RECENT LITERATURE

Edited by JACK P. HAILMAN

BANDING AND LONGEVITY

(See also 14.)

1. A difference in band loss from male and female Red-billed Gulls *Larus novaehollandiae scopulinus*. J. A. Mills. 1972. *Ibis*, **114**: 252-255.—Females loose bands faster, although the causes are unclear. This is the first report of sex-difference in band-loss of which I am aware, and may well affect conclusions purporting to show that male gulls are longer lived than females.—Jack P. Hailman.

2. Fourteenth ringing report. C. C. H. Elliott and M. J. F. Jarvis. 1970. *Ostrich*, **41**: 1-117.—This report covers the period of July 1963 to June 1968 in South Africa and documents nearly 1800 recoveries. The tables, showing merely how many birds of each species were banded in each year alone, occupy 52 pages of valuable journal space, whereas the unanalyzed and unsynthesized recovery reports occupy the remainder. This waste of space is an outrage.—Jack P. Hailman.

3. Yellow-eyed Canary: longevity in captivity. R. Liversidge. 1971. *Ostrich*, **42**: 143.—The blind *Serinus mozambicus*, found as an adult with a broken wing, lived 16.5 years. Any record over 15 years for a passerine seems extraordinary, and reemphasizes the difference between natural mortality in natural conditions and the physiological lifespan potentially available to small birds.——Jack P. Hailman.

4. Longevity in the Longtailed Widowbird in captivity. H. Schifter. 1970. *Ostrich*, **41**: 255.—A male *Euplectes progne* was a month short of reaching 18 years in the Schonbrunn Zoo of Vienna. A congener, *E. capensis*, lived 18 years, 10 months.—Jack P. Hailman.

5. Effect of olfactory nerve section on the homing capacity of Carrier Pigeons. F. Papi, L. Fiore, V. Fiaschi, and S. Benvenuti. 1971. *Monit. zool. Ital.*, **5**(4): 265-267. (In English.)—Ten each of control and experimental pigeons were used; 9 to 10 days after cutting of the olfactory nerve the birds could not home from distances up to 54 km.—Leon Kelso.

MIGRATION, ORIENTATION, AND HOMING

(See also 2, 33, 34.)

POPULATION DYNAMICS

(See also 7, 11, 29, 49.)

6. The determination of clutch-size in birds: a review. H. Klomp. 1970. *Ardea*, **58**: 1-124.—This monographic-length review paper occupies the entire issue; its bibliography numbers in the hundreds of papers. It is an ambitious attempt to review all the relevant evidence concerning both the proximate and ultimate factors that determine clutch-size. The brief summary of some points of interest given here does not in any way replace reading of this fact-filled review.

Proximate factors are those that immediately control the clutch: internal mechanisms and external stimuli that promote or inhibit the development and laying of eggs. Some species are known to develop a certain number of follicles by the beginning of laying, and that number of eggs, exactly, is then laid. These are called "determinate" layers, and Klomp reviews the conflicting and often insecure evidence on which many species have been assigned to the "determinate" category. Other species are influenced by external stimuli during laying, the commonest control being some judgment of how many eggs are in the nest: when "eggs in the nest" reach a certain number, arrest of follicle-development is initiated and the remainder of the clutch is fixed. Therefore, by stealing eggs as they are laid, one can induce such birds to lay well in excess of their normal clutch (the record appears to be 80-100 eggs from a mallard, *Anas platyrhynchos*). These species are called "indeterminate" layers (which is a poor choice of terms, since the clutch size *is* determined—it is just determined by a different set of mechanisms from those of determinate layers).

Klomp reviews the experiments that attempt to pin-point the physiological mechanisms that underlie determinate and indeterminate laying. The mean clutch-size increases in second and subsequent breedings in relation to the first, which Klomp calls an "age" effect, although the evidence has never cleanly separated age from prior experience. The effect, in any case, is small (less than one egg per clutch, for most species). Good food abundance increases clutch-size in certain species, although, again, the effect is small. Klomp also reviews the effects of weather, altitude, habitat, and population density, with the expected results: some species show such effect, whereas others failed to show it when it was sought after. As to season, some species lay larger clutches at the beginning and clutches of later breeders decline regularly, whereas others have a peak in the middle of the season; the latter category is completely of passerines, whereas the former includes all kinds of birds. Finally, year-to-year variations are reviewed.

Klomp then turns to the other side of the question: so-called ultimate factors, by which is meant the evolution of clutch-size (and hence, the evolution of the proximate factors and mechanisms). The degree to which clutch-size is genetically controlled is, frankly, unknown—a fact that provides difficulties for tight evolutionary reasoning. In the competitive game of natural selection, the parental strategy will (almost) always be to produce as many young as possible. Therefore, the evolutionary question is why clutch-sizes are limited as they are: that is, why they are not larger. It seems unlikely, from the evidence reviewed by Klomp, that brooding is limiting, since some birds can successfully brood far more eggs than they lay. Klomp also catches the incorrect reasoning of others who have charted the per cent hatchability of different-sized clutches: clearly what is important is the absolute number of young that emerge, regardless of the percentage (witness toads that lay thousands of eggs in order to get a few successful new toads).

