notebook, which is about 14 x 22 centimeters and will fit nicely into field jacket pockets.

The second volume reflects what must be a labor of love. It includes discussions of every color presented on the color chips and references to the use of this color in the Ridgway volumes of "The Birds of North and Middle America." When I say references I am understating the fact, because every time a particular color is mentioned in Ridgway, Dr. Smithe has noted it in a discussion of that color. So, for example, on fuscous, which is used to mean all sorts of shades of brown by various people, Dr. Smithe has two and a half pages of references to Ridgway's use of fuscous and related colors such as fuscous black and dusky or sooty brown. Smithe's second volume thus provides the backup material for the first volume of the color chips, together with confusing related color names. Further, by refering the color to a bird, he provides us with an additional subjective understanding of the color. For example, in discussing smoke gray, Dr. Smithe selects Ridgway's reference to the Townsend Solitaire, whose upperparts are described as varying drab gray or smoke gray. So, if you are familiar with Townsend Solitaires, you have some idea of the kind of color smoke gray is without referring to the color chip. The second volume also includes a discussion of previous color standards, color systems, or color charts, which have been used by naturalists in describing colors of birds and other natural objects. The main problem, which Smithe points out, is that the extensive color standards of Ridgway are not easily obtainable, and the color of the swatches may have changed over the years. The more readily available color chart in the *Handbook of North American Birds* is really about the only effort since Ridgway's to publish a color guide for ornithologists, as Smithe notes, but there are not enough choices to perform the kind of job that the more extensive "Naturalist Color Guide" can perform.

The supplement also includes discussions of color terminology, how colors were determined, tabulations of colors and related colors, and a correlation to Ridgway's colors with another color system, which I will not discuss, called Villalobos System. What we have then is the first new, extensive, readily available color system. This means that we now have a coding system available whereby we can all talk "more or less" the same language in describing a bird's color, eye color, or, for that matter, in describing the colors of butterflies or flowers or objects that are subjected to taxonomic description and identification. The more-or-less restriction, I should explain, is due mainly to the problems of viewing colors under different lighting conditions. In using the Color Guide with a live bird, I have used high intensity incandescent light. I have checked the decisions made under that light source by taking the bird out in the bright sun, and I have not found any significant deviations. Let us say that, under most circumstances, if I pick out the back of a Blue Jay as being Cyanine Blue, color # 74, it seems to match that color under high intensity incandescent light and in direct sunlight.

I have tried the "Naturalist Color Guide" on a number of birds trapped or netted in banding projects of the last several months. I have also compared the use of the "Naturalist Color Guide" with that of the Munsell Soil Colors. The latter volume of 7 pages is used by many banders in an attempt to record eye color variations in selected species.

I should point out that in the Munsell Soil Color charts, the 7 pages and 197 chips have a limited range in that they all center around what one might loosely describe as browns and yellow browns. For example, the notations deal only with three hue areas, red, yellow red, and yellow, whereas the "Naturalist Color Guide" ranges through those hues as well as green, blue green, blue, purple, red purple. Thus, in the "Naturalist Color Guide" the color range is sufficient to be useful in describing the more vivid plumages, something not possible unless one purchases additional charts from the Munsell series. The Munsell Soil Color chart, however, provides a more subtle range of colors within these hue limits than does the "Naturalist Color Guide" for the same hues. Differences between some of them, especially in the brown areas, are slight, and matching these with the eye of a bird becomes tricky. I think the Munsell Color Guide tends to force decisions on me of a subtlety that I probably cannot defend. I found, when working with the "Naturalist Color Guide," that although the eye colors of the live bird might not exactly match a given chip in the color guide, it was close enough that any distinct deviations could be referred to another chip. In the Munsell I found I had to spend a lot of time trying to figure out just which color was closest to the eye color of the bird because the differences in colors are so slight.

