RECENT LITERATURE

Edited by JACK P. HAILMAN

BANDING AND LONGEVITY

(See also 52)

1. Recent Saskatchewan banding of the Double-crested Cormorant. C. S. Houston. 1971. *Blue Jay*, **29**(2): 74-79.—4,838 *Phalacrocorax auritus* were banded at lakes in central and southern Saskatchewan from 1923 through 1969. This report summarizes 152 recoveries of 1,720 birds banded by the author from 1953 through 1969. Whereas birds banded in the 1930's were recovered proportionately more often along the Mississippi Valley, recoveries since 1953 have been more frequently obtained further to the west, from North Dakota through Oklahoma. This difference in locality of recoveries might reflect a real change in the migratory pathway of the species. On the other hand, the author points out that recently recovered birds are reported as "shot" only about one-third as often as for earlier reports. This suggests that at least part of the apparent change might result from a change of bias in source of recovery reports.—Roger B. Clapp.

2. Bird-banding at Hays, Kansas through 1970. C. A. Ely. 1971. Dept. Biol. Sci. and Agric., Fort Hays Kansas State College. 15 pp.—This report gives a history and summary of banding activities from 1924 through 1970. Only 187 were banded through 1959. Since then Ely and his students have banded 19,788 birds, 18,847 of them from 1966 through 1970. Principal species banded from 1966 through 1970 include: Tree Sparrow (*Spizella arborea*) (2,138), Barn Swallow, (*Hirundo rustica*) (1,926), Chipping Sparrow (*S. passerina*) (1,437) and Clay-colored Sparrow (*S. pallida*) (1,366). Data on returns and local recoveries and particulars on foreign recoveries are given in some detail. Occurrence in Ellis County of 13 species was documented solely as the result of netting operations, again emphasizing the value of bird-banding in distributional studies.—Roger B. Clapp.

3. White Stork; longevity record. R. M. Harwin. 1971. *Ostrich*, **42**(1): 81.—A White Stork (*Ciconia ciconia*) flew into an electric powerline in Karoi, Rhodesia and died subsequently on 10 November 1969 at an age of 17 years, 4 months. It had been banded as a nestling at Förstgen, West Germany (51° 18′ N., 14° 40′ E.) on 13 July 1952. The maximum longevity reported for this species in the wild is 19 years, 2 months.—Roger B. Clapp.

MIGRATION, ORIENTATION, AND HOMING

(See also 7, 36, 44, 46, 52)

4. On the possibility of avian orientation by the geomagnetic field. (K voprosu o vozmozhnoi orientatsii ptits po geomagnitnomu polyu.) O. Lutsyuk and G. Nazarchuk. 1971. *Vestnik zool.*, **5**(3): 35-39.—In the fall of 1968, experiments with Robins, *Erithacus rubecula*, in a planetarium, in cages, *Zugunruhe* being observed, under an artificial sky, and in an artificial magnetic field, resulted in the findings that, when the sky corresponded to the natural and the artificial field, was diverse from the natural field, the birds oriented by astro-orientation. When the sky was altered so as to have an unfamiliar appearance, they oriented according to the horizontal component of the natural magnetic field.—Leon Kelso.

POPULATION DYNAMICS

(See also 12, 20, 52)

5. Features of biological systems' organization and a hypothesis for "irruptions" of species in a community. (Osobennosti organizatsii biologicheskikh sistem i gipoteza "vspyshki" vida v soobshchestva.) V. Fedorov. 1970. *Vestnik Mosk. Univ., otdel biol.*, **25**(2): 71-81. (In Russian.)—It is maintained that the biomass of a species in a community is no index of its well-being, contrary to the humanistic view of "the more the better", or merrier. If a species' optimum does not coincide with its maximum numbers in the biomass, what then does determine its optimality? A species cannot persist indefinitely apart from its associates, including the classic triad—producers, consumers, and reducers—and actually overdevelopment of a species evokes irreversible modifications of the medium. These changes must be compensated for, *i.e.*, the medium must be restored, or the species cannot continue there. In a "flareup" or "irruption" of abundance the species overrides the rate of renewal and behaves as in a monoculture. It may be so maladjusted as to be expelled from its own community, only to perish in the communities it invades (*e.g.*, lemming migrations). It is suggested that a species showing sharp fluctuations in numbers is really maladjusted and that its elimination might be only a matter of time.—Leon Kelso.

6. On the population dynamics of the Willow Ptarmigan in Bolshezemelskaya Tundra, on Yamala and Taimyr. (K izucheniyu dinamiki chislennosti beloi kuropatki v bolshezemelskoi tundre na Yamala i Taimyre.) V. Bakhmutov. 1971. *Ekologiya*, **2**(3): 100, 101. (In Russian.).—In a 35-year period, 1935-1969, in the Willow Ptarmigan, *Lagopus lagopus*, population, there were irregularly spaced fluctuations, not wholly coincident, in the Yamala and Taimyr subareas, the declines occurring in 1943, 1945, 1959, and 1969 in the former, and 1954, 1963, and 1969 in the latter. Recoveries proceeded slower than the declines. In a 23-year survey of an area of 1,664,900 km², the kill of the species by hunters totaled 5,400,000.—Leon Kelso.

7. The Nutcracker invasion in 1968 in Nordrhein-Westfalen. (Die Invasion des Tannenhahers (*Nucifraga caryocatactes*) im Jahre 1968.) M. Boecker. 1971. *Bonner zool. Beitr.*, **21**(3/4): 183-236. (In German, English summary.)—This extremely detailed, 53-page report, quite expectedly characteristic of the land of its source, contains even many details on food of the Nutcracker immigrants, but does not depart from the belief that they never get back home to Siberia whence most of them come. The banding data indicating that some of them do return, reported in *Bird-Banding* (**41**(2): 136, review **8**, 1970) was seemingly overlooked. The long bibliography gives striking evidence of the many new journals that have joined the bird world: *Aves, Charadrius, Corax, Falke, Luscinia, Orion, Ornis, Regulus, Vogelkosmos, Vogeljaar*, and *Beitrage Vogelkunde*, to name only the more simply titled. To think that back in 1930 there was complaint of the growing prolixity of ornithological literature!—Leon Kelso.

8. Survival and weight loss of nestling Great Tits, *Parus major*, in relation to brood-size and air temperature. J. H. Van Balen and A.J. Cavé. 1970. *Neterlands J. Zool.*, **20**(4): 464-474.—The tendency toward increasing clutch size as one proceeds northward in Europe has been well documented by Lack and others. Further, early broods in a given area are usually larger than late ones. Traditionally these differences have been attributed to the day length available for feeding young. Mertons had earlier demonstrated that heat production of young and consequent energy requirements depend upon brood-size and temperature, and Royama had demonstrated that food requirements of young Great Tits are dependent upon brood-size. Van Balen and Cavé here present further evidence that exposed hole nests might reach a critical high temperature, which they assume to be less frequent, on the average, in the north than in the south. Using temperatures consistent with those obtained in woodlands upon artificially constituted broods of varying size in the laboratory, they readily produced mortality by heating the broods to such temperatures. Such moderate heating initially resulted in mortality of only part of the brood, the decreased brood in this case producing less heat of their own and hence not being so vulnerable. A further effect noted was that as holes were heated up humidity reached saturation, with the result that exchange of heat with the air mass rapidly became problematical. Van Balen and Cavé hypothesize that their findings might necessitate an additional or alternative hypothesis to the above-mentioned one for

brood-size gradients. Presumably hole-nesting species, such as the Great Tit, would be particularly vulnerable to this problem; however, this consideration should not be as vital a one in species not nesting in holes.—Douglass H. Morse.

NESTING AND REPRODUCTION

(See also 26, 40, 44, 51)

9. The breeding biology of Barn and Cliff Swallows in West Virginia. D. E. Samuel. 1971. *Wilson Bull.*, **83**(3): 284-301.—No temporal separation of the breeding cycles existed where these species nested sympatrically in West Virginia. Competition was avoided through differences in nest-site selection, mud-gathering behavior, and foraging patterns. Barn Swallows tend to build deeper within barns and do not require exits as large as those required by Cliff Swallows. Barn Swallows gather mud from near their nests whereas Cliff Swallows tend to congregate at nearby ponds to gather mud. Foraging patterns are different, the Barn Swallow flying low and remaining near its nest, within 3/4 mi., the Cliff Swallow flying quite high and ranging upwards of two miles from its nest site.

But too often Samuel fails to describe behavior quantitatively. Comparison of mud-gathering, courting, and particularly foraging behavior suffer from this lack of quantification.—Edward H. Burtt Jr.

10. Studies on the Squacco Heron, *Ardeola ralloides* (Scop.). Part IV. Spatial organization and mechanisms integrating the species. M. Jozefik. 1970. *Acta ornithol.*, **12**(10): 393-443. The fourth part of this very intensive study, noted previously (*Bird-Banding*, **41**(4): 312, 1970.) promises (p. 440) a fifth but not final part to follow on the heron's zonal range. The present part discusses: aggregations of breeding sites, their size and degree of isolation, position in aggregation, micropopulation contacts, territorial preference, numerical oscillations and degree of isolation, spatial integration, optimum density, pulsation mechanisms of range boundaries, disjunction formation, spatial isolation, aspects of Allen's rule, and anthropogenic affected changes in distribution.—Leon Kelso.

11. The Eastern Bluebird; its breeding season, clutch size, and nesting success. D. B. Peakall. 1970. *Living Bird*, **9**: 239-255.—This study presents the first large analysis of the nest-record cards being assembled by the North American Nest-record Card Program. Herein, a study of *Sialia sialis* is based on 8,108 cards, nearly 7/8 of them obtained during the period from 1964 through 1969.

Longest breeding seasons, largest clutch sizes, and maximum densities of breeding birds tended to coincide in the central portion of the range (roughly from western Oklahoma through Pennsylvania) with shorter breeding seasons and smaller clutch sizes being found in the northernmost populations and in the southeastern United States. Percentages of nests at least partially successful (nests that fledged at least one young) varied from 52.1 per cent in Iowa, Minnesota, South Dakota, and Nebraska to 78.3 per cent for the Delaware-New Jersey-Maryland area. There was no clearly discernible geographic pattern of nesting success.

In this study, areas for which clutch sizes were compared consisted of groups of political entities (states) arranged in roughly north-south and east-west groupings. One of the areas used for analysis would subsume data on birds nesting in northern Virginia with those nesting in southern Georgia. It seems likely that such analyses would profit considerably by using more adequately comparable geographic criteria in determining subsets of data to be compared.—Roger B. Clapp.

12. Establishment of pair and breeding site bounds by young known-age Adelie Penguins (*Pygoscelis adeliae*) R. E. LeResche and W. J. L. Sladen. 1970. *Anim. Behav.*, **18**: 517-526.—Young birds (3-7 years) only slowly develop the faithfulness to nest site and mate characteristic of older birds. There is a great deal of fine detailed information concerning mortality, nesting success, rematings, etc., with regard to age.—Jack P. Hailman.

13. Large American Avocet clutches at Dowling Lake, Alberta. K. Vermeer. 1971. *Blue Jay,* **29**(2): 88.—Visits to a small colony of American Avocets (*Recurvirostra americana*) on 15 June 1967 and 9 June 1970 revealed that 15 of 30 nests contained from five to eight eggs; the rest contained one to four eggs. The author suggests that this resulted from more than one female laying in the same nest and cites two previous examples of this phenomenon.—Roger B. Clapp.