Lack's famous hypothesis that clutch-size is ultimately regulated by the number of young that can be successfully fed is reviewed *in extenso*. Klomp agrees that young do die from starvation when the brood is large and the food supply short. Klomp also establishes that in poor food years young in larger broods weigh less, and after fledging, survive poorly. However, the evidence is satisfactory thus far for only a few species. Klomp then attempts to assess Lack's hypothesis with a comprehensive view toward the proximate modifications of clutch-size that may be adaptive to the immediate circumstances of a particular year, and, in general, supports Lack's view while calling for better evidence.

Klomp then looks at phenomena such as the phylogenetic relationships as a factor in clutch-size, clutch-size in polygynous species, and the evolution of clutch-size in birds where the parents do not feed the young. He goes on to look at geographic variation, for which the inadequate evidence provides no clear answers, and the effect of predators at the nest, which he rejects as a likely factor. The theory that too large a clutch may overheat the nestlings is an interesting one on which there are no field data as yet. Klomp closes the section on ultimate factors with a resounding demise of group-selection "ideas" that have been applied to clutch-size.

Klomp's last major section is on the "adaptive significance of phenotypic variations." Basically, it asks after the ultimate factors that determine the response to proximate factors, and I think this, more than any other section of the paper, drives at the heart of answering the complex questions about clutch-size. We do, after all, focus too myopically on averages, and not enough on variations. It is an Aristotelian trait in our Western thinking that equates means with ideal reality. But I digress. Klomp shows the likelihood that correlated variation, seasonal variation, and so on are probably adaptive, although the evidence is slim.

This is the most important review on the subject of clutch-size to appear in some time, but regrettably no summary or abstract was included for those who do not read Dutch. Perhaps this paper will once and for all stop the stream of poorly conceived publications that fail to keep straight the questions of proximate and ultimate factors. I hope it will encourage new studies, both on species that have not been studied and on problems that await firm evidence. Some of the conclusions and interpretations herein may be wrong, but if shown so, it will probably be because Klomp has articulated them so clearly that others will be stimulated to gather the critical evidence.—Jack P. Hailman.

NESTING AND REPRODUCTION

(See also 6, 13, 14, 15, 16, 29, 33, 40, 59.)

7. Chick raising ability in Adelie Penguins. D. G. Ainley and R. P. Schlatter. 1972. *Auk,* **89:** 559-566.—The age of the parent and not the amount of prior reproductive experience affected the fledging weight of single chicks and the per cent of two-chick broods successfully raised to fledging time. Only one adult of each pair was of known age (i.e., banded as a chick). The mate is presumed to be of a similar age on the basis of arrival time at the colony and pairing behavior. A "control" group of pairs exists where both birds are of unknown age, but what purpose this group serves is never made clear. The mean weight of single fledglings increases with the age of the parent until the parent is 6 years old. Further aging of the parent causes no change in the mean fledging weight. The per cent of successful two-chick broods rises from 0 with a 3-year-old parent to 36 with an 8-year-old parent and remains constant thereafter. These results suggest that reproductive success is more dependent on accumulated foraging experience than on accumulated reproductive experience, an interpretation quite different from that of others studying seabirds (e.g. Coulson, *J. Anim. Ecol.,* **35:** 269-279, 1966).—Edward H. Burtt, Jr.

8. Courtship feeding in gallinaceous birds. A. W. Stokes and H. W. Williams. 1971. *Auk,* **88:** 543-559.—The paper reviews the widespread trait in this group, finds it of longer duration in monogamous species with long pair bonds, and believes it to be evolved from feeding of the young.—Jack P. Hailman.

9. The Fawn-breasted Bowerbird (*Chlamydera cerviniventris*). W. S. Peckover. 1970. *Proc. Papua and New Guinea Sci. Soc. for* 1969, **21:** 23-35.—Well illustrated with six black-and-white and two color plates and a map, this is an important study of 85 bowers of *Chlamydera cerviniventris* made over a period of several years. The author discusses a wealth of data on bower location, construction and demolition, decorating and painting, as well as male display, nesting, and mimicry. Nests have been found in all months except April and an 8-9-month-period of display begins in May or June. The male abandons his bower at the end of the breeding season, and it is usually demolished at about the time a new-season bower is started nearby. The nesting trees so far found have been at least 150 m. from a bower site. (See also review **14.**)—Mary LeCroy.

10. Breeding behaviour of the Long-tailed Skua, *Stercorarius longicaudus* (Vieillot). M. Andersson. 1971. *Ornis Scand.,* **2:** 35-54.—*Ornis Scandinavica* is a new journal, published by the Scandinavian Ornithologists' Union, which is an association of ornithological societies in Denmark, Finland, Norway, and Sweden. The quality of its papers in the first few volumes seems better than average for new journals, and a variety of subjects, from parasites and PCB's to puffins and plovers, has appeared. Andersson's paper is a good ethological study of feeding, hunting, territory, and so forth, with ample material on displays and vocalizations. The display behavior, taken as a whole, is more aerial than gulls' to which the skuas are, of course, related, as is evidenced by similarities in their display postures and movements.—Jack P. Hailman.