This decoder "ring" provides a way in which we can use a certain amount of quantitative notations in a code, which can be decoded by someone else who has the "Naturalist Color Guide." Color descriptions may lose some information because the description used by an author may mean something else in the mind of a reader. Some information is lost because the receiver does not have the same decoder used by the sender of the coded message. A good example is discussed by Smithe in reference to the color, olive green. In the "Naturalist Color Guide" he provides a basic olive green chip and then a two-chip variation from that. As he points out, you would think that olive green is something that everybody could agree on and confidently apply to a feather color. He indicates that a study of many of the birds called olive green indicates a "misplaced confidence, perhaps even a degree of looseness in its use." So, by reference to the "Naturalist Color Guide," I feel that some confidence can be reestablished for the use of the term olive green. And again we have the situation in which the message given in code by the sender can be decoded by the receiver with a certain degree of consistency.

This system should be extremely helpful not only for the taxonomists but for those involved in handling and describing live birds, such as bird-banders. For example, in determining the sex of Starlings, the "Guide to Sexing and Aging," by Merrill Wood, mentions that in the spring the base of the bill of the female is pinkish and the base of the bill in the male is bluish. Normally, we would not have a problem in distinguishing pink and blue, but the pastel nature of these colors might cause some confusion. I think it is clearer and more communicable description to say that the bill of the female centers around the color # 7 pink, whereas the color of the base of the bill of the male centers around color # 77 lavender.

Already Smithe's color guide is in use. The January-February 1976 issue of *Birding* has a discussion by H. Douglas Pratt on identification of (breeding) White-faced and Glossy ibises. The facial skin of the White-faced is described as bright Carmine, that of the Glossy as Plumbeous, margined above and below with Pale Sky Blue. By reference to my Color Guide, I have little doubt as to what Pratt means.

I have found yet another use for the "Naturalist Color Guide," namely to check the accuracy of color photographs or paintings of birds. Perhaps I should say, more accurately, to check the quality of the reproduction. I am doing this now for a colorful volume under review. I found the Guide extremely helpful in making a critical assessment of that book, which features color paintings of birds but which because of the printing process presents some strange color variations from life.

The only problem that I have found in using the "Naturalist Color Guide" is that some of the chips have cracked at the very edge, producing an annoying series of white spots or white lines, which can only be overcome by putting the bird or the feather over the chip itself or holding the eye directly above the center of the swatch. This appears to be more a problem in producing the Guide than anything else.

The Color Guide comes with a gray mask which can be used to cover over adjacent colors so the eye is not confused with interactions between colors.

All in all, I think this will be a very useful Guide, and I hope that as we increase our attention to fleshy colors of birds, or further redefining plumage variations, this will become the "decoder ring" that all of us may use and thus approach some sort of uniformity of visual understanding. A final caution should be made. As Smithe clearly states, the notations may create an impression of too rigid a nature, especially when Munsell notations are used. Such precise accuracy is arithmetic only, and as far as color is concerned it should be discounted. Smithe points out that a given color can be regarded as a central point of a family of colors which range around the focal color. Problems of this kind are discussed in the "Naturalist Color Guide" supplement.—Jeff Swinebroad.

43. Competition and the Structure of Bird Communities. Martin L. Cody. 1974. Princeton, Princeton University Press. 318 p. $6.95 (paperback)—Classically, competition has often been studied as a simple all-or-nothing phenomenon. More recently, ecologists have become aware of the widespread occurrence and importance of competition between species coexisting in the same community. In light of that, Martin Cody's book (seventh of the Princeton Monographs in Population Biology) at first sight looked very interesting, for it considered competition not only in its most extreme effects (i.e., the exclusion of a species by competitors) but also in its more subtle effects within communities where competitors coexisted. However, the number of mistakes and questionable interpretations of data presented in the text make the book a disappointment.