14. Brown-headed Cowbird parasitism on Spotted Sandpiper and Wilson's Phalarope. D. R. M. Hatch. 1971. *Blue Jay,* **29**(1): 17-18.—On 15 June 1970 a single Cowbird (*Molothrus ater*) egg was found among four Wilson's Phalarope (*Steganopus tricolor*) eggs in a nest at Watchorn Bay on Lake Manitoba ca. 10 miles west of Moosehorn, Manitoba. Another cowbird egg was found with four Spotted Sandpiper (*Actitis macularia*) eggs on 26 June 1970 on an island in Lake Manitoba. The author notes two previous instances of apparent "egg-dumping" in phalarope nests but found no previous records for the sandpiper. Friedmann, (*Smithsonian Misc. Coll.,* **149**(11): 2, 1966) however, cited a report of a Cowbird egg in a Spotted Sandpiper nest at Edmonton, Alberta in 1964.—Roger B. Clapp.

15. Brown-headed Cowbird parasitizes Baltimore Oriole. R. W. Nero. 1971. *Blue Jay,* **29**(1): 16.—In Winnipeg, two eggs of *Molothrus ater* were found on 4 July 1970 in a nest of *Icterus galbula* that had been deserted sometime in June. Thirteen previous instances of parasitism of this oriole were reported by Friedmann (*U. S. Natl. Mus. Bull.,* **233;** 132-133, 1963). The present observation apparently constitutes the first record for Manitoba.—Roger B. Clapp.

ETHOLOGY AND PSYCHOLOGY

(See also 12, 35, 36, 82)

16. Geometry for the Selfish Herd. W. Hamilton. 1971. *J. Theor. Biol.,* **31**(2): 295-311.—Employment of mathematics in ethology continues here, where gregariousness is considered as a form of cover-seeking, exemplified by birds, in which each animal tries to reduce its chance of being caught by a predator by close assembly. The selfish avoidance of a predator can lead to aggregation.—Leon Kelso.

17. Use of tools by the White-winged Chough. J. N. Hobbs. 1971. *Emu,* **71**(2): 84-85.—On 14 May 1970 at Marthaguy Creek, north of Warren, NSW, Choughs (*Corcorax melanorhamphus*) were seen using empty shells (and occasionally entire animals) to hammer holes in fresh water mussels (*Velesunio ambiguous*). Similar behavior has been recorded in northwestern Victoria some 650 km to the southwest. Since the chough is a resident species, this observation suggests that the habit is widespread.—Roger B. Clapp.

18. Visual stimulus characteristics for initial approach response in chicks (*Gallus domesticus*) A. H. Schulman, E. B. Hale and H. B. Graves. 1970. *Anim. Behav.,* **18:** 461-466.—Chicks preferred to approach objects of 10-20 cm in diameter, and initially approached "approaching objects" rather than following retreating ones. The second finding is contrary to Schneirla's much quoted non-theory of approach-withdrawal behavior, which compels the chick to follow the retreating stimulus and flee from the approaching one (no fleeing was observed at all). It is high time this approach-withdrawal formulation be laid to rest, as it has been used by some as an over-simplified description of the fine subtle physiological experiments on visual fields, and as an "explanation" of such things as the gull chick's begging behavior. The behavior of birds is complex, and our conceptual modes of dealing with it must keep pace with the complexities revealed by solid empirical studies, such as the present one.—Jack P. Hailman.

19. Social heirarchy in winter flocks of the Grey-breasted Silvereye *Zosterops lateralis* (Latham). J. Kikkawa. 1968. *Japanese J. Ecol.,* **18**(6): 235-246.—In northern New South Wales one might find resident and migratory

(from Tasmania) Grey-breasted Silvereyes together in winter flocks. In general the migrants are dominant to the resident individuals, which might not be predicted. Field observations were confirmed by aviary experiments. Males generally were dominant to females. The hierarchy was primarily linear: from this Kikkawa concludes that a rigid dominance order exists. No significant relationship existed between weight and position in hierarchy.—Douglass H. Morse.

20. Territory size and aggression in a fluctuating Red Grouse population. A. Watson and G. R. Miller. 1971. *J. Anim. Ecol.*, **40**(2): 367-383.—Territory size and frequency (and success) of aggression are positively correlated in male Red Grouse (*Lagopus lagopus scoticus*). Territory size and spring population density are inversely correlated. Further, the smallest territories are usually occupied by unmated males, and on the largest territories males sometimes have two hens. Survival of males was positively correlated with territory size; however, success in rearing young did not show any correlation (possibly because large territories sometimes had two females). The role of visibility in territories (ability to see other individuals) is investigated, but no clear conclusions emerged. The average territory size varied from year to year.

There thus appears to be a social convention strongly geared to ownership of adequate space, a factor pointed out earlier by this group of workers when discussing the relationship of territory-holding to winter survival. However, the causal basis for the statement (p. 375) that numbers of territories decreased two years because grouse occupied larger territories is not clear from information presented. Also open to question is the use of parametric statistics in correlations involving a ranked index of aggression.—Douglass H. Morse.

21. One versus two discrimination by Whitenecked Ravens (*Corvus cryptoleucus*) with non-number dimensions varied. L. S. Swenson. 1970. *Anim. Behav.*, **18:** 454-460.—Three birds were trained to discriminate panels with one and two shapes (various colors and sizes of shapes being used). Whereas each learned to do so above the chance level, the birds used position and area differences as the basis of discrimination, so that it could not be proven that they possess a number concept. One raven was very interesting: its per cent correct responses jumped suddenly from about 50% (random) to more than 80%; unfortunately, testing was stopped at this point, so it cannot be certain whether the animal had permanently mastered the discrimination.—Jack P. Hailman.

ECOLOGY

(See also 5, 7, 8, 9, 10, 12, 14, 16, 19, 20, 30, 37, 45, 46, 51, 54, 63, 81, 82)

22. Structure of avian communities in selected Panama and Illinois habitats. J. R. Karr. 1971. *Ecol. Monogr.*, **41**(3): 207-233.—Karr's is the latest of a long line of papers attempting to determine why there are more species of birds in the tropics than in the temperate zone. Increased diversity appears to be largely the result of increased numbers of frugivores and insectivores (particularly those feeding on large insects). Low energy demands (resulting from the warm climate) and small mean size alone make a larger number of individuals possible in the tropical areas than in the temperate ones. It turned out that the total energy requirements of populations studied in both regions were quite similar. Between-habitat diversity is also great in the tropical habitats studied. Many of the differences between spacing in tropical and temperate communities appear to result from the patchiness of fruit and ant resources. On the basis of a number of censuses in tropical and temperate areas, Karr suggests that avian communities might subdivide the vegetational profile similarly throughout the world in spite of the drastically different numbers of species to be found in different areas. One wonders whether such a generalization, if valid in the first place, would extend to island habitats. Presumably Karr's present studies will provide an answer to his prediction. The paper concludes with a review of the possible bases for differing diversities, and Karr supports the stability-time hypothesis. This study bears many parallels to Orians' work in Costa Rica (see Review **40**, *Bird-Banding*, **41**(4): 325-327, 1970).—Douglass H. Morse.

23. Fox predation on a bird island. H. Blokpoel. 1971. *Blue Jay*, **29**(1): 32-34.—Destruction of all (ca. 50) Double-crested Cormorant (*Phalacrocorax auritus*) and many gull nests (number of each of three *Larus* spp. unspecified) as well as a nest failure of over 95 per cent in ca. 1,800 White Pelican (*Pelecanus erythrorhynchos*) nests during 1970 on Backes Island, Saskatchewan, is attributed to predation by Red Foxes (*Vulpes fulva*). Although two foxes were killed on one of several visits the stomach of one was not examined and that of the other contained ". . . grass and the toenail and skin of a webbed foot . . . ." About 10 dead pelicans were found and a number of pelican feet and heads were found near the entrance to a fox den.

It might also be noted that the island is ". . . in the middle of an Air Weapons Range of the Department of National Defense . . ." and that the island might or might not have been visited by defense personnel for recreational purposes. The author apparently made no attempt to determine whether human disturbance could have been of importance in the nest failure. Although the data presented indeed indicate that the foxes might have caused much nest failure, the merit of this note is considerably vitiated due to lack of hard data and to an apparent reluctance to determine the effect of other factors.—Roger B. Clapp.

24. Comparative energy expenditure in migration and wintering of birds. (Sravnenie energeticheskikh raskhodov na migratsiyu i zimovky u ptits.) V. Dolnik. 1971. *Ekologiya*, **2**(3): 88, 89. (In Russian.)—In comparing energy economy of migrating Courish Spit Chaffinches (*Fringilla coelebs*) with those of Finland, it is calculated that for the former it is 1.9 kcal/day for 131 days; and for the latter, 2.5 per day for 140 days; consequently energy expenditure for the Courish, for 3500 km travel, is 250 kcal, and for the Finnish, in 5000 km travel, it totals 350 kcal. It is concluded per the above figures and other reasons that migration to and from and sojourn in a warmer climate for the winter involves about the same energy expenditure as if the birds remained home through the winter.—Leon Kelso.

25. Bird ecology in the evergreen forests of north western Zambia. T. B. Oatley. 1969. *Puku* (Occas. Pap. Dept. Wildlife, Fisheries, National Parks, Zambia), **5:** 141-180.—This paper describes an expedition into a little-studied forested region of Zambia and includes four full-page plates of major habitat areas of that area. Different forest types are described briefly, along with their principal bird species. A general species list follows, which includes a number of cases of possible competitive exclusion. The most interesting involves four species of bush shrikes of the genus *Malaconotus*. Oatley includes a two-page discussion on foraging flocks, but he says little that has not been said elsewhere.—Douglass H. Morse.

26. Nest-site selection by adult Laughing Gulls (*Larus atricilla*) S. F. Bongiorno. 1970. *Anim. Behav.*, **18:** 434-444.—Selection is initially to highest ground in the marsh during spring flooding, thence to the higher vegetation. Social spacing is the final factor that dictates nest placement. Experimental manipulations, such as cutting grass or placing debris, altered nest placements predictably. This is a fine study of habitat preferences, and should serve as a model for other field experimental studies.—Jack P. Hailman.

27. Phenological relationships of some aculeate Hymenoptera, their dipteran mimics, and insectivorous birds. G. P. Waldbauer and J. K. Sheldon. 1969. *Evolution*, **25**(2): 371-382.—This paper attempts to explain the bimodal seasonal distribution of flies in Illinois that are alleged to mimic certain aculeate Hymenoptera. Even though the flies are present in both spring and fall, they are almost never found in the summer. Furthermore, the species found in the spring are not the ones found in the fall. Waldbauer and Sheldon attribute this temporal distribution to the presence in the summer of young unexperienced birds, which would likely take both model and mimic before finally learning that they should be avoided. Once learned, this discrimination apparently is not quickly lost. Data presented include the nesting times of potential passerine predators and number of models and mimics collected at different times by the authors. The correlation of the fledging of young and disappearance of mimics is striking; however, this does not establish a necessary causal relationship. As the authors point out, data to strengthen this hypothesis would be most difficult to obtain.

The authors have divided the model-mimic assemblages into four complexes. The models in these different assemblages differ markedly in their density at the time when young birds are beginning to feed for themselves. When combined, there is a very strong pulse of abundance at about the time that most young birds are out of the nests. The basis for this pulse is not explained; however it is pointed out that it should result in young birds learning quickly to avoid models.

One could also ask some interesting questions about strategies used by the model. If one is distasteful, is it most advantageous to flaunt itself in maximum numbers at the time that predators are learning to discriminate, resulting in their learning maximally quickly? Or is this peak merely the result of other important events in the life history of the models, with it not being important whether few or many individuals are present in order to minimize overall predation? Or is predation even an important consideration?