11. Aspects of breeding behaviour in the Royal Penguin, *Eudyptes chrysolophus schligeli.* J. Warham. *Notornis,* **18:** 91-115.—Besides the usual breeding behavior information there are notes on mortality, comfort movements, etc. The descriptions of displays and other action patterns are not as detailed as those of the more ethologically-oriented observers, but much valuable information is in this report.—Jack P. Hailman.

12. The weight of the Kiwi and its egg. B. Reid. 1971. *Notornis,* **18:** 245-249.—No bird of similar weight lays an egg as large as that of *Apteryx.*—Jack P. Hailman.

ETHOLOGY AND PSYCHOLOGY

(**See also 7, 8, 9, 10, 11, 23, 24, 39, 43, 46, 53, 55, 59, 62, 63.**)

13. The behaviour of the Ptarmigan. A Watson. 1972. *Brit. Birds,* **65:** 6-26.—A fine descriptive study of nesting, behavior of the young, predators, feeding comfort movements, etc., in *Lagopus mutus.* It is the first of a two-part paper.—Jack P. Hailman.

14. Behaviour of the male Satin Bower-bird at the bower. R. Vellenga. 1970. *Austral. Bird Bander,* **8:** 3-11.

Satin Bowerbirds. R. Vellenga. 1972. *Wildlife in Australia,* **9:** 6.—These papers report observations made on color-banded birds, a total of 950 individuals having been banded by the time of the second paper. Intensive observations were made of the seasonal activities of one male; behavior of immature males and female behavior in the vicinity of the bower are recorded. This male mated with five different banded females and courted 10 identified females at the bower in a single season. I believe this to be the first time promiscuous polygyny has been shown in color-marked bowerbirds, although it has often been suggested or assumed. Known-age immature males were watched building rudimentary bowers, often in groups. Females visited these bowers but no matings were seen. The bower of a deceased male was taken over by another adult male within 12 hours, causing change of ownership at several bowers in the vicinity. Plumages of immature males and bill color change in the third year are described. (See also review **9.**)—Mary LeCroy.

15. Prenatal experience of parental calls and pecking in the Laughing Gull (*Larus atricilla* L.). M. Impekoven. 1971. *Anim. Behav.,* **19:** 475-480. —Clearly embryonic experience affects later behavior. The parent gull utters a "crooning" call that increases pecking rate in the chicks, and an alarm "kow" call that tends to suppress pecking. Experiments played back these calls to young prior to hatching, and charted the effects both upon the embryo and upon the chick's pecking after hatching. Crooning calls increase beak-activity of embryos, but the "kow" call has no effect, or only a slight depressive effect. After hatching, chicks that had been played "kow" calls in the egg did not differ from those incubated silently: both groups showed significant depression of pecking rates when the "kow" sound was played. However, playing back the crooning call to the eggs had an effect on the response of the chicks to this call: playing the crooning slightly depressed pecking (or had no effect) in silently-reared chicks but enhanced pecking in chicks that had heard the call in the egg. This is another in a growing list of studies showing how complex and subtle are the interactions involved in the ontogeny of behavior, and how useless is the facile concept of "instinct."—Jack P. Hailman.

16. Observations on the influence of social displays on ovarian development in captive Mallards *Anas platyrhynchos.* M. F. Desforges. 1972. *Ibis,* **114:** 256-257.—The author believes he has disproven the idea that social displays have a significant effect on ovarian growth because a few captive birds of unstated origin laid an unstated number of eggs. The publication of these anecdotes will serve only to confuse the literature.—Jack P. Hailman.

17. Dark pollinia in hummingbird-pollinated orchids, or do hummingbirds suffer from strabismus? R. L. Dressler. 1971. *Amer. Nat.*, **105:** 80-83.—Ready? Well, orchids have dark pollen to match the color of hummingbird beaks because lighter pollen would contrast with the beak and the bird would wipe it off as man wipes a dark smudge from his nose.—Jack P. Hailman.

18. Comparative behaviour of West African and South African subspecies of *Ploceus cucullatus*. N. E. Collias and E. C. Collias. 1971. *Ostrich Suppl.*, **9:** 41-52.—Here is another fascinating study from the prolific husband-and-wife team who have studied weaverbirds in such admirable detail. Only quantitative differences were found in the behavior of *P. c. cullatus* and *P. c. spilonotus*, such as nest-site, head-bowing in territorial aggression, feeding preferences, and so on. The latter subspecies might experience more predation than the former, which might explain these slight evolutionary shifts.—Jack P. Hailman.

19. Use of tools by the Egyptian Vulture. C. J. Skead. 1971. *Ostrich*, **42:** 226.—It turns out that Van Lawick-Goodall and Van Lawick (*Nature*, **212:** 1468-1469, 1966) were not the first to discover tool-using in *Neophron percnopterus*. Skead has found a report in 1867 by "an old sportsman" published in a newspaper: "It will take a stone as large as a cup, and let it fall on the eggs repeating this until he breaks some of them . . . It takes stones from sometimes as far as about three miles . . .".—Jack P. Hailman.