The first chapter ("Resource Division and the Niche") is a discussion of the various ways that resources, especially food, can be divided among competing bird species. The chapter ends with a nice discussion of niche theory. Cody points out that the competitive exclusion principle has been overworked, and that the meaningful question is not whether the competitive exclusion principle is being violated; rather, it is how much overlap in resource utilization can be tolerated by competing species.

The second and third chapters ("Niche Breadth" and "Niche Overlap") are quantitative treatments of niche theory. These chapters are largely devoted to a fitness model that predicts patterns of resource use, to discussions of how niche size can be measured, and to ways of estimating niche overlap. These two chapters contain many errors. On page 58, line 21, the critical value of p^* is actually $K\ (ln\ W)/[K - 1)\ (ln\ q)]$. On page 60, line 21, the exponent of qW in the numerator of the equation for the oak generalist should be $2(1 - K)$, and not $(2 - p)\ (1 - K)$ as is printed. On page 64 Cody misinterprets the results of a chi-square test and incorrectly accepts the null hypothesis that the Black-throated Gray Warbler is a generalist. In Figure 23 the ratio of body/bill size is decreasing, not increasing as stated. The lines in Figure 31 are labeled incorrectly; the proper values can be found in the text. On page 102 the (hand-drawn) line through the variance values in Figure 34 and the interpretation of that line in the text are not justified by the data points on the graph. The two different symbols in Figure 38 are never identified. The two graphs in Figure 39 seem to contradict Cody's statements interpreting them; perhaps 39a and 39b should be switched. On page 127, Cody cites statistically insignificant data as supporting a theory which predicts that statistically significant trends would be found.

In Chapter 4 ("The Variable Competitive Environment") Cody discusses the outcome of competition as a function of which particular competitors cohabit the environment. Much of this chapter is devoted to spurious use of the community matrix as a tool in ecological research. Cody neglects to mention that the only study published prior to 1974 (Wilbur, *Ecology*, **53**: 3-21, 1972), which had critically examined the community matrix concept with regard to metazoan populations, rejected the concept because it assumes (incorrectly) that the magnitude of competition between a particular pair of species is constant, regardless of community composition. A more recent study (Neill, *Amer. Nat.*, **108**: 399-408, 1974) has confirmed the invalidity of that assumption. In fact, Cody's own data in the appendices of the book show that the community matrix cannot be used as Cody has used it. About 90% of the species pairs that occur together in more than one community have niche overlap values that differ by more than 5% from community to community (when it is assumed that the values are constant from community to community). Nowhere in the text does Cody suggest that the concept of the community matrix might be less than viable for predicting population densities in bird communities. In Table 8 where Cody compares predictions of population densities (based on a mainland community) with the observed values (from an island community) to demonstrate how operable the community matrix is, only 4 of the 9 species that occur on both the mainland and the island are mentioned. Judging from the data in Table 7, the other 5 species would not have fit the predicted pattern. None of the 5 showed drastic increases in density, although the theory predicts that at least two of the five species would have greatly increased in density in response to the reduced competitive regime. Such omission of "bad" data, especially when the "bad" points are a substantial portion of the data, is negligent at best. Figure 51 does not have any explanation of several symbols until 101 pages further in the text.

In Chapter 5 ("Parallel and Convergent Evolution") Cody discusses the effects competition can have on the evolution of bird communities in areas that are ecologically similar but geographically and taxonomically distant. Community similarity has evolved, as illustrated by the grassland bird communities of Kansas and Chile. However, in beech forest bird communities, unexpectedly, the population densities of birds with similar niches in different forests are not highly correlated (7 of the 10 pairs of forest communities have essentially no correlation between the population densities of similar ecological guilds in different forests). Cody concludes that competition can cause parallel and convergent evolution of communities, but it by no means always does.