Waldbauer and Sheldon have described an interesting correlation; now it remains to be tested.—Douglass H. Morse.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(See also 81)

28. Naturally occurring Insecticides. M. Jacobson and D. Crosby, (eds). 1971. Marcel Dekker, Inc. New York. xii + 585 p. $15.—Fifteen collaborators contribute 11 chapters apportioned into parts: (1) Botanical insecticides, (2) Insect-derived insecticides, (3) Bacterial and fungal insecticides, and (4) Destruxins and piericidins. This information is advanced in hope of their adoption for use as safer means for insect control work.—Leon Kelso.

29. The food of the Cattle Egret. W. R. Siegfried. 1971. *J. Appl. Ecol.*, **8**(2): 447-468.—This study was largely undertaken to investigate the economic significance of the Cattle Egret (*Ardeola ibis*) upon agriculture. A number of workers have stated in the literature that this species is of considerable significance as a result of the amount of injurious insects that it consumes. Siegfried stops short of making such a sweeping conclusion, but has presented a great number of interesting data for consideration.

The study was based upon stomach contents of 265 free-flying birds and 100 food samples obtained from nestlings and juveniles still dependent upon the adults. Careful records upon the location and behavior of individuals were made before collecting the free-flying birds, an admirable effort, though Siegfried questions the value of the information thus obtained. Insects and annelids made up the majority of food of the egrets, accounting for almost 90% of the entire diet throughout the year. During the wet season earthworms made up 60% of the food by weight; during the rest of the season insects (particularly orthopterans, lepidopterans, and dipterans) predominated. Thus, this species consumed large numbers of species both considered "desirable" and "undesirable" by farmers. There was also a quite striking daily shift in items of food captured.

A number of interesting comments and observations are presented in the paper. There is a discussion of the precaution necessary in analyzing stomach contents. Some striking individual differences were obtained in the food contents of birds foraging together, suggesting the possibility that different individuals were specializing upon different food items. Juvenile birds beginning to forage for themselves took a wider variety of food than old birds, which is consistent with food selection being a learned phenomenon.—Douglass H. Morse.

CONSERVATION AND ENVIRONMENTAL QUALITY

(See also 28, 77, 78, 79, 80, 81)

30. The process characteristics of avian urbanization. (K kharakteristike protsessa urbanizatsii ptits.) S. Boshko. 1971. *Vestnik leningradsk. Univ.*, **1971**(9): 5-14. (In Russian, English summary.)—Urbanization is defined

as penetration into towns from the wild, with adaptations therefore; one phase of general synantropization. It involves change of (1) habitat, (2) of breeding and seasonal life, (3) of territorial changes (nesting sites limited, with intrapopulational pressures reduced), (4) of food and feeding, and (5) of general behavior (i.e., of wariness, vocal signals, and pugnacity). Potential, conventional, partial, and complete stages of urbanization are defined. In time urbanites undergo complete reconstruction of life with elevation to "a higher level among synantropes."—Leon Kelso.

31. Spotted Sandpipers as possible indicators of mercury contamination of rivers. K. Vermeer. 1971. *Blue Jay*, **29**(2): 59-60.—During June and July 1970 Spotted Sandpiper (*Actitis macularia*) eggs were collected along the North Saskatchewan River upstream and downstream from Edmonton. Subsequent tests revealed that the mean level of mercury residue (0.09 ± 0.03 ppm.) in 14 eggs collected upstream was significantly less than that (0.28 ± 0.06 ppm.) found in 19 eggs collected downstream but the source of the contamination could not be determined. Data are given on the per cent occurrence of insects by family for 31 sandpiper stomachs collected in July and August.—Roger B. Clapp.

PARASITES AND DISEASES

32. On seasonal dynamics of bird lice infestation on the Coot in the Karakum Canal Zone. (K sezonnoi dinamike zarazhennosti pukhoedami lysukhi (*Fulica atra* L.) v zone karakumskogo kanala.) O. Shcherbinina. 1971. *Izvestiya Akad. nauk turkmenskoi SSR, ser. biol.*, **1971**(2): 66-69. (In Russian.)—On 220 adult and juvenile Coots, examined 1960-1962, 5402 individual bird lice of five species were found. General infestation was 81.8% of those examined, not over 33 lice per bird. Some were parasitized simultaneously by four or even five louse species. Those species showing highest general infestation tended to show higher numbers per bird affected; *e.g.*, *Rallicola fulicae*, total 2081, average per Coot infested, 17.5; *Eulaemobothrion nigrum*, total 332, average, 4.3. There was decided seasonal fluctuation: decline in winter, 23.9%; rise in spring, 33.6; decline in summer, 7.7; rise in fall, 29. Seasonal variation in infestation was most closely correlated to molt, which reduced it as much as 36%. Louse distribution was decidedly localized according to area of bird and type of feathers.—Leon Kelso.

PHYSIOLOGY

(**See also 4, 24**)

33. The morphophysiological features of the optic retinal pecten of wild birds. (K morfophysiologicheskoi kharakteristike grebeshka setchatki dikikh ptits.) A. Allaverdyan, A. Mirzoyan, D. Gevorkyan, S. and K. Akoryan. 1970. *Biol. zhurn. Armenia*, **23**(7): 81-91. (In Russian.)—Finer details of pecten structure are described for "stork, pheasant, pigeon, diurnal raptors, Eagle Owl, and parrot." In experiments applying weak laser light beams to retinas of "nonnarcotized" birds, with retinal neural impulse effects recorded by electroretinogram apparatus, they found more marked "a-wave" and intense "b-wave" response; the effect was the opposite in the owl. There was a weakened retinogram response to light beams striking the pecten area "with simultaneous increase of receptive potential at the point of receptor stimulation." "On examination of relation of potentials in retinogram response to light stimulus intensity, there was found a shift of response curve area on changeover from dark to light adaptation, which distinguishes the self-organizing capacity of avian retinas." Here again in diurnal species going from dark to light there was an increase in retinal responsiveness, with the reverse in the owl.—Leon Kelso.

34. Interferometric analysis of proteins in nuclei of ganglion neurons of the chicken retina at certain age stages. (I terferometricheskoe issledovanie belkov v yadrakh ganglioznykh neuronov setchatki kuritsy na nekotorykh stadiyakh ontogeneza.) M. Neverova and V. Brodskii. 1971. *Vestnik mosk. univ. ser biol.*, **1971**(4): 21-25. (In Russian.) — Intermittent flashes of light

on the eye of adult domestic fowl cause fluctuation of the dry weight of ganglion nuclei in the retina, as measured by ultra-refined micro-electrode and interferometric apparatus. The plotted curve of these weight changes is synchronized to periods of accumulation and excretion of protein material from the nucleus into the sytoplasm and thence into the axon of the nerve cell. The end result of this is not elaborated. The same has been found true for various mammals.—Leon Kelso.

35. Possible mechanisms of magnetic sensitivity in birds. (Voznozhnye mekhanizmy magnitochucstvitelnosti ptits.) V. Danilov, G. Demirochaglyan, Z. Avetisyan, M. Aelakhnyerdyan, S. Grigoryan, and G. Saribekhyan. 1970. *Biol. zhurn. Armenia*, **23**(8): 26-34. (In Russian.)—The partisans supporting the role of the optic pecten in bird orientation have not given up. In search of its possible role in avian direction-finding they have designed experiments and searched biophysical literature to incorporate additional concepts: the photomagnetic effect and the magnetoconcentrative effect, to apply to experimental results. In momentary applications of a constant magnetic field of 1000 oersteds intensity, in total darkness, the flicker or "blink" rate of pigeon eye muscles declined from 20 to 3 per minute. Electronic apparatus with micro-electrodes inserted in the eye of anaesthetized pigeons in similar magnetic fields, 1000 oersted, recorded a photomagnetic and magnetoconcentrative effect in the retina; but they believe that the pecten is the sensitive area.—Leon Kelso.

36. Microwaves and birds in flight; Scientists tune in on wavelengths of birds. A. Tanner. 1971. *Science Dimension*, **3**(3): 18-21. (In English and French.)—This involves more "radar ornithology", *i.e.*, research being conducted by the National Research Council of Canada for the purpose of warding off birds from airplane landing flyways. Unexpected is some trenchant incidental information evolved. "The reaction of chickens whose tail feathers only were subjected to microwave radiation was explored in the laboratory together with the effects of radiation on defeathered birds. In the case of the former, when radiation was switched on, the bird immediately ceased what had been a moderately inquisitive exploration of its cage. After a period of 10-20 seconds, it showed mounting signs of distress in form of vocalization, defecation, and initiation of flight. Repeated periods of exposure produced the distress reaction in a shorter time. In each case when the field was switched off, a bird responded by fluffing its body feathers and actively preening. The feathers alone appeared to be responsible for this reaction. With plucked chickens, exposure to microwave radiation produced little or no reaction until the twelfth day. At this time it was observed that new feathers had started to grow and their tips protruded from the surface of the skin." The author believes that feathers serve a sensory role; the physical properties of quill tissue, particularly the piezoelectric, fundamental to living substance, indicate multiple physiological relationships, "and suggest sensory mechanisms that hitherto have been overlooked." It is suggested that a microwave beam of appropriate frequency and intensity could provide a corridor of safety from birds for approaching aircraft, and that present radar equipment could be modified to do this.—Leon Kelso.

37. Circumannual periodicity in warblers (*Sylvia*). (Circannuale Periodik bei Gräsmucken (*Sylvia*.) P. Berthold, E. Gwinner, and H. Klein. 1971. *Experientia*, **27**: 399. (In German, English summary.)—As if intended to meet objection raised by P. Evans (review **53**, *Bird-Banding*, **42**(2): 143, 1971), this article summarizes research findings in the Blackcap, *Sylvia atricapilla*, and Garden Warbler, *S. borin*, year-round rhythmicity "in moult, migratory restlessness, and in body changes of body weight and gonad size under constant photoperiodic conditions."—Leon Kelso.

38. The sonar medium of the Long Eared Owl (*Asio otus*), and the spectral sensitivity of its auditory nerves. (Zvukovaya sreda ushastoi sovy (*Asio otus*) i spektralnaya chuvstvitelnost ee slukhogo nerva.) V. Ilichev, V. Voronetskii, and T. Golubeva. 1971. *Z. zhurn.*, **50**(9): 1358-1368. (In Russian, English Summary.)—A broad spectrum of components have been measured in the sonar environment of this owl. The more important are the sounds of prey (*e.g.*, squeaks and rustle of rodents), calls of nestlings and fledglings and also other adults, and nuptial alarm calls. To perceive and locate these, the owl's hearing has to be very selective to distinguish them from natural noise. The total

range for important sounds is determined as 0.5 to 11.0 kiloHertz. The owl's own calls differentiate into four to six frequency components separated by subequal intervals, showing a harmonic character in these sounds. The spectrum range for nestlings is 0.3-0.5 fledglings, 0.3-0.8; and 0.1-0.6 kHz for adults. In the first nerve component of the recorded cochlear potential, the highest sensitivity is in the range of 4 to 7 kHz; the sounds of prey and fledglings fall within this span, and require the highest aural specialization.—Leon Kelso.

39. The role of dermal thermoreceptors and plumage in thermal regulation of the avian organism. (Rol termoretseptorov kozhi i perevogo pokrova v termoregulyatsii ptits.) S. Karapetyan and R. Arutyunan. 1970. *Izvest. "MVO" selskokhoz. Armenian SSR,* **1970**(10): 67-76. (In Armenian, Russian summary.)—The reaction of domestic fowl to high and low temperatures in warm and cold baths occurred in two phases; in 1, the body temperature rose 0.4-0.5 °C; in two, it fell 0.8-1.5°. In phase 1 at low temperature chemical regulation increased metabolism, and physical regulation constricted blood vessels and reduced heat loss. In phase 1 at high temperature, physical regulation prevailed and relieved heat accumulation. In phase 2 chemical regulation took over and reduced metabolic level and body temperature. Bath temperature acted not only through skin, legs, comb and wattles but through plumage also. Black plumage was more heat resorptive and more heat expulsive. In black plumage, heat loss was 38.8% higher than in controls; in white plumage, 12.1%. In black, upper critical body temp. was 45.5°; in white 43.5°C. Black-plumaged fowl were more subject to thermal polypnea than white by a ratio of 3.8-1.8. It was concluded that black plumage is a better adaptation for hot climate.—Leon Kelso.