20. Use of tools by the White-winged Chough. J. N. Hobbs. 1971. *Emu*, **71:** 84-85.—Man was once naively defined by anthropologists as the "tool-user." Tool-using has now been widely reported in birds (Lack on finches, Morse on nuthatches, Van Lawick-Goodall on vultures, etc.), and now *Corcorax melanorhampus* can be added to the list. They open water-mussels by hammering them with empty shells, and may also strike them against an object used as an anvil (as is known from Song Thrushes, *Turdus philomelos*, opening snails). Some pundits are now calling man the "tool-*maker*," a term which should provide an interesting ornithological challenge.—Jack P. Hailman.

21. Tool-use by the New Caledonian Crow (*Corvus moneduloides*). R. I. Orenstein. 1972. *Auk*, **89:** 674-676.—The bird was seen once to probe with a stick, somewhat in the fashion of the two Darwin's Finches of the Galapagos. The bird was seen to use the stick, but not to find it, obtain food with it or discard it.—Jack P. Hailman.

ECOLOGY

(See also 6, 7, 13, 53, 60, 62, 67, 68.)

22. Pollinators in high-elevation ecosystems: relative effectiveness of birds and bees. R. W. Cruden, 1972. *Science*, **176**(4042): 1439-1440.—It was observed in montane Mexico that plants with hummingbird-pollinated flowers were more numerous in both species and individuals at elevations above 2300 m. than between 1000 and 2300 m. The conclusion is that at higher altitudes in the rainy season, the daily flight time available to hummingbirds is greater than that available to bees. It is shown that, under bee-flight conditions rated *poor* or *medium*, the fecundity of bird-flowered plants is greater than that of bee-flowered plants. With good conditions for bee flight the fecundity of both types of plants is essentially equal. It is further pointed out that pollination "is not necessarily a good measure of fecundity." ("Pollination in this paper was defined on the basis of developing seeds, thus is minimal"—Cruden *in litt.*). Fecundity is the percentage of pollination times percentage of seed set. A final conclusion is that seed set is dependent on the number of pollinating visits to a flower. The dispersion measure used in the middle of column 1, page 1040 is one standard deviation (Cruden *in litt.*)—C. H. Blake.

23. Observations of the Great Gray Owl on the winter range. D. F. Brunton and R. Pittaway, Jr. *Canadian Field-Nat.*, **85:** 315-322.—*Strix nebulosa*, being a far northern species, has not been studied extensively. These observations document its home range, wing-beat rate in various situations, the rarity of territorial encounters and vocalizations, prey, and so on. Apparently the owl requires open foraging areas in winter, and is not restricted to dense forest as was previously thought. There is a nice photo of an owl attacking.—Jack P. Hailman.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(See also 13, 67.)

24. Bird behavior and technology. (Povedenie ptits i tekhnika.) V. Yakobi. 1972. *Zh. obschchei. biol.*, **33**(3): 261-273. (In Russian, English summary.)—Vehicles are the main item of concern. Indifference to stationary or moving carriers is the general trend in birds unless an immediate threat is sensed. To try mechanical structures as nest-sites they have even tolerated temporary moves, noise, and strong radar radiation. An analysis of over 11,000 cases of bird strikes on aircraft finds that the majority involve inexperienced individuals, unfamiliar with airdromes or aircraft, e.g. juveniles shortly after nesting or on seasonal migration. Experience in avoiding strikes is gained via individual and group learning. Local populations tend to adapt rapidly. Recorded turbojet noise was ignored by gulls living away from airports, but frightened those living near them. Adult alarm at danger sounds is communicated to young by adult response thereto.—Leon Kelso.

25. John Gooders watching Tawny Eagles in Thebes. (Zeiss Co.) 1972. *Brit. Birds*, **65:** i.—While I don't mean to begin a stampede for reviewing advertisements about ornithology, this one attracted my attention because I wanted to see the Tawny Eagles. Well, the picture shows Gooders, but the only other thing visible is his binoculars. Admittedly this quote is out of context, but the text of Gooders's endorsement reads in part: "Zeiss binoculars are not cheap . . .".—Jack P. Hailman.

CONSERVATION AND ENVIRONMENTAL QUALITY

(See also 47, 51, 67, 68.)

26. Constitutional implications of wetlands legislation. J. W. Gannon, Jr. 1971. *Environmental Affairs*, **1**(3): 654-669.—A variety of states now have statutes designed to conserve wetlands by restricting the uses an owner may make of such lands. Recently the Supreme Judicial Court of Maine (in *State vs. Johnson*) held that application of the Maine Wetlands Act was unconstitutional, in that it amounted to the "taking" of wetlands without just compensation to the property owner. In addition, the Court found that application of the law was not a proper exercise of the state's police power, since it deprived the owners of reasonable use of their land.

This paper carefully examines the decision of the Court, which could set a dangerous precedent in all states with conservancy zoning or regulation statutes. The author submits four reasons for believing the decision to be in error, and cites a variety of cases that weigh against the court's decision. Environmentalists concerned with the preservation of wetlands would be well advised to examine this article carefully, as cases of this nature will be more in evidence in the years to come.—B. Dennis Sustare.

27. Organochlorine residues in aquatic birds in the Canadian prairie provinces. K. Vermeer and L. M. Reynolds. 1970. *Canadian Field-Nat.*, **84:** 117-130.—Some highlights of this study are: DDE and dieldrin levels were higher in eggs of fish-eating birds and larids than in eggs of ducks and geese; eggshell thickness was inversely correlated with DDE concentration in a sample of 40 eggs of the Great Blue Heron ("*Aechmophorus occidentalis*" presumably —*Ardea herodias*); and PCB concentration and eggshell thickness were not significantly correlated. The record of death and destruction continues to grow.—Jack P. Hailman.