In Chapter 6 ("Alternatives to Competitive Displacement Patterns") Cody discusses interspecific territoriality, interspecific flocking, and related phenomena. Interspecific feeding flocks are proposed to be a "strategy" for optimally exploiting food resources that are continually being renewed (e.g., local concentrations of seed plants that are continually ripening). On page 211 Cody mentions a community that differs from the predictions of MacArthur's "broken stick" model of community diversity patterns, without mentioning that the "broken stick" model has been abandoned by MacArthur (*Ecology*, **47**: 1074, 1966). On page 217 the statements based on Figure 64 are rather dubious interpretations of the graphs, especially considering the small amount of data presented for residents of communities with unpredictable resources. The equation of page 220 for r when $N = 1$, is incorrect; the correct equation is $r = 2K(1 - \propto)/(2\sqrt{2} - 1 - \propto)$. Consequently, Figure 68 is incorrect, but the correct graph is similar enough that neither the discussion of Figure 69 nor its relevance to the theory needs to be changed.

Other comments and criticisms of Cody's book can be found in Kreb's review (*J. Anim. Ecol.*. **44**: 923-924, 1975). I have not duplicated any of his criticisms. I would like to add that Kreb's criticism of Cody's method of calculating vertical foraging height distribution (i.e., 1,000 seconds of observation/species) is probably invalid. Krebs watched a tit feed on the ground for 8 minutes and felt that Cody's analysis would present the tit as a predominantly ground-feeding bird. In Cody's defense, it should be pointed out that he limited single observations to a maximum of 60 seconds (p. 30-31) in an attempt to minimize the collection of aberrant data.

All in all, Martin Cody's monograph is a disappointment. The book contains several very worthwhile sections and much interesting data. However, the number of errors, incorrect statements, improperly cited references, and dubious discussions are disheartening. Consequently, in the passages where Cody's contentions occasion doubt, one often chooses to disbelieve Cody on the basis of his performance in the rest of the book. However, those who are studying the structure and functioning of avian communities will need to refer to this monograph in their attempt to cover the literature completely and will want to read it for its many ideas.—Christopher H. Stinson.

44. Scarce Migrant Birds in Britain and Ireland. J. T. R. Sharrock. 1974. T. & A. D. Poyser Ltd. Berkhamstead. 191 p. £3.80.—This book is essentially a reprint of a series of 10 papers published in *British Birds* between 1969 and 1973, together with some additional illustrations. Sharrock analyzed the records of 24 species of "scarce" migrants—i.e., those species rare enough for each occurrence to be recorded, but numerous enough to justify statistical analysis—in Britain and Ireland during a 10-year period from 1958 to 1967. Some 7,000 individual records were available, and these were analyzed in great detail. Geographical and temporal patterns of occurrence are summarized in 130 figures and 14 tables. Each species displays distinctive patterns of occurrence. These are related to the breeding ranges and migration patterns of the various species. Inferences are drawn about the reasons for the birds' occurrence, including "over-shooting" on spring migration, lateral displacement or drift, reversed migration in autumn, and perhaps random postbreeding dispersal.

North American readers will be most interested in Chapter 5 on American birds. Discounting Sabine's Gull (*Xema sabini*), which properly should not be in this chapter, the Nearctic species most frequent in Britain and Ireland are shorebirds (512 records in the 10-year period), including Pectoral Sandpiper (*Calidris melanotos*, 269), dowitcher species (49, including a substantial fraction of Long-billed, *Limnodromus scolopaceus*), White-rumped Sandpiper (*C. fuscicollis*, 47), Buff-breasted Sandpiper (*Tryngites subruficollis*, 40), Lesser Yellowlegs (*Tringa flavipes*, 29), Wilson's Phalarope (*Phalaropus tricolor*, 27), and Baird's Sandpiper (*C. bairdii*, 22). Many of these birds were found in southwestern Britain and Ireland following equinoctial gales, and Sharrock attributes their occurrence to "transatlantic crossings initiated and/or aided by westerly gales." However, he does not address the fact that the species list is unlike any collection of shorebirds likely to be encountered anywhere in eastern North America. The principal common feature of these species is that they are nearly all trans-equatorial migrants. A small but significant group of records of American shorebirds also occurs in eastern Britain in early autumn. These include a number of Pectoral and Baird's sandpipers, and Sharrock suggests that the birds involved may have come from the Siberian part of these species' breeding range.