40. Incubation temperature in the Hedge Sparrow. (Temperatura nasizhivaniya u lesnoi zavirushki.) A. Bolotnikov and V. Korolev. 1971. *Biol. nauki,* **14**(2): 11-14. (In Russian.)—Average daily incubation egg-surface temperature (recorded every 10 min. by thermistor or point contact thermometer for 15 days) was 34.5-38.0°C; variation by day was greater than by night. Absences during egg deposition are deemed responsible for 4-5 young hatching being spaced over two days.—Leon Kelso.

41. Uropygial gland fat of the Fulmar. (Das Bürzeldrusensekret des Eissturmvogels, *Fulmarus glacialis.*) J. Jacob and A. Zeman. 1971. *Z. Naturforsch.,* **26b**(1): 33-40. (In German, English summary.)—The preen gland contents of a fresh-killed male were analyzed by advanced mass spectrometry and gas chromatography. Among a complex mixture of ester waxes some distinctively significant alcohol compounds, particularly "14-methyl-hexadecanol" were identified. There are footnote references to other published preen gland analyses. —Leon Kelso.

42. The uropygial gland fat of the Rook. (Das Bürzeldrusensekret der Saatkrähe, *Corvus frugilegus.*) J. Jacob and A. Glaser. 1970. *Z. Naturforsch.,* **25b**(12): 1435-1437. (In German, English summary.)—A considerable variety of fatty acids and alkanols of the "37th order of the natural system" were found, whereas those identified in the preen gland of the Tufted Duck, *Aythya fuligula, (ibid.,* pp. 1438-1447) were of the "17th order." These analyses are very detailed but many more are needed, along with feather lipid (fat) analyses, before birds can be systematized on these bases.—Leon Kelso.

43. External respiration, gas exchange, and energy expenditure in varied exertions during weightlessness. (Vneshnee dykhanie gazoobmeny i energotrary pri razlichnoi deyatelnosti cheloveka v usloviayakh nevesomosti.) I. Kazyan, G. Makarov, and V. Sokolov. 1971. *Izvest. akad. nauk, SSSR, ser. biol.,* **1971**(5): 673-681. (In Russian. English summary.)—In cosmic flight various experiments have found that weightlessness exerts general and profound effects, even lethal, on vertebrates, including man. Partial, artificially simulated short term weightlessness effects on human beings are reported here, achieved by three methods more difficult than their titles indicate, *viz.*: Kepler parabola acceleration, water immersion, and suspension methods. The significance to the reviewer is that birds during their ordinary round of living, if aerial or aquatic, endure all three modes of temporary, partial weightlessness. In these experiments all me-

tabolic processes showed an increase of 9 to 42% in intensity at first. If the weightlessness were prolonged the metabolic rate receded and stabilized at the former lower level, with presumably slower food consumption. The implication is: do not birds through their customary dips and dives in air or water, their undulation in flight, reap the benefit of partial degravitation? This would mean not only less weight to sustain but extra stimulation.—Leon Kelso.

44. The endocrine system and seasonal biological phenomena in birds. (Endokrinnaya sistema i sezonnye biologicheskie yavleniya u ptits.) V. Dolnik. 1971. *Uspekhi sovremennoi biol.*, **71**(3): 412-427. (In Russian.)—This review article in their special review journal attempts a survey of the literature on endocrine glands as related to avian seasonal activities, discussing gonad changes, breeding behavior, nesting, egg laying, incubation, care of young, molt, preparation for fall migration, wintering state, and spring migration. Photoperiodism, in the regulation of seasonal cycles, and the physiological differences between sedentary and migratory birds are discussed.—Leon Kelso.

45. Hummingbird dispersal of *Delphinium cardinale* pollen treated with radioactive iodine. R. A. Schlising and R. A. Turpin. 1971. *Amer. J. Bot.*, **58**(5): 401-406.—Can pollen flow in a plant population be traced? By applying radioactive iodine (I^{131}) to stamens on flowering *Delphinium* stalks and examining other nearby stalks for radiation at intervals later, the authors attempted to answer this question. Hummingbirds were determined to be the only pollen vectors for the plants; Anna's (*Calypte anna*), Costa's (*C. costae*), and Allen's (*Selasphorus sasin*) hummingbirds were tentatively identified as the birds involved. The pollen-marking technique worked successfully as radioactive pollen was later discovered only within flowers and on no other parts of the plants. In two study areas monitored, 64.2% of 137 flowering stalks were visited in 24 hours in one area and 58.2% of 323 stalks were visited in eight days in the other area. The authors' main interest in this study was to test a method for tracing gene flow in plant populations. They thus gave lesser attention to the ornithological consequences of their work. They mention a possible mechanism whereby nectary position trains the birds to nectar presence before mature pollen is available on the flower and suggest that hummingbirds might have strong selective influence on flower color. The authors do not, however, treat the potential effects of hot iodine on hummingbird behavior. The technique described in this paper might provide a valuable tool for studying hummingbird-plant interactions, pollen dispersal by the birds, and perhaps territoriality in these birds as well.—Paul B. Hamel.

46. Radioactivity of Kestrel pellets ejected after feeding on mice containing P^{32}. (Radioaktivnost pogadok posle kormleniya obykhnovennoi pustelgi myshami, soderzhashchimi P^{32}.) B. Dobrokhotov and D. Litvin. 1971. *Z. zhurn.*, **50**(10): 1591-1592. (In Russian.).—After a 23-day period of feeding on white mice injected with a radioactive phosphorus compound, $Na_2HP^{32}O_4$, in doses daily of 0.35 microcuries, a Kestrel, *Falco tinnunculus*, continued to eject radioactive pellets for nine days after switchback to untreated mice. Individual pellets were ejected 12-18 hours after feeding and remained radioactive for 123 days after ejection, if kept dry. These facts should be considered in analysis of animal movements by recovery of radioactively marked pellets.—Leon Kelso.

MORPHOLOGY AND ANATOMY

(See also 33, 54, 66)

47. "Resin secretion" in *Hemicircus* (Picidae). W. J. Bock and L. L. Short. 1970. *Ibis*, **113**: 234-236.—The two species of the Asian genus *Hemicircus* possess a tuft of feathers, stuck together with a resinous secretion, located in the middle of the back. The authors attempted to pinpoint the anatomical source of this secretion. They were unable to locate an epidermal gland or duct using histological techniques. They propose that two other possibilities exist, secretion by the epidermis itself or, more likely, by modified powder feathers. Sufficient material was not available to decide between these alternatives.—Joel Cracraft.

48. Skull morphology and jaw mechanics of Caprimulgidae. (Schädelmorphologie und Kiefermechanik der Captimulgidae, Aves.) P. Bühler. 1970. *Zeitschr. Morph. Tiere,* **66**(4): 337-399. (In German, English summary.)—Based chiefly on dissections of the Nightjar (*Caprimulgus europaeus*) with occasional comparisons to species of the African and American tropics, this lengthy and well illustrated study is an outstanding addition to the realm of bird anatomy. An aspect prominent and so discussed is the extreme modification for lightness of structure, exemplified in the paper-thinness of the skull walls. "The goatsuckers are able to enlarge the opening of the mouth in two dimensions. A very broadened occipital region, a division of the *musculus pterygoideus* in two parts, and two pairs of highly adapted intramandibular articulations are the morphological conditions for the mechanism. The jaws are spread by several simultaneous movements. As a result of their movements the five parts of the lower jaw, the two quadrates and the skull base integrate into the annular gular frame of the expanded mouth. This unusual kinetik is an adaptation to nocturnal living." It would seem to work out that way anyhow.—Leon Kelso.

49. Some observations on the splenius capitis muscle of birds. P. J. K. Burton. 1971. *Ibis,* **113:** 19-28.—In this very interesting paper Burton describes a peculiar modification in the structure of the neck muscle *splenius capitus.* This modification, which involves an enlargement of the area of origin and interdigitation of the muscle fibers from the right and left sides, was found in very few families but has its highest degree of differentiation in the Trochilidae, Apodidae, and Hemiprocnidae. Burton notes some possible functional implications of this new arrangement. Most importantly, he calls attention to the fact that this character-state, which is clearly derived, argues for the monophyly of the Apodiformes.—Joel Cracraft.

50. Some observations on the os uncinatum in the Musophagidae. P. J. K. Burton. 1970. *Ostrich, suppl.,* **8:** 7-13.—Burton discusses the anatomy and function of the os uncinatum, a peculiar small bone articulating with the ventral border of the lacrimal-ectethmoid complex. A short discussion of possible evolutionary pathways of the bone is also presented.—Joel Cracraft.

PLUMAGES AND MOLTS

(See 37, 47)

ZOOGEOGRAPHY AND DISTRIBUTION

(See also 8, 60, 69, 74, 75)

51. Breeding biology of Purple Martins at the northern limit of their range. J. C. Finlay. 1971. *Wilson Bull.,* **83**(3): 255-269.—This study simply extends northward our knowledge of this species' breeding biology. The breeding cycle was divided into seven stages. Entrance-departure activity was recorded using a system of photoelectric sensing devises and light sources; the exact method and further analysis of these data will be published soon. Clutch-size did not increase with latitude, but the number of young fledged per nest was slightly higher than that recorded in more southern locations. The increase in the hourly entrance-departure rate was not proportional to increased brood size. Nestlings in larger broods presumably received less food apiece than nestlings in smaller broods. Gibb (*Brit. Birds,* **48:** 49-58, 1955) noted the same phenomenon among Great Tits (*Parus major*) and suggested that large broods might partially compensate for the reduced energy intake by a reduced heat loss. Finlay does not consider the possibility that parents of larger broods bring larger prey or more prey per visit.—Edward H. Burtt Jr.

52. Growth features of passerines in the polar zone as related to species' dispersal. (Osobennosti rosta vorobnykh ptits v zapolyare v svyazi s rasseleniem vidov.) M. Denisova and Z. Artamonova. 1971. *Z. zhurn.,* **50**(5): 741-750. (In Russian, English summary.)—As a result of considerable field study

and literature review it is determined that growth constants in all species increase with distance from the primordial range center latitudinally and decrease longitudinally. The period of maximal growth rate in those of open nest habit increases with both dimensions. Covered nesters show maximal growth rate about the close of the first day after hatching throughout the ranges. Any distortion of these correlations indicates direction of range expansion. Typical arctic species' young grow slower than human-introduced immigrants. Ratio of growth rate of open and sheltered nesters in the arctic is the reverse of that seen in temperate zones, but similar to that in deserts. Analysis of a variety of data indicates that the Snow Bunting (*Plectrophenax nivalis*) and the Lapland Longspur (*Calcarius lapponicus*) populations as a whole are shifting eastward.—Leon Kelso.

SYSTEMATICS AND PALEONTOLOGY

(**See also 58, 59, 60, 61, 69, 70, 71, 73, 83, 84, 85**)

53. The affinity of African with neotropical woodpeckers. L. L. Short. 1970. *Ostrich, suppl.* **8:** 35-40.—This paper constitutes a brief review of the relationships of the African woodpeckers. Most of the African picids belong to three endemic genera, *Campethera* (3 species), *Geocolaptes* (1), and *Dendropicos* (6), and Short believes these genera are more closely related to each other than to any other non-African genus of woodpeckers. Based on an unpublished study Short suggests the New World colaptine woodpeckers to be the closest relatives of these African forms.—Joel Cracraft.