28. Thickness of 1967-69 Whooping Crane eggshells compared to that of pre-1910 specimens. D. W. Anderson and J. F. Kreitzer. 1971. *Auk*, **88:** 433-434.—The table claims that pre-DDT thicknesses averaged "0.064 mm" whereas later ones were ten times as thick ("0.612 mm"). This has to be a most unfortunate typographical error, as the text says the latter figure "is essentially the same as the pre-1910 mean."—Jack P. Hailman.

29. The Laughing Owl *Sceloglaux albifacies*. G. R. Williams and M. Harrison. *Notornis*, **19:** 4-19.—One of the two native New Zealand owls began to disappear from the North Island more than 150 years ago and has not been "officially" sighted since 1914. The known facts about the biology of this possibl extinct species are reviewed.—Jack P. Hailman.

30. The energy crisis: the issues and a proposed response. M. McCloskey. 1971. *Environmental Affairs*, **1**(3): 587-605.

A legal solution to the electric power crisis: controlling demand through regulation of advertising, promotion, and rate structure. D. H. Permar. 1971. *Environmental Affairs*, **1**(3): 670-693.—The spiraling growth of the electric power industry is cause for alarm to most environmentalists. This growth is responsible for large space demands for power plants and transmission lines, new sources of waste heat, radioactive wastes, air and water pollution, and increasing claims on our nonrenewable fuel resources. These two papers present methods for regulating this runaway growth and ameliorating its problems.

The first article concentrates on action at the federal level. The author calls for a variety of constraints to retard artificial inducements to growth and to internalize the social costs of electric production and fuel supply. He particularly targets the automobile, aluminum, paper, and fertilizer industries as consuming large amounts of energy and causing serious environmental problems without the costs of curing these problems being reflected in the costs of their products. The author outlines six points of legislation that are needed, these providing for changes in the operation of the Federal Power Commission and the Interior Department. One of his key proposals is to separate the planning function from the licensing function in the FPC, so that the public interest can be adequately represented before license hearings.

The second paper emphasizes action at the state regulatory commissions. The author proposes that the growth rate of demand for electricity be reduced by using advertising and promotion to conserve, rather than encourage, electric consumption. In addition, he would modify the electric rate structure so that larger consumers would pay more per unit consumed than small consumers; this is the reverse of the present situation. If the reader is not yet convinced that the energy industries are at the heart of many of our environmental problems, he should read these two articles, so as to recognize the dangers and comprehend possible solutions.—B. Dennis Sustare.

PARASITES AND DISEASES

31. Ectoparasitic insects on birds and mammals of the Kermadec Islands. J. C. Watt. 1971. *Notornis*, **18:** 227-234.—A notable feature of this report is a key to the main groups of ecoparasites, which should be helpful in places other than the Kermadec Islands, and in any case sets a good example.—Jack P. Hailman.

32. Aqueous humor inflow in normal and glaucomatous avian eyes. J. Lauber, J. Boyd, and T. Boyd. 1972. *Exp. Eye Res.*, **13**(1): 77-82.—"White Rock" chickens were the subject. Apart from circadian rhythm implications, fowl reared under continuous light developed a glaucoma-like condition, with eye enlargement, elevated intraocular pressure, impaired water outflow facility, reduced corneal curvature, and eventual blindness. The avian eye has a higher water exchange rate than that reported for man, monkey, rabbit or cat, about 10% total water volume per minute. Birds reared in continuous light developed discernible abnormal eye enlargement during the first few weeks after hatching. At 10 weeks eye weight was 3.3. (vs. 2.3 for normal). At 20 weeks age, weight of the eye was 5.4g, about 60% larger, but aqueous volume interiorly was about 60% less than normal. Reasons for these results and the possible long range implications are still being sought.—Leon Kelso.

PHYSIOLOGY

(See also 5, 6, 16, 32, 40, 41, 62.)

33. Torpidity in the White-backed Swallow. D. L. Serventy. 1970. *Emu*, **70**: 27-28.—Lest *Cheramoeca leucosternum* be added to the small list of birds that undergo torpor, note: it is a second-hand report from a schoolteacher who remembers picking limp swallows from their nest in 1936!—Jack P. Hailman.

34. Torpidity in Australian birds. D. L. Serventy. 1970. *Emu*, **70**: 201-202.—Add to the hearsay list the swallow, *Hirundo neoxena*, and the Mistletoebird, *Dicaeum hirundinaceum*.—Jack P. Hailman.

35. The ultimobranchial gland of birds and the effects of nutritional variations. L. F. Bélanger. 1971. *J. Exp. Zool.*, **178**: 125-138.—This paper was part of a symposium on the ultimobranchial body and its function. The author reviews the literature concerning the anatomy and physiology of the gland in birds. The ultimobranchial body produces the hormone calcitonin which inhibits osteocytic osteolysis.—Joel Cracraft.