The North American landbirds recorded in Britain and Ireland (70 in 11 years) look more like a random selection of long-distance migrants from the East Coast. Most of the records are of warblers, vireos, orioles, and thrushes, which usually occur in western Britain and Ireland in a short period during October. American Robins (*Turdus migratorius*) usually occur in winter, and most records of sparrows and juncos have been in spring. At least the latter are probably attributable to crossings on ships. Records of Yellow-billed Cuckoos (*Coccyzus americanus*) have become much less frequent in recent years.

This book goes some way towards making rare-bird hunting respectable by showing that records of scarce birds fall into patterns that are the subject of legitimate scientific analysis. Nevertheless, the insights into mechanisms of bird migration gained through this analysis are quite meager in comparison to the hundreds of thousands of man-hours expended in gathering the data. Rare-bird hunting still remains primarily a sport, although this book testifies both to the large number of participants and to their interest in rational underpinnings for their pastime.—I. C. T. Nisbet.

45. Biological Fundamentals of Averting Avian Plane Strikes. (Biologicheskie osnovy predotrashcheniya stolknovenii samoletov s ptitsami.) V. E. Yakobi. 1974. "Nauka" Press. Moscow. 166 p. (In Russian; price uncertain.)—On 6 October 1960 a "Baltimore-bound Electra" was lifting off from Boston's Logan Airport. It took a sharp turn and plunged into Boston Harbor. Its human mortality was 62 passengers. Hoisted out of the harbor, the jet engines were found to be clogged with Starling feathers and flesh. Overall costs of this crash exceeded $5,000,000. While this may be the most sensational to date of known bird collisions, or "strikes," their frequency is increasing worldwide.

Their study has become a science no longer new, as attested by 397 titles in the bibliography. The introduction includes a discussion of history, hazards, and damage. Chapter I analyzes avian plane strikes as to type, with diagrams (i) recording spot of impact; (ii) showing seasonal patterns, more in spring and fall; (iii) daily pattern, more frequent in the forenoon; and (iv) only 3.2% by helicopters. There is an analysis of strikes as related to plane velocity; most occur at 150 to 200 km/hr. A "medium sized gull" at 320 km/hr delivers 3,200 kg impact; at 960 km/hr, 38,800 kg impact. As to flight pattern, most occur on takeoff or landing, mostly at low altitudes, 20 to 600 m. The species list of bird victims includes a broad variety of birds but identity is often doubtful. Proportions of pigeons and corvids are high, but worldwide, gulls have scored more damage. Chapter II queries, what draws birds to airports, and how to make them unattractive to birds? The main attractants are food, both vegetable (particularly cereals and weed seeds) and animal (insects, and particularly rainworms), garbage dumps (becoming more numerous and spacious as human population pressure increases), nesting sites (almost any man-made structure at an airport), and resting and roosting sites (birds accommodating themselves even to radar towers and reflectors).

Chapter III is Effective bird repellents at airports and includes pyrotechnic means (rockets) for flushing birds; acoustic means of repelling birds; review of work abroad; experience with acoustic bird repellents in USSR; results of testing; frequency analysis of birds' fright calls; use of chemicals for control and repellence; use of raptors and dogs; use of various objects for repelling birds; bird reactions to radar beams and radar use for dispersing birds (desirable but experimental results very inconsistent and controversial). A combination of various means is recommended for each airport.

Chapter IV is Radarlocation of bird flights and includes radar - a new effective mode of bird flight research; radarlocators and their possibilities for ornithological observation (reviewed); radar beams of 3, 10, and 23 cm bands; modes of radarlocating observations; determination of velocity and direction of target; photorecording from rotating reflectors; bird identification on radar screens; general results of radar beam research; perfection of techniques of perception and identification of birds; flight altitude, breadth of flight front; migration time; windward flight; numerical estimation of bird flights; weather-flight relation and forecasting; gregarious behavior of birds; radar as a main mode of averting avian plane strikes away from airports.