54. Taxonomic position and morphological peculiarities of the genus Pagophila. E. N. Kurochkin. 1970. *Acta Ornithologica,* **12**(8): 269-291. (In English, with Polish and Russian summaries.)—With a very detailed osteological study of the Ivory Gull, this paper examines in detail and rejects its congeneric relationship with skuas and jaegers, renders tabular comparisons with structural features of eight other species of arctic gulls, and attempts to correlate such details with what is known of its habits. "Spending all the year round in the far north, where temperatures are often below freezing point, the birds are forced to swallow large pieces of frozen food. . . . Thus they are left with only one possibility—swallowing everything that can be digested in the form in which they find it. However such a lack of specialization is at the same time a form of adaptation. The Ivory Gull, without any competition, lives in conditions in which other species would not be able to exist."—Leon Kelso.

55. Quaternary avian remains from Dark Canyon Cave, New Mexico. H. Howard. 1971. *Condor,* **73:** 237-240.—This paper describes a rather extensive avifauna (over 40 species) from a late Pleistocene cave of eastern New Mexico. Approximately 23 per cent of the species in the Dark Canyon fauna represent extinct forms. The more significant findings are discussed in detail and comparisons are made with other cave avifaunas. In this and her other papers on cave faunas, Dr. Howard provides us with important data about Pleistocene birdlife.——Joel Cracraft.

56. An early Pleistocene eagle from Nebraska. L. D. Martin. 1971. *Condor,* **73:** 248-250.—A new species, *Spizaetus tanneri,* is described for a distal tarsometatarsus from the Broadwater Formation. This form is the oldest known record for the genus and is the first occurrence for the genus from the central Great Plains.—Joel Cracraft.

57. The fossil ostrich from the Akchagil Layers of Georgia. N. I. Burchak-Abramovich and A. K. Vekua. 1971. *Acta Zool. Cracoviensia,* **16:** 1-26 (In English).—A new species of ostrich, *Struthio transcaucasicus,* is described for a pelvis from the Akchagil layers (upper Pliocene) of Eastern Georgia. Comments are also made on the systematic status of fossil ostriches, and the authors take issue with Brodkorb's checklist in which a number of the Eurasian species are lumped.—Joel Cracraft.

EVOLUTION AND GENETICS

(See also 82)

58. Flying ability of *Archaeopteryx*. D. W. Yalden. 1971. *Nature*, **231**: 127-128.—Yalden criticizes a recent paper by Heptonstall (*Nature*, **228**: 185- 186, 1970.) on the flight of *Archaeopteryx*. Yalden notes that Heptonstall probably overestimated the weight of *Archaeopteryx* by a factor of two and incorrectly determined the wing area. Heptonstall's conclusion that *Archaeopteryx* was a poor flier with high landing speed is therefore questionable. (see next review.) —Joel Cracraft.

59. The flying ability of *Archaeopteryx*. D. W. Yalden. 1971. *Ibis*, **113**: 349-356.—This paper presents Yalden's detailed analysis of flight in *Archaeopteryx* (see preceding review). He first considers various aerodynamic parameters and concludes that they are well representative of an arboreal and flying bird. He then briefly discusses some of the anatomical evidence used to support the "poor flier" hypothesis and effectively discounts the significance of these data. Yalden's conclusion, which seems closer to the truth than previous work, is that *Archaeopteryx* was capable of flapping flight but could not sustain it for long periods of time.—Joel Cracraft.

60. Some elements in the evolution and dispersal of the Capercaillie in the modern epoch. (Nekotorye momenty evolyutsii i rasseleniya glukharei (*Tetrao urogallus*) v antropogene.) A. Kudryashov and K. Yudin. 1971. *Z. zhurn.*, **50**(6): 875-885. (In Russian, English summary.)—The 12 races recognized in this species are analyzed as to features of color, wing and tail length, and voice. In the range mosaic of geographic forms widely dispersed in the Eurasian taiga from Spain to beyond middle Siberia, recognizable "eastern" and "western" patterns of nuptial call or "crowing" have long been known. Their boundary falls between 20° and 30° longitude. Their difference is an interlude of a succession of "bopping" or cork-popping-out-of-a-bottle sounds occurring in the western races' call, during which the bird is believed to become temporarily deaf. After some discussion, it is theorized that the more complicated western form of "song" might have been derived through a temporary bisection of the species' range during the most recent "ice age."—Leon Kelso.

61. The genetics of polymorphism in the Ross' Goose (*Anser rossii*). F. Cooke and J. P. Ryder. 1971. *Evolution*, **25**(3): 483-490.—Mate selection in the dimorphic Lesser Snow Goose (*Anser caerulescens caerulescens*) is of particular interest, since it is believed that, as a result of imprinting upon parents, like morphs mate more frequently than by chance alone. In this case both adults and goslings are dimorphic, with blue-phase goslings always developing into blue-phase adults and white-phase goslings (actually yellow) always developing into white-phase adults. Less well-known is the plumage polymorphism of the downy goslings of the Ross' Goose. There are again basically two colors, gray and yellow, and it is assumed that this characteristic is under single gene control, though the variability of colors on the two basic themes makes it appear likely that modifiers are at work as well. If one is to use the Snow Goose model, he would predict that assortative mating would not occur between the two morphs in Ross' Geese, since this characteristic does not carry on to the adult. This is in fact what was found. Since Ross' and Snow geese are believed to have come from a common ancestor, it is assumed that originally Ross' Geese were dimorphic in the adult stage, but that selective factors favoring a modifying gene suppressing gray adult phenotype resulted in the dimorphic condition being only dimorphic in the gosling stage. This essentially is saying that in some cases it is advantageous to be dimorphic, whereas in other cases it is not. Unfortunately, data are not presented that allow one to carry this speculation further.—Douglass H. Morse.

62. Hybrid Cinnamon Teal X Blue-winged Teal at Regina. F. W. Lahrman. 1971. *Blue Jay*, **29**(1): 28.—A drake seen and photographed 25 April 1970 ca. 12 miles northwest of Regina had a faint white crescent on the head reminiscent of the Blue-winged Teal (*Anas discors*) but the reddish coloration of the body was more similar to that of *Anas cyanoptera*. Another sighting, thought to be of the same bird, was made several miles south of Regina on 30 May 1970. Wild hybrids of these species have previously been reported.—Roger B. Clapp.

FOOD AND FEEDING

(See also 27, 28, 29)

63. The functional and numerical responses of the Cassin Finch, *Carpodacus cassinii* Baird to epidemic numbers of the lodgepole needleminer, *Coleotechnites milleri* (Busck). S. G. Herman. 1971. *Wasmann J. Biol.*, **29** (1): 71-80.—This paper discusses the exploitation of the lodgepole needleminer, the larva of a small gelechiid moth, by Cassin's Finches in the Sierra Nevada Mountains of California. Data consisted primarily of censuses of numbers of finches in an infested and uninfested area and in stomach contents collected in these areas. A functional response (tendency to use the prey species more than previously) was noted about the time that numbers of finches increased markedly (they exhibited a numerical response.) Herman's main point is that the literature has generally ignored the mechanism primarily involved in numerical responses toward insect prey by a vertebrate predator. The major impact here will be by immigration, rather than by reproduction or decreased mortality, as in the case of arthropod predators. Herman attributes this lack of emphasis to the fact that workers have been preoccupied with arthropod predators and parasitoids. Perusal of some current basic texts in ecology suggests that they might not underplay vertebrate-arthropod relationships as strongly as Herman implies, however. It also should be pointed out that the immigration type of numerical response need not be associated with species that are widely separated phylogenetically, as Herman implies. Length of generation is the basic factor involved. No estimate is made of the impact of the Cassin's Finch upon the needleminer population.—Douglass H. Morse.

64. Foraging behavior of Mangrove Swallows at Barro Colorado Island. R. E. Ricklefs. 1971. *Auk*, **88** (3): 635-651.—While feeding young, adult Mangrove Swallows (*Iridoprocne albilinea*) showed both temporal and spatial patterning of foraging activities. Temporal separation of self-feeding and feeding of nestlings permitted the swallows to divide the territory into an area near the nest that required only short feeding trips and a more distant area where the adults could forage without reducing the food supply near the nest. The time spent flying was between 80 and 100 per cent in the early morning and late afternoon, but only 50 per cent during midday. This diurnal activity pattern might be due to difficulty in dissipating the radiational heat load. Further analysis suffers from a very small sample size and from large variance in the data. But several intriguing observations worthy of more study are made.—Edward H. Burtt Jr.

SONG AND VOCALIZATIONS

(See also 60)

65. Vocal repertoires of sympatric Barn and Cliff Swallows. D. E. Samuel. 1971. *Auk*, **88**(4): 839-855.—This paper discusses maintenance of reproductive isolation through distinctive vocalizations and compares vocabulary size between colonial and noncolonial species. Descriptions of vocalizations and their behavioral context are accompanied by numerous sonographs. But as Samuel acknowledges, the exact functions of the songs and calls remain to be determined through experimental study.

The complex songs of these species are very different, the differences probably helping to maintain reproductive isolation. Neither species responded to the other's songs. Nonetheless, each species responded to alarm calls of the other species. The repertoire of the noncolonial Barn Swallow consisted of nine songs and calls whereas that of the colonial Cliff Swallow contained only three. But classification into colonial and noncolonial is questionable.—Edward H. Burtt Jr.

66. The structural basis of the organ of voice in the genera *Anas* and *Aythya* (Aves). R. W. Warner. 1971. *J. Zool.*, **164:** 197-207.—Warner describes the syrinx of these two genera and emphasizes the differences in histological structure. The left and right internal tympaniform membranes are

thickened in *Anas*, whereas only the left is in *Aythya*. The bullae are also different in that a right bronchial "valve" is present in *Aythya* but absent in *Anas*. Some functional speculations are offered but little supporting evidence is provided.—Joel Cracraft.

PHOTOGRAPHY, RECORDINGS, AND FILMS

67. "Hellstrom Chronicle."—Since the era of Walt Disney's cut-and-spliced films of animals dancing to music there have been few nature films of note that were not also human films. One could marshall some evidence for a theory that nature films simply don't sell at the box office. Despite the excellent photography of the old Disney films, they had to be "jazzed up" with unnatural sequences, staged behavior and anthropomorphic interpretation. Despite these gimics, one of Disney's directors once told me that they lost money on every nature film produced.

The new genre was to introduce the animals into a human story. Some good films of this type came from Scandinavia and England. "Pure" nature films are rare at the theaters; perhaps Hans Sielmann's excellent film on the Galapagos was one of the most recent. "Hellstrom Chronicle" lies somewhere between "Born Free" and this last, and some of the photography is by Sielmann.

The continuity is provided by "Nils Hellstrom, M.A., Ph.D.," who narrates the film with the theory that the insects shall inherit the earth. The vehicle, although occasionally distracting, can be forgiven, for the photography is marvelous. See insects feeding, moving, fighting, reproducing, developing and communicating in utterly fantastic sequences of uncontrived behavior. No anthropomorphism here; insects lend themselves not to human empathy. In its emphasis on the powers of natural selection to mold survival and reproduction as the focus of life, "Hellstrom Chronicle" is the most biological nature film it has ever been my pleasure to see. Don't miss it.—Jack P. Hailman.

MISCELLANEOUS

68. Sociology of refereeing. H. Zuckerman and R. Merton. 1971. *Physics Today*, **24**(7): 28-33.—An examination of large series of papers submitted for scientific journal publication finds that eminent scientists publish not only better papers but more papers than "run-of-the-mill scientists." Who would admit himself in the latter classification? "Rank and authority are acquired through performance but, once acquired, tend to be ascribed for an indeterminate time." They find that while submission rates are nearly equal, about 91% of the papers by physicists in the "foremost" institutions were accepted for publication as against 72% from other universities. Interestingly it is noted herein that even in the serious science of physics many practitioners are there only because for them it is the most convenient way of making a living.—Leon Kelso.