36. Effect of light and dark adaptation on the retina and pecten of chickens. S. Bawa and R. Yashroy. 1972. *Exp. Eye Res.*, **13**(1): 92-97.—The bird retina (as in reptiles, but unlike mammals) is devoid of blood vascular supply, so for nutrition it must depend on inward diffusion of nutrients from the outside. The pecten is richly supplied with blood vessels from which the nutrients diffuse into the vitreous substance to be absorbed finally by the retina. Increase in alkaline phosphatase activity in the pecten on exposure to light may stimulate the flow of nutrients from the pecten, thus helping the retina to cope with its increased energy demand. With three experimental groups of 10 each, one in continuous darkness for 30 days, the second, in light, and third, a control, it was found that alkaline phosphatase metabolite transport activity decreased 25% in the dark adapted group. It has been found that birds reared in continuous light develop abnormally distended eyes with some glaucoma.—Leon Kelso.

37. Some functional and morphological features of the effect of laser radiation on the pigeon retina. (Nekotorye funktionalnye i morfologicheskie kharakteristiki deistviya lazernogo izlucheniya na setchatku glaza golubei.) E. Ter-Gazaryants and D. Gevorkyan. 1972. *Biol. zhurn Armenii*, **25**(1): 83-87. (In Russian.)—Laser beams of varied intensity focused on the optic nerve and neural envelopes of the (common domestic?) pigeon caused a sharp edema with intercellular blood infiltration. At the base of the pecten they caused depigmentation and disintegration of tissue with a swelling of endothelium. Some damage was found even in eyes not directly radiated. This implies that laser beams are too dangerous for animals and humans for use in repelling birds from airports.—Leon Kelso.

38. Effect of gamma irradiation on the chicken retina. S. Bawa and R. Yashroy. 1970. *Radiation Res.*, **48**(2): 303-311.—Interest in radiation effects on the retina dates back to 1955 when it was found that X-rays are discernible to the human eye. Head areas of chickens were exposed to gamma rays of 2000 Roent. per hr intensity. Examination of retinas found that phospholipids and glycogen had increased whereas nucleic acids declined.—Leon Kelso.

MORPHOLOGY AND ANATOMY

(See also 12, 35, 36, 52, 69.)

39. Handedness in the Brown-throated Parakeet *Aratinga pertinax* in relation with skeletal asymmetry. R. McNeil, J. R. Rodriguez S., and D. M. Figuera B. 1971. *Ibis*, **113:** 494-499.—In birds that bring food to the beak with the right foot, all limb segments are longer on that side. The effect is not as great in the rarer left-handed birds. The title is not grammatical.—Jack P. Hailman.

40. The incubation patch of birds. R. E. Jones. 1971. *Biol. Rev.*, **46:** 315-339.—Jones presents a comprehensive review of our knowledge of the incubation patch. He discusses morphology (including histology), development, hormonal control, evolution, and physiology. Most of Jones' previous work has dealt with hormonal control and this is emphasized in his review. Jones points out the many as yet unanswered questions regarding the biology of the incubation patch, and his paper can certainly be recommended for those persons interested in avian breeding biology.—Joel Cracraft.

41. Preen gland weights. R. J. Kennedy. 1971. *Ibis*, **113:** 369-372.—I have a scientific friend who bemoans much published research as "quantification of the obvious." Nevertheless, it seems useful to me to demonstrate that waterbirds *do* have larger preen glands than other birds. Indeed, pointing out the exceptions and variations may lead ultimately to a better understanding of the functional significance of preen glands.—Jack P. Hailman.

42. Variability of feather structure and egg coloration in some birds. (Izmenchivost struktura pera i okraski yaits u nekotorykh ptits.) A. Yablokov and A. Valetskii. 1972. *Z. zhurn.*, **51**(2): 248-258. (In Russian, English summary.)—The density per unit area of barbules in various parts of the wing, tail, and contour feathers was counted for a variety of gull species, the Rock Dove, *Columba livia*, and Willow Ptarmigan, *Lagopus lagopus*. The work was part of a search for extra but generalized systematically diagnostic features, a coefficient of variability of 10-20% being unsuitable. The highest density of barbules per area was found in the larid species, particularly the Common Tern, *Sterna hirundo*. The greatest barb density occurred in the pigeon and ptarmigan. In all cases barbules were more numerous on the dorsal than on the ventral side of the barb. Among eggs of gull species those of the Great Black-headed Gull, *Larus ichthyaetus*, showed equality of rounded and elongate spots; mostly rounded spots occurred in the Herring Gull, *L. argentatus*, and Common Gull, *L. canus*. Prospective use of these features to define population differences is discussed.—Leon Kelso.

43. Passerine foot-scutes. G. A. Clark, Jr. 1972. *Auk*, **89:** 549-558.—The motivation for looking at the structure of these scutes was taxonomic, but individual variation seems to render the character only marginally useful. There is a presumably adaptive difference in structure between sparrows that do and do not use the two-foot "double" scratching method of foraging.—Jack P. Hailman.

44. The role of avian rictal bristles. R. J. Lederer. 1972. *Wilson Bull.*, **84:** 193-197.—These are the modified feathers that remind one of cat's whiskers, and the author shows they play no role in insect-capture by flycatchers. Their function remains unknown.—Jack P. Hailman.