The conclusions following this include a discussion of human aircraft in the birds' environment as a novel factor. A major role in averting collisions with them is experience. This may be acquired directly or by imitation, from parents to young, or by imitation through groups, the experienced signaling to the inexperienced. Noting a stereotype behavior, as seen in the so called "aerial ballet" of Starling flocks around a swooping raptor, the group control does not afford scattering. Around a flying raptor they form a "vacuole." With flying aircraft such tactics "invite disaster," if no individuals accustomed to the sight of aircraft are in the flock. The author is convinced that inexperienced birds make up the bulk of plane collision victims. It is suggested that postbreeding wandering habituates young and adult birds to orienters whether for astronavigation or not. These experiences serve for safety and guidance in future distant flights. Group experience occurs more readily and effectively in flocks. All measures known at present cannot guarantee total elimination of bird collisions. Even less is the possibility of eliminating strikes away from airports, particularly on flights at low heights. Most radar is airport based, with beam radius of only 80 to 100 km, and within that flocks may change course or altitude. Some radar is apparently "seen ' by small birds but it does not control their direction. It is stated that reduction of bird numbers around airports, by various repellents, and use of radar for tracking and warning movements of migrant flocks have decidedly reduced the number of avian plane strikes in USSR.—Leon Kelso.

46. Birds of South Primor. (Ptitsy Yuzhnogo Primorya.) E. Panov. 1973. "Nauka" Press. Siberian Division, Novosibirsk. 376 p. (In Russian.)—"Southern Ussuriland" is an alternate geographic term for this little studied and not commonly explored area of the remote "Far East," and this recent book should be of at least historical significance, even though not readily available. The abundant field notes and extensive discussions of ecological aspects center around a local Soviet national reserve, "Kedrovaya Pad" (in English - "Cedar Falls"), but are applicable to surrounding areas. There are 52 black-and-white plates, and 42 ink-drawn nuptial display patterns, many tracing aerial evolution forms, a phase of behavior worthy of attention for further study. Following an introduction covering topics on history, geography, climate, and vegetation there is a systematic review, including 377 annotated forms, followed by a review of seasonal aspects of periodic phenomena. Then are added some 36 headings on local observations and discussions thereof on behavior responses as related to local ecological phenomena, rather elaborate for a local ornithology. There is a moderately complete bibliography and indices of Latin and Russian names.—Leon Kelso.

47. The Wheatears of Northern Palaearctic. (Die Steinschmätzer der nördlichen Paläarktis, Gattung *Oenanthe.*) (Kamenki severnoi chasti Palearktikii.) E. Panov. 1974. Die Neue Brehm Bücherei. A. Ziemsen Verlag, Wittenberg Lutherstadt. 128 p. 67 illus. (In German; price uncertain.)—In Eurasia the genus *Oenanthe* constitutes a group that is very complex systematically, ecologically, and ethologically for an aggregation confined to arid steppes, grassland, and tundra for the most part. Their biotope spans that of the Horned Lark (*Eremophila alpestris*) as it occurs in America. This text comprises another in a popular science monograph series. Species included are *O. isabellina, oenanthe, xanthoprymna, picata, finschi, pleschanka, hispanica, deserti, leucura,* and *leucopyga.* The author is a specialist on birds of the Asian Far East-Pacific area, and he is a close observer of nuptial, particularly aerial, display, as demonstrated in illustrations supplied here and in his other book ("Birds of South Primor"). This tome again is luxuriantly printed, with a bibliography of 81 titles. Species are treated under: Introduction, General Considerations, and Systematic Account, with other topics as they occur.—Leon Kelso.