BOOKS AND MONOGRAPHS

(See also 28, 87)

69. *Families of Birds.* Oliver L. Austin, Jr. 1971. Golden Press, N. Y. 200 pp, paperback. $1.95. (Illustrated by Arthur Singer).—Once in a great while there appears a volume so useful and well done that usual praise would demean rather than acclaim it. Whereas Austin has covered much of this same material in other formats, this survey of fossil and living birds, excellently illustrated in color by Arthur Singer, is surely the most attractive and useful exposition of the subject.

There is an Introduction to taxonomy, an explanation of the Faunal Regions of the World, a marvelous color chart of the avian Fossil Record based on Pierce Brodkorb's work, a section on the Origin and Evolution of Birds, and the systematic accounting of families. Each family is illustrated with typical species, and a general account is given of the distribution, characteristics and habits of its species. There are a few things that might have been given more attention, such as the statement (p. 92) "5 fo 1 species to Eocene of Wyoming", which appears

to be due to a sleepy typesetter. And I object to defining the chordates as "backboned animals" (p. 10). (Curiously, Subphylum Vertebrata is then designated "vertebrate animals," which cannot be terribly illuminating to the uninitiated.) Unfortunately, the myth that sandgrouse drink by sucking is perpetuated (p. 85). But the occasional slips demand forgiveness.

This book is one of a series of small volumes on biology and natural history begun under the editorship of Herbert S. Zim, and continued here under Vera R. Webster. We hope more like the present volume will be forthcoming. If you miss this little gem for under two bucks you deserve your fate.—Jack P. Hailman.

70. ***Eagles, Hawks and Falcons of the World.*** Leslie Brown and Dean Amadon. 1968. McGraw-Hill, N. Y. Two volumes, 945 pp. $59.50.—As faithful readers of the *Recent Literature* section are aware, this reviewer is often dubious about the worth of large sumptious volumes, the average value of which seems to depreciate faster than most used automobiles. There are, however, exceptions—and this seems to be one. This is no ordinary collection of overpriced plates by unknown and insensitive artists, but, rather, a real attempt to provide an authoritative and at the same time attractive account of the hawks of our planet. Actually by "hawks" one means all the species of the Order Falconiformes, including the new world vultures and condors; osprey; kites, old world vultures, harriers, accipiters, buteos, eagles, and other Accipitridae; the secretary-bird; and the caracaras and falcons. This project was an immense undertaking, and seems to have come off very well indeed.

The first 150 pages or so of the book consist of chapters of textual material on various matters. I say "the book" because pages are numbered consecutively throughout the work, and the division into two volumes is merely a convenience of binding, there being no logical break between the two volumes. The book begins by introducing the diversity, classification and possible phylogenetic trends of these raptorial birds, and then proceeds to physical attributes and plumages. The emphasis throughout the early chapters is on the adaptive significance of various structures and habits, and the adaptiveness of differences among species. The evolutionary thinking in general seems quite sound, if unsupported by real evidence. (For instance, while one expects that greater density of photoreceptive cells leads to greater visual acuity, it is not a logical necessity that this be so; someone needs to condition a hawk in a Skinner box, as has been done with pigeons, to find the real resolving power of their visual systems.)

A goodly space is devoted to the daily cycle, flight dynamics, and migration of hawks, in general but informative terms. The text then is prepared to delve into foraging methods and thence into the food ecology of predation. These subjects lead into territoriality, reproductive displays, nesting, eggs, incubation, and rearing of the young. Again, the text carefully sets the scene for returning to fundamental matters of ecology, the next subjects being breeding success, productivity, longevity, mortality, and enemies. Finally, the economics and recreational value of hawks is discussed in the chapter on Hawks and Man.

Part II is the real meat of the book, taking the remaining several hundred pages of the first volume and all of the second. It is, basically, a species account of all living hawks; an impressive feat it is. It begins with a general field key for identification of genera, which seems to me to be utterly useless. Who is going to lug such a huge volume around in the field, sorting through all the hawks of the world, merely to find the genus of something he has seen in a specific locality? Almost (not quite) anywhere one goes in the world a better means of field identification for hawks exists. There is, however, also a useful section on synonomy of names (both species and genera), as well as two other useful features: a list of forms treated here as species that are not always considered so in the literature, and a list of subspecies that are sometimes given specific status in the literature. One hopes that lists such as these will become a standard item of monographs on various avian groups.

There are, in the species accounts, basically four separate items that one must match up, sometimes (alas) requiring both volumes to be open at once. First, there is the basic text, which gives the usual information about range, description (including separate accounts of the subspecies), voice, general habits, food, and breeding habits. The authors have tried to assemble hard-to-come-by data, such as the weight of the birds. One or a few references end the text, and these must be considered inadequate.

Second, there are colored (occasionally black-and-white) paintings of each species, usually placed near the textual account. A really fine staff of artists participated in this endeavor, including familiar names such as Eckelberry and Peterson. The plates vary, as one would expect, in both quality of execution as well as artistic flair, but none is terrible and many are really fine. I believe, although I have not been able to check this out for certain, that this is the first complete collection of plates of the world's hawks. (Perhaps readers have some further information on this point.)

The third element of the species list is an "in flight, seen from below" sketch. These plates are grouped at the end of volume 1, even if the species account does not appear until volume 2. They are adequate for identification in the field, and show immature plumages where the pattern differs from adults. If you are going to some far-flung part of the world, it could be useful to xerox these 15 in-flight plates and carry them along (or else snip out from the xeroxed sheets those species that will occur in areas to be visited).

Finally, there are range maps for each species, collected as a group at the end of volume 2. Many maps have two or more species superimposed with different kinds of shadings, which I think was inexcusable for a book of these pretensions. In many cases, the maps are far larger than they need be, considering the spotty information upon which they must be based. I would rather have had smaller range maps, a separate map being devoted to each species; it would have required no more space.

This book emphasizes throughout what is known, rather than what remains to be discovered, and is thus a general source of information rather than a stimulus for further work. It is only a general reference work, however, not a good source book for those studying hawks. The terminal bibliographies are useful, generally well selected, but limited in completeness and scope. The work is one of the best of its genre and should be in the library of everyone who has a serious interest in our magnificent—and, alas, declining—diurnal birds of prey.—Jack P. Hailman.

71. ***Eagles.*** Leslie Brown. 1970. Arco, N. Y. and Arthur Baker, London, copyright by author. 96 pp. $3.95.—This little popular monograph begins with the chapter "Define an eagle." One not only learns what an eagle is (and isn't), but how it flies, hunts, nests, and so on. The text is usually clear, in a simple English unencumbered by the technical trappings of academic ornithologists. The photographs, from a huge variety of sources, are generally excellent portraits of the world's eagles, often in action. Many of the photographs are in color, and although these are not technically excellent in printing, they are quite good. This is a useful book for introducing friends to a most interesting group of birds.—Jack P. Hailman.

72. ***Owls -- Their Natural and Unnatural History.*** J. Sparks and T. Soper. 1971. Taplinger Publ. Co. New York. 206 pp., illustrated. $5.95.—We might include with this, the review of the same by our co-reviewer, Mrs. E. S. Austin, in the recent *Auk* (**88**(3): 684, 1971). Many species of owls on a worldwide scope are portrayed by reasonably adequate or even good diagnostically definite illustrations, not available in any recent popular book. Authors discuss many points of interest in connection with owls. Yet there are problems. The bibliographical lists, which exclude much American work (among them 45 plus titles by this reviewer), cannot be commended for literature coverage; nor can much other inclusive work that appears these days. Yet this book and its contents might reach millions, although the solid proper works will not. What is the use of long, labored monographic efforts by specialists if they are ignored, *e.g.*, three recent continent-wide works on South American birds? And anent Mrs. Austin's comment on lack of comprehensive books or monographs on owls, there are more than one would suspect, buried here and there. But in these times of population implosion (in the McLuhan sense) journalists are invading and carrying the day. One can but wonder if their books would impress so thoroughly were not a lot of museum drudge-work aid being handed them for free. It was Paul Ehrlich who long ago suggested that fees for systematists' aid should be charged equable to fees levied by doctors, dentists, lawyers, plumbers *et al.*, for their "services", *i.e.*, the former should quit under-selling each other down to absolute zero, in which case they might have less impulse to chew out each other.—Leon Kelso.

73. ***Birds of North America.*** Austin L. Rand. [1971?] Doubleday and Co., Inc. N. Y. 256 pp. $9.95.—Let us hope that the publisher's innovation of omitting the date of publication is something that will quickly slip into oblivion, lest citation of literature become completely chaotic. At any rate, this volume is one of a new series entitled "Animal Life of North America" with text by prominent biologists and photographs from a variety of sources. The text is systematic in outline, presenting the families of North American birds with comment on their interesting habits, including some personal experiences. Many of the photographs are superb, and many are in color; in fact, the color printing in my volume is excellent, no plate being out of register and most rendering a very natural color.

Robert T. Orr's *Mammals of North America* (251 pp, same price, same lack of date) is similar in nature, and contains some quite unusual photographs of marine mammals in addition to the more familiar species. *Insects of North America* by Alexander and Elsie Klots (251 pp., dateless) contains some really gorgeous examples of color macrophotography, and is similar to the other volumes.

The series is projected to include volumes of fishes, invertebrates (presumably excluding insects) and herps. The text is at a simple level, yet informative, making the volumes of the series appropriate to the casual reader and the budding young naturalist alike. The photographs, however, are what make the books worth their price.—Jack P. Hailman.

74. ***The Birds of Kazakhstan.*** (Ptitsy Kazakhstana.) I. A. Dolgushin, editor, and chief contributor for 1st volume. Vol. I. 1960. Academy of Sciences Publishing House, Kazakh Sov. Soc. Rep. Alma-Ata. 470 pp. Vol. II. 1962. 780 pp. Vol. III, 1970. 646 pp. About $6.00, $10.00, and $14.00, respectively.—This series, originally planned for three volumes, but destined for a fourth, and perhaps a fifth, contains black-and-white illustrations and maps showing resident and migratory ranges for the 481 species admitted. With occasional photographs and color plates, this major ornithological work of the recent decade should approach the "Birds of the Soviet Union" of Dementiev *et al.* in aggregate mass of material. It also contains lengthy taxonomic treatment, including keys to orders, families, genera and species, and abundant locally pertinent life history details. A possible decline in availability of these volumes with passage of time suggests our noting their existence, especially for interests wanting complete libraries of major works. The editors prefatory, general descriptive, generalization, and commentary material, covering 100 pages, the fruit of many years of observations, heads the first volume, so that his untimely death following appearance of the second tome does not deprive us of that. This section includes: a history of Kazakhstan ornithological exploration, involving such names as Pallas, Gmelin, Zarudny, Severtsov, Menzbier, Sushkin, Buturlin, and more recently, Formozov, Spangenberg, and Dementiev; an annotated list of many most pertinent publications; an ecogeographic survey of the avifauna, climate and life-zones, ranging from desert to highest alpine; migration; theoretical paleo-ornithological history of Kazakhstan avifauna, and a systematic review, with an atlas of figured Russian descriptive terms, a godsend to beginning translators. In fact the work as a whole is planned for maximum thoroughness, up-to-dateness and utility. An example of its species' treatment is the ten pages, in Vol. II, more than in "Bent", devoted to the Short-eared Owl, *Asio flammeus.* This reviewer, a former dweller of U. S. western plains, is struck by the greater abundance of grassland or steppe bird species in this country, rivaling Texas in size. In addition to considerable variety of pipits, wagtails, and shrikes, there are 14 species of larks in contrast to our one. Notable among these is the Black Lark, *Melanocorypha yeltoniensis,* whose stout, conical finch-like bill enables it to dig over hard-frozen snow and ground surface in the winter months. Flocks of the local variety of Horned Lark, *Eremophila alpestris,* attend this work to get as good a share as they can of the grass seeds and grain uncovered. The section on larks alone, 90 pages, constitutes a suitable monograph. Of raptor species the remarkable total is 51; of shorebirds, 54, and 226 passeres. The progress of this work is provided for by the assignment of various family treatments to different collaborators; these include Kuzmina, Gavrilov, Gavrin, Kovshar, Borodikhin, and Rodionov, under the more recent editorship of Korelov. Most of the many illustrations are by their principal bird artist, A. N. Komarov.—Leon Kelso.