45. On how an Archosaurian scale might have given rise to an avian feather. P. F. A. Maderson. 1972. *Amer. Nat.*, **106:** 424-428.—Figure 1 (p. 425) shows hypothetical intermediates between reptilian scales and avian feathers, with the migration of cells and the distributions of α-keratin and β-keratin.—Jack P. Hailman.

46. Adaptive mechanisms of the raptor pelvic limb. G. E. Goslow, Jr. 1972. *Auk*, **89:** 47-64.—This paper analysed three hindlimb muscles (tibialis anterior, flexor hallucis longus, flexor digitorium longus) in eight species (four families) of raptors. In addition to the standard comparative anatomical work, Goslow also determined length-tension curves for each muscle in each species. This then permitted him to make statements about force development at different leg positions. Using this approach, for example, he shows that the flexor digitorum longus is more effective when the leg is fully extended, whereas the flexor hallucis longus operates best when the leg is flexed. Goslow has demonstrated the value of this approach for functional morphology, and, combined with other methods of analysis, it should help us discover what really happens during hindlimb locomotion. This paper deserves attention by all morphologists.—Joel Cracraft.

47. Morphology of the tongue apparatus of *Ciridops anna* (Drepanididae). W. J. Bock. 1972. *Ibis*, **1972:** 61-78.—The Hawaiian honeycreeper *Ciridops anna* is now probably extinct and only five specimens are known. The morphology of this monotypic genus is important because *Ciridops* may play a central role in various hypotheses about the evolution of the honeycreepers themselves. Bock presents an excellent description and numerous fine illustrations of the tongue of the only alcoholic specimen known. A few comparisons are made to the genus *Loxops*. The tongue morphology suggests drepanidids are closer to the cardueline finches than to the "coerebids."—Joel Cracraft.

48. Morphology and evolution of the ectethmoid-mandibular articulation in the Meliphagidae (Aves). W. J. Bock and H. Morioka. 1971. *J. Morph.*, **135:** 13-50.—This paper describes an articulation consisting of a process on the dorsal surface of the mandible which fits into a recess on the ventral surface of the ectethmoid. The articulation forms a true diarthrosis and apparently serves as a brace for the adducted mandible against dorsoposteriorly directed forces. The articulation is found in all species of *Melithreptus*, some of *Manorina*, and some of *Ptiloprora*. Because these genera are apparently not close relatives to each other, it is assumed this articulation evolved at least three times within the family. The authors present a detailed description of the osteology, jaw and tongue muscles in *Melithreptus*. The relationship of the articulation to the known feeding habits of meliphagids is discussed.—Joel Cracraft.

PLUMAGES AND MOLTS

(See 42, 44.)

ZOOGEOGRAPHY AND DISTRIBUTION

(See also 60, 65, 70.)

49. Range expansion of the Cattle Egret. D. Blaker. 1971. *Ostrich Suppl.*, **9:** 27-30.—The essence of the thesis is that *Ardeola ibis* may have crossed the Atlantic many times in history, but only became established and expanding in the new world when cattle became widespread. The increase of cattle and Cattle Egrets in South America is graphed.—Jack P. Hailman.

50. New avifaunal sight-recordings for Bougainville. L. W. Filewood. 1970. *Proc. Papua and New Guinea Sci. Soc. for 1969*, **21:** 20-22.—Ten species reported as first records for Bougainville Island, Solomon Islands.—Mary LeCroy.

51. Rediscovery of the Imperial Snipe in Peru. J. Terborgh, and J. Weske. 1972. *Auk,* **89**(3): 497-505.—In intriguing detail this relates the nuptial display and details of calls along with rediscovery of *Gallinago imperialis* in the Peruvian Andes at about timberline, which at little more than 10,000 ft altitude is not high for an equatorial latitude. Attendant to a senatorial hearing on endangered species, it was noted that a complicating problem is whether a threatened item *is* a species, or a variety, form, local population or, a gleam in someone's eye. This snipe has been rated by various writers, say these authors, all the way from color phase of something else, to variety, to species, to a distinct genus. Comparison of the specimen brought back with the type has yet to be made, so yet another opinion on its status may be expected.—Leon Kelso.

SYSTEMATICS AND PALEONTOLOGY

(See also 43, 69, 71.)

52. Anatomical evidence for phylogenetic relationships among woodpeckers. W. R. Goodge. 1972. *Auk,* **89:** 65-85.—Using comparative data on a number of anatomical features, the author attempts to draw conclusions regarding intergeneric relationships of the picids. Unfortunately the study suffers from some questionable systematic theory, which easily could have been avoided. Unlike many other workers, Goodge at least attempts to distinguish between primitive and derived characters. However, rather than letting the distributions of the characters speak for themselves, he concludes *a priori* that character-states in *Jynx* and piculets are primitive. This defeats the purposes of systematic analysis, and it probably leads to incorrect conclusions. It is difficult not to have reservations about some of his primitive-derived sequences and therefore about his systematic results. In his discussion section Goodge also does not clearly distinguish for the reader whether relationships are based on shared features that are primitive or derived. In certain cases he implies relationship on shared primitive characters, a comparison which cannot be done. Finally, before recognizing polarity sequences of characters within the Picidae, it is necessary to examine these features within other families of the order.—Joel Cracraft.