48. Birds of Central Pennsylvania. Merrill Wood. 1976 (2nd ed.). State College, Pa. State College Bird Club, 54 p. $2.00.—This booklet briefly reviews the status of all 279 species of birds recorded within 25 miles of State College, Pennsylvania. Each species is summarized by a few lines of telegraphic phrases that usually include seasonal status, dates, and general habitats. Common species names are used without any scientific name identification. The status summaries are succinct and reflect Wood's years of local experience. Periods of occurrence are given by divisions of the months (e.g., "Early May-late August"). Since the State College Bird Club apparently has dated species records from 1950 to 1975, more specific arrival and departure comments should have been possible with average dates in days, or at least the extreme early and late dates given (c.f., E. L. Poole, 1947. "A half century of bird life in Berks County Pennsylvania"). The habitat comments often refer to specific parks, lakes, and forests that can be located in the introductory gazetter. These locality notes, although exceedingly brief, will be useful for birdwatchers in this region. As a whole, the booklet compares favorably with other such "college area" summaries that are designed for local consumption.—Charles F. Leck.

49. Wonders of the Pelican World. Joseph J. Cook and Ralph W. Schreiber. 1974. New York, Dodd, Mead and Co. 64 p. $4.50. (Available from Seabird Research, Inc., 11008 Teegreen Drive, Tampa, Florida 33612).—This slim book, written for an adolescent audience, recounts the life history of the Brown Pelican, the subject of a long-term study by Schreiber. There is an opening chapter about man's past interest in the pelican in poetry and mythology and a closing chapter on pelican conservation, describing in some detail the effects of DDT and fishline. In between are chapters on taxonomy, which briefly describes the other pelican species, molts and plumages, courtship and nesting, growth of the young, and fishing. Some of this information has only recently been discovered during Schreiber's study. The text is augmented by numerous black-and-white photographs.—Bertram G. Murray, Jr.

50. Wonders of Sea Gulls. Elizabeth Anne and Ralph W. Schreiber 1975. New York, Dodd, Mead and Co. 80 p. $4.95. (Available from Seabird Research, Inc., 11008 Teegreen Drive, Tampa, Florida 33612).—In this book Elizabeth Anne and Ralph Schreiber introduce teen-age readers to gull biology. After a brief introduction to gulls in general and to several of the more common gulls of the Northern Hemisphere, there are chapters on plumages, food and feeding habits, courtship and nest building, and the raising of the young. Although the discussion refers only to "gulls," much of it seems to be based primarily on the Laughing Gull. A chapter describing the gulls' relatives (skuas, terns, and skimmers) and a chapter on gull-human interactions complete the book. The text is profusely illustrated with black-and-white photographs and line drawings, almost all by the authors and the majority of the Laughing Gull. These illustrations are excellent in complementing the text.—Bertram G. Murray, Jr.

51. Another Penguin Summer. Olin Sewall Pettingill, Jr. 1975. New York, Charles Scribner's Sons. 80 p. $10.00.—In 1953-54 Dr. and Mrs. Pettingill visited the Falkland Islands to film a movie, and Mrs. Pettingill wrote a book, "Penguin Summer." They returned to the Falklands in 1971-72 to film another movie, and this time Dr. Pettingill has written a book, "Another Penguin Summer." In contrast to his wife's book, Dr. Pettingill's book is essentially a vehicle for his color and black-and-white photographs, which take up 48 of the 80 pages. The text describes the biology of the five species of penguins breeding on the Falklands (Gentoo, Rockhopper, Magellanic or Jackass, King, and Macaroni) and is based on the author's own observations, there being only two references to other papers on penguins. Nevertheless, there is much to be learned here, especially for those whose knowledge of penguins is limited to the recurring television movies of Adelie Penguins on Antarctica. Despite their similar appearance, penguins show diverse behavior and ecology, much of which is described in the text and shown in the photographs. This is an excellent book for a general audience.—Bertram G. Murray, Jr.