75. ***A Portfolio of Australian Birds.*** William T. Cooper (text by Keith Hindwood). 1968. Charles E. Tuttle, Rutland, Vt. 60 pp. $17.50.—This is one of the recent volumes brought out by Tuttle to bring eastern ornithology to the western world. It is basically a collection of 24 paintings of large size (about 11 x 14 inches), with an accompanying text for each species. Australia has found a good proponent in artist Cooper: the paintings are technically excellent and not without character, and all have been reproduced flawlessly. This is a worthy volume to slip alongside Audubon on your over-sized-book shelf.—Jack P. Hailman.

76. ***A Portfolio of New Zealand Birds.*** Bruce Harvey. 1970. Charles Tuttle, Rutland, Vt. 60 pp. $17.50.—This collection of 25 plates is a sort of companion to the *Portfolio of Australian Birds* (review **75**). Although it has the same format, it is no carbon copy. Harvey's marginal sketches, for instance, enliven the volume. His style in the plates is strikingly different from Cooper's, being less technical but somehow more vibrant. Some plates, in my opinion, fail (*e.g.*, that of the Silvereye, *Zosterops lateralis*) — I think due to composition more than anything else. Others, like the Red-bill Gull, remain imprinted in the memory long after the volume is closed. Harvey is not as consistent as Cooper, and seems to be striving for a distinct style of his own that he has not yet solidified. Let us hope he will continue to paint.—Jack P. Hailman.

77. ***Environment, Power, and Society.*** H. T. Odum. 1971. Wiley-Interscience. New York and London. ix + 331pp. Numerous illustrations and diagrams. — This is the year, or even "der Tag" for Odum readers, what with the publication of E. P. Odum's 3rd edition, 1971, of *Fundamentals of Ecology,* revised and expanded. Having much of the latter book's *"omnibus rebus"* scope, the present one, reading with characteristic force and conviction, contains much of the same elements but emphasizes systems as applied to present and future humanity. The eleven chapters discuss; This world system. What power is. Power in ecological systems. Power basis for man. Power for order and evolution. Power and economics. Power and politics. Energetic basis for religion. Electrical simulation of energy networks. Partnership with nature. What systems are next?

Samples of the text are: "An ecological system is a network of food and mineral flows in which the major pathways are populations of animals, plants and microorganisms, each specialized to live in a different way, doing a different job for the energy flows of the system. A species of living organism is a population that is insulated and kept separate by various means so that the pathways of its food and mineral flows are not entangled with those of another species." p. 60.)

"The eccentric behavior of the birds, bats, and blooms is really the outer manifestation of preprogrammed computer units that control the timing for the whole ecological system. The present science of behavior often asks only half of the why questions, namely those concerning the mechanisms within the organisms for achieving the observed animal activities. Behavioral science will immediately become of age and make enormous strides when it also asks and measures the role of the species in doing jobs for the system." (p. 95.) All this seems quite compatible to a power and mechanistic-minded age.—Leon Kelso.

78. ***Dimensions of Change.*** Don Fabun. 1971. Clencoe Press (Division of Macmillan Co.), Beverly Hills, Calif. 230 pp. $8.95.—To say this is an offbeat volume in ecology is understatement. Its origin is a series of pamphlets by the Kaiser Aluminum and Chemical Company, which owns the copyright. The chapters are: ecology, shelter, energy, food, mobility, and telecommunications. The book defies succinct description. There are full-page color abstractions that might be suitable for framing (as the expression goes), pages of print that render John Hancock's signature small, a "text" consisting of an endless string of quotes from industry and today's "instant ecologists" (to quote Joseph Hickey), and marginal quotes in boldface (including such gems as "The whole world is watching America, and America is watching television"). The index is useless, being more a list of acknowledgments to persons whose words are quoted than a subject index. This is a volume of emotional content more than logical, and if it has a central theme that theme might be this: our plight is not the result of too much industrial and technological progress, but lack of progress in our political and sociological control of technology. With that—in the abstract—no one could quarrel.—Jack P. Hailman.

79. ***Natural Resources and Public Relations.*** Douglas L. Gilbert. 1971. Wildlife Society, Washington D. C. xxiv + 320 pp. $6.50.—Praise be to the Wildlife Society for printing the price of the book on the copyright page, thus protecting from inflation (maybe). This is the Society that publishes the *Journal of Wildlife Management,* and the book is a "how to win friends" text. Included are instructions on using mass communications, advertising, propaganda, dealing with governmental officials, group motivation, how to present slide shows, and so on. The end of the volume gives some interesting case histories in public relations, including the famous 1967 elk controversy in Yellowstone National Park. Although the situation is anything but simple, part of it involved whether the abundant elk would be driven out of the Park to be taken by hunters or cropped inside the Park by the Park Service. The author's bias shows clearly in his comments, such as "Very little controversy exists over whether or not a reduction is necessary. As for letting nature take its course, it has been pointed out by the Leopold Report that management is necessary . . ." (p. 234). I'm not sure everyone would agree, since the apparent overpopulation of the elk that would destroy the habitat has been in part due to the shortage of original predators, such as wolves and pumas, and in turning the grizzly bears to dumps for their food. Fortunately, a new Park Service policy seems to be shaping now (as opposed to the 1967 controversy related here) in which biologists *are* questioning whether a reduction in elk is necessary.

For too long, it seems to me, National Parks have failed to meet their goal of preserving intact ecosystems because of undue influence of wildlife management attitudes. The propogation of wildlife for hunting is a different matter, carrying different attitudes and orientations than those associated with preserving natural communities. Although some management is bound to be required in order to get our National Parks back into balance before they can be allowed to "run free" ecologically, there is only one animal that really needs to be managed closely on a perpetual basis: *Homo sapiens.* This book might prove surprisingly valuable for the true conservation buff, since cowboy-ecology industry and governmental bureaucracy are not the only enemies of the natural environment.—Jack P. Hailman.

80. ***Aftercare of Oil-covered Birds.*** J. L. Naviaux. 1971. National Wildlife Health Foundation. San Francisco, Calif. Mimeographed, with plastic back and paper covers. 33 pp. Available by gift & exchange.—This is published preliminary to a future book: *Oiled Seabirds: Contingency Program for Aftercare and Treatment,* T. T. Crowell Co., New York. The conservation crisis-conservationists must meet the challenge: this was approximately the title of the talk of one of the perennial leaders of wildlife foundations at the last "Wildlife Conference" in Washington. This work represents the efforts of a group which would meet head-on the problem of high mortality of oil-stricken seabirds, the mortality of which is unbelievably and disastrously high. The crucial point research-wise is that "Little is known about the pathological effects of most petroleum oils. The heavier crude oils appear to be less toxic than the lighter volatile oils which contain many aromatics." Light oil spills (*e.g.,* of kerosenes) bring the highest death rates, and that in less than 36 hours. Of the commonest mortal symptoms, respiratory distress and diarrhea, subsequent autopsies show very little evidence of either. Although birds are extraordinarily able to dispose of internal food poisons, *e.g.,* arsenic and atropine, poisons externally applied are a much more lethal problem; thus more knowledge and research is needed on avian dermal physiology.

In terse telegraphic style, experience-gained practical information is given on numerous topics including the following: general contamination effects; cleaning and recovery measures; medical treatment, which must include dealing with incidental wounds and fractures; release procedures, record-keeping of procedures; equipment and readiness of personnel (especially imperative for large disasters). "It must be recognized that these birds are medical cases and must be treated individually as such."—Leon Kelso.

81. ***Vertebrate Animals and their Urbanization in Poltava City and Vicinity.*** (Pozvonochnye zhivotnye i urbanizatsiya ikh v usloviyakh goroda Poltavy.) N. Gavrilenko. 1970. Kharkov University Publishing House, Kharkov, USSR. 140 pp. (About $1.50 U. S.) (In Russian.)—As more and more of the humanly habitable world becomes urbanized the capacity of birds to adapt thereto

becomes more consequential, at least to the birds. In the about 70 pages devoted to the 154 species discussed here, it is evident that as in other areas, some species have retreated from urban life whereas others have adapted to and even flourished in it. Here, based on 60 years of observations, the breeding species, including two falcons and two owls, number 41: migrants, 118; winter residents, 49; permanent residents, 12; and irregular visitors, 10.—Leon Kelso.

82. ***Mimicry in Plants and Animals.*** Wolfgang Wickler. 1968. World University Library, London. 255 pp. $2.45, paperback. (Translated from the German by R. D. Martin.)—Mimicry can be loosely defined as the evolution of a morphological or behavioral pattern that resembles the pattern of another organism or thing. It is often brought about by realizing gain through confusing some third organism. The classical case, of course, is that of certain tasty (to birds) butterflies that have come to resemble certain distasteful butterflies, and are thus avoided by the avian predator. However, Wickler leads us through a world of all kinds of other mimicry in all kinds of animals, some examples being so fantastic that they are difficult to believe. This is an exciting book of scientific exploration into natural history, delivered in an excellent translation and sprinkled with fascinating pictures, many of which are in color. At this bargain price the book should be in the collection of anyone who has even a passing interest in wild things. —Jack P. Hailman.

83. ***Numerical Taxonomy.*** A. J. Cole, editor. 1969. Academic Press, London & New York. xv + 324 pp.

84. ***Taxonomic Analysis.*** (Taksonomicheskii analiz.) E. S. Smirnov. 1969. Moscow University publishing house, Moscow. 186 pp. (In Russian).

85. ***The Bases of Automatic Classification.*** (Les bases de la classification automatique.) I. C. Lerman. 1970. Gauthier-Villars, Paris. viii + 117 pp. (In French).—The details and philosophies of the three systems noted above, as well as those long being developed in this country (embodied mostly in the books and articles of Sneath and Sokal) involve bird systematics, there being so much available data on them, and provide abundant details for those who can or care to read them. They are indicative of the invasion of biology by the practitioners of mathematical science. Chemists and physicists are likewise exploiting it as evidenced by many articles of bird interest appearing in their journals.—Leon Kelso.

86. ***Jonathan Livingston Seagull: A Story.*** Richard Bach. 1970. Macmillian, N. Y. 93 pp. $4.95.—There are two kinds of anthropomorphism, I've decided: one kind uses us, as we think we are, to explain animals that we don't understand; the other uses animals to understand ourselves better. Jonathan wanted to fly well: "Seagulls, as you know, never falter, never stall. To stall in the air is for them disgrace and it is dishonor." To compare Richard Bach with Poe is unduly strained, but there are touches of prose that do border on poetry. The story, such as it is, I must leave for you, with only the note that Russell Munson's fine photographic studies in black-and-white in no way detract from this surprisingly delightful little book.—Jack P. Hailman.

SPECIAL REVIEW ON "PETERSON" FIELD GUIDES

87. ***A Field Guide to the Insects of America North of Mexico.*** Donald J. Borror and Richard E. White. 1970. Houghton Mifflin Co., Boston. x + 404 pp. $5.95.—The ornithologist's reaction might well be "it's high time someone wrote a field guide to bird food." Field Guide no. 19 of the "Peterson" series is destined to wind up in the library of most of us interested in avian ecology as well as the pockets of those who merely love creepy-crawly things. And yes, this *is* the same Borror whose fine work on bird song is well known.

Whereas the ultimate proof of a field guide is in the using, this one has all the earmarks of being a truly fine one. Used properly, it should allow the rankest of amateurs to identify any American insect to family. What? Not to species? Well, consider the magnitude of the problem: for every bird species there are more than

100 species of insects in North America. The Peterson Field Guides require three volumes to cover the birds. My eight-year-old son tells me that it would thus require more than 300 volumes to cover all the insect species, and even I can perceive that this might create certain problems in the field. I count more than 100 families of beetles alone: knowing a Pleasing Fungus Beetle from a Variegated Mud-loving Beetle will just have to suffice for the present.

One begins with the endpapers, which contain a pictorial dichotomous key that identifies the order of your unknown specimen. Turning to the page indicated for that order one finds some text on separating families (or groups of families), and for larger orders even another key that allows one to proceed with confidence. Accounts of the probable family give clinching characteristics, along with drawings of one or more representative or common species. There is also a section of 16 beautifully executed color plates. It will help greatly to have a hand lens, for counting the segments in legs, studying the pattern of veins in the wings and looking at the mouthparts are all part of the game. I'm continually surprised at how relatively few persons realize that their binoculars, inverted, make a really dandy field microscope.

There is, of course, another field guide in the "Peterson" series devoted to (one order of) insects: the butterflies and moths of the eastern half of North America (by Klots, no. 4 in the series), and Roger Peterson's note in the beginning of the Borrow-White volume promises a western guide for the lepidopterist. Klots' book is a good one—in fact the best of its kind, allowing species identifications on all forms east of the Great Plains by the original "Peterson system" of color plates and arrows to key species' characteristics. Like the familiar bird guides of the series, ranges are described, rather than mapped.

Rambling on, this seems an opportune time to look back on the other field guides in the series and ask how they have fared with extensive use over the years. I omit comment on two nonbiological guides: *Rocks and Minerals* (Pough, no. 7) and *Stars and Planets* (Menzel, no. 15). The three American bird guides by Peterson himself (*Eastern*, no. 1; *Western*, no. 2 and *Texas*, no 13) are classics, but have recently been challenged strongly by the single-volume *Birds of North America* by Robbins, Bruun, Zim, and Singer. Last spring in Everglades National Park we made an informal count, and found Robbins *et al.*, being carried by about five times as many persons as the former "Bible of Birds." The attraction lies in part in the excellent postage-stamp-sized range maps in Robbins *et al.*, and its convenience of covering the whole of North America north of Mexico. It includes recently established species omitted from the eastern Peterson: Cattle Egret (*Bubulcus ibis*), Spot-breasted Oriole (*Icterus pectoralis*) and others. However, the revised *Western Birds* of Peterson includes Hawaii, so I still recommend having them all in your collection. In Europe you'll want the fine bird guide to *Britain and Europe* (Peterson, Mountfort, and Hollom, no. 8). Basically similar to the other bird guides, this one includes invaluable range maps (a European edition has plates of eggs as well). This is the best of the four Peterson bird guides.

The *Mammal* guide (Burt and Grossenheider, no. 5) is in a second edition, with a much improved text. The concept of the modern biological species is still struggling hard to find its way into the minds of mammalogists, but the new edition shows great improvement in this regard. The range maps are invaluable, and have been updated. It is a monumental shame that mammal *Tracks* were relegated to a separate volume (Murie, no. 9). My honest opinion is that this volume is useless: it does not use any coordinated system for identifying tracks and has far too much rambling text to be worth the weight in one's field knapsack. I've had the volume for years and hardly ever use it, preferring instead the diagrams of the few tracks given in the Burt and Grossenheider volume (which, by the way, also provides a fine series of plates for identification of mammalian skulls found in the field). *European Mammals* are covered by van den Brink (no. 18). It was originally a Dutch book, then translated into German by Haltenorth (published by Paul Parey Verlag). The range maps are excellent, and the German edition served me well during half a year in Germany in the mid-sixties. I have not seen the Houghton Mifflin version of this guide.

In a sense, the Peterson series reaches a peak in the two books on herps. Conant's *Eastern Reptiles and Amphibians* (no. 12) and Stebbins's *Western* counterpart (no. 16) use the "Peterson system" of identification, and helpfully include range maps. They cover all the species of frogs, toads, newts, salamanders, snakes, turtles, lizards and crocodilians, and the *Eastern* volume will soon appear in a

revised edition. The *Western* volume contains keys to eggs and larvae, as well as those to adults, allowing identification at all stages of the life cycle.

The remaining animal volumes are on *Shells of the Atlantic and Gulf Coasts* (Morris, no. 3) and the companion for the *Pacific Coast and Hawaii* (also Morris, no. 6). The eastern one seems adequate, but I've not pressed its limitations, and no opportunity has presented itself for use of the western companion.

Turning now to plants, I wane even less enthusiastic on some volumes. There are, to be fair, real problems with plants. They don't sing and wag their tails, and they look different in different habitats. Further, there are lots and lots of species to be dealt with, species boundaries are less sure than in most animals, and the taxonomy has lagged behind that of higher animals. Given these problems, most of the plant books of the series, few as they are, probably do a good job.

The volume on *Trees and Shrubs* (Petrides, no. 11) is disappointing. Plates are of single leaves, and the "Peterson system" of arrows is ignored. The volume covers only the northeastern and northcentral part of the country, and so is far more "regional" than any of the animal guides. There are no range maps. I've found that invariably I go to *Trees of North America* by Brockman, Zim, and Merrilees, a companion volume to the Robbins *et al.* guide on birds (*supra*), both published by Golden Press. (A third volume in that excellent series, by the way, is *Seashells of North America*, by Abbott, Zim, and Sandström, which should be compared with the Morris books mentioned above.) The Brockman *et al.* volume on trees gives valuable range maps, general colored pictures of the trees, and close-ups of the leaves with berries and flowers where relevant. Although it fails to include *every* species, I go to it first, and then to Petrides to run down a tree species.

Covering the same area as the tree guide is the *Wildflower* volume by Peterson and McKinny (no. 17). (The coincidence of regional coverage is hardly accidental, since both books are based on Fernald's *Gray's Manual of Botany*, for which one needs extensive linguistic training in Botanese in order to master.) However, the flower guide is a real gem. It does use the "Peterson system," and quite successfully in my opinion. I have never failed to identify a flower within its range. Although most of the plates are line drawings, one can learn the flowers well by coloring in the species you find. One friend of mine carries with her a box of two or three dozen colored pencils so she can capture just the right shade of each flower and leaf. A companion volume to *Rocky Mountain Wildflowers* (Craighead, Craighead, and Davis, no. 14) is very different in nature, relying on keys and photographs of selected species (*sans* "Peterson system" arrows). It covers only about a third of the species within its area. From very limited use, though, I think it might prove a workable field companion.

An unusual book in the series is Cobb's guide to *Ferns and Their Allies* (no. 15). "Allies" here means horsetails (scouring rushes), clubmosses (ground pines), spikemosses and quillworts; don't worry if you've never heard of quillworts. Like the tree and flower guides, its range in the United States is restricted to the northeastern and northcentral portions, but with an added checklist from Western Europe and the British Isles, which share many species with us. There are very few of these primitive Pteridophytes—plants having conducted systems for water, nutrients, etc., but lacking the reproductive sophistication of the higher Spermatophytic seed plants. Ferns and their relatives are thus advanced in structure over the non-conducting lower plants such as mosses and liverworts (the Bryophytes). A highlight of Cobb's book is the sensitive pen-and-ink drawings of Laura Louise Foster, and the price is worth it for those alone. You can identify virtually every species herein with certainty, because there are so few, which left Cobb extensive space to discourse on the amazing details of these fascinating plants. Just the same, I'd rather have one volume for identification for the whole of the United States, and leave the details to another book to be kept on my library shelf.

Thus endeth the Parade of Petersons—some good, some not so good, a few truly outstanding. It is a distinguished series on the whole, but there is room for change, improvement, and expansion. Animal tracks should be put in the mammal volume where they belong. Skindivers would treasure a volume on inshore and coral reef fishes. The beetles demand a volume of their own—yes they do! They are beautiful and interesting beasts, full of fascinating behavior. And perhaps the bees, wasps and ants also demand a volume ultimately—if only to get one to the correct genus. The bird guides need range maps if they are to survive

the competition. Turning to plants, the Bryophytes (mosses and liverworts) require a volume, and perhaps do even the more primitive fungi, algae, and lichens. Coverage needs to be expanded in the fern, tree, and flower guides for the whole continent, and guides to other areas such as the Caribbean Islands, Mexico, and Europe will help the traveller.

It would probably be safe to assert that this distinguished series under the editorship of Roger Tory Peterson has done more to popularize serious natural history in the United States than any other series. At a lower level, the small Golden Guides under Zim's editorship have certainly made their impact, and the new larger Golden Press guides mentioned several places above are seriously challenging the Peterson series. The older series (Putnam and the like) simply fail to compete except in scattered aspects of one group or another. The latest addition to the Peterson books, by Borror and White, is welcome; I think it will prove one of the better volumes in the series.—Jack P. Hailman.

NOTES AND NEWS

The Northeastern Bird-Banding Association and readers of *Bird-Banding* owe a special debt of gratitude to the retiring editor, E. Alexander Bergstrom, for his 21 years of service in that office. Under his able guidance and tireless efforts the journal has maintained both national and international reputations as an outstanding ornithological publication. Additionally, Alex somehow found the time to handle voluminous sales of mist nets. We shall miss him as editor of *Bird-Banding* but greatly appreciate his continuing service in many other functions for NEBBA.

The editor takes pleasure in naming an Editorial Advisory Committee, a group of proficient ornithologists who have agreed to provide their expertise, advice, and counsel to the editor. Those serving on this committee currently are Jon C. Barlow, E. Alexander Bergstrom, Alan H. Brush, Nicholas E. Collias, L. Richard Mewaldt, and Bertram G. Murray, Jr.

The **Spring Meeting** will be hosted by Manomet Bird Observatory on 3 June 1972. Kathleen Anderson and the Manomet Staff will act as chairmen of the meeting.

The **Annual Meeting** is scheduled for 4 November 1972 tentatively at St. Anselm's College near Manchester, N. H. Dr. John Kennard is chairman for that meeting. Make plans now to attend.

Mist Net Orders. As this issue goes to the printer, stocks of NEBBA mist nets of type A are almost exhausted, and will not be replenished (because of general preference for the tethered, extra-full version, type ATX). Type KTX (the tetoron net corresponding to ATX in nylon) is in very limited supply, though by May we expect to have moderate supplies. NEBBA mist nets are otherwise in good supply, though still feeling the effects of dock strikes and other delays. Orders for, or inquiries about, these nets should be directed to NEBBA's Assistant Treasurer for mist nets, Mr. E. A. Bergstrom, 37 Old Brook Road, West Hartford, Conn. 06117.

Raptor Banders. Anyone interested in information about an organization for raptor banders, please call or drop a card to the following organizers: William S. Clark, 7800 Dassett Court, Apartment 101, Annandale, Va. 22003, 703-941-5324; Robert Wilson, Clover Lane, Randolph Township, New Jersey 07081, 291-895-2259.

The purpose of such an organization would be the interchange of information on raptor trapping techniques, results, and studies. Also a raptor banding ethic will be established through editorials and article content. A questionnaire will be sent to you by return mail.