53. Systematic relationships in herons (Ardeidae), based on comparative studies of behaviour and ecology: a preliminary account. K. Curry-Lindahl. 1971. *Ostrich Suppl.,* **9:** 53-70.—The genera of herons have ranged in number from eight to 22, depending on the author, and Curry-Lindahl opts for nine. The study uses behavioral patterns to a greater extent than heretofore applied to herons, but the conclusions are derived largely from the author's as yet unpublished behavioral studies, making it difficult to judge the evidence. Emphasis is upon courtship, but without the full studies it is difficult to judge how evolutionarily "conservative" one should expect courtship patterns to be. For instance, smaller species and those that live in more open habitats might have more display flights than larger species living in wooded areas. One must simply trust the perceptiveness of the author in using behavioral evidence without having published it.

The origin of the herons appears to have been in the tropical Old World. Many species are still expanding their ranges (see review **49.**). Curry-Lindahl believes that several ecological equivalents in the New and Old World should probably be considered conspecific: for instance, the Great Blue Heron (*Ardea herodias*) and the European Heron (*A. cinerea*), and the Snowy Egret (*Egretta thula*) and the Little Egret (*E. garzetta*). Although Curry-Lindahl's taxonomic revisions seem to be generally in line with the morphological studies, this paper may be viewed cautiously until the full behavioral evidence reaches print.—Jack P. Hailman.

54. The problem of generic limitation in ornithology. (Probleme der Gattungsabgrenzug in der Ornithologie.) H. Wolters. 1971. *Bonn. zool. Beitr.,* **22**(3/4): 210-219. (In German, English summary.)—This expresses in print what others have been thinking for some time. A "natural" classification of birds, he writes, should reflect as well as feasible the relationships of the various species and subspecific groups. In this, one should be guided by certain understood principles. Smaller genera are preferable to larger (recalling for the latter *Anas* among the ducks and *Otus* in the owls) since they provide a better guarantee that the species placed together are really related, and not just similar to each other in certain characters owing to convergent or parallel evolution. However a tide of change in reverse to that in the Peters' world check-list would arouse more annoyance with nomenclature, for which systematics has had to pay too much already.—Leon Kelso.

55. The flying ability of *Archaeopteryx*. D. W. Yalden. 1971. *Ibis,* **113:** 349-356.—It was formerly thought that the classic reptilian-bird (or avian-reptile if you prefer) could only glide, but Yalden's thorough analysis of the body structure of the fossils concludes the beast was capable of short flapping flights.—Jack P. Hailman.

56. A new ibis from the lower Eocene of Britain. C. J. O. Harrison and C. A. Walker. 1971. *Ibis,* **113:** 367-368.—A new genus and species of threskiornithid, *Proplegadis fisheri,* is described for a distal humerus from the London Clay. The bird was somewhat smaller than the living Glossy Ibis (*Plegadis falcinellus*).—Joel Cracraft.

57. A review of the pre-Pliocene penguins of New Zealand. G. G. Simpson. 1971. *Bull. Amer. Mus. Nat. Hist.,* **144:** 319-378.—Based on an examination of specimens Simpson has revised this important fauna. He recognizes six genera and nine species. A new species, ?*Platydyptes marplesi,* is named for a complete skeleton. Simpson does not believe our knowledge of fossil penguins is sufficient to recognize subfamilies; this conclusion, with which I agree, points to the need for more comparative anatomical studies on recent forms. He still considers penguins to be most closely related to procellariiforms, although this conclusion has never been adequately established.—Joel Cracraft.

58. Review of fossil penguins from Seymour Island. G. G. Simpson. 1971. *Proc. Roy. Soc. Lond.,* **178:** 357-387.—Dr. Simpson has revised the fossil penguins of Seymour Island located off the northeastern end of the Antarctic Peninsula. He believes the fauna is probably late Eocene in age although this is still uncertain. Simpson accepts five genera (six species) and provides diagnoses. A new genus and species, *Wimanornis seymourensis,* is described for a humerus. The Seymour Island penguins are quite different from the Miocene fauna of South America but have a remarkable similarity, at the generic level, to Eocene-Oligocene penguins of New Zealand.—Joel Cracraft.

EVOLUTION AND GENETICS

(See also 6, 18, 45, 47, 52, 69.)

59. Wife sharing in the Tasmanian native hen, *Tribonyx mortierii*: a case of kin selection? J. M. Smoth and M. G. Ridpath. 1972. *Amer. Nat.,* **106:** 447-542.—The problem is: why do something nice for someone in the competitive world of natural selection? And the kinship-selection answer is: one does nice things only for close relatives, because in such cases it is possible to contribute more of "your" genes to the next generation than if you did not. Take the example of a distraction display: in the extreme case, a hen may give her life in order that her clutch of young escape predation, since each young is carrying genes which are half hers. The evidence ultimately depends on such factors as the probability that the hen will live through the situation, the number of young she is liable to produce in future seasons, the survival to reproduction of her own young being saved from the predator, and so forth.

In the present case, the flightless rail is organized such that two males frequently are mated to the same female, so the question is why the two tolerate each other. The answer is that they are brothers, so that each will be passing to its offspring some of the genes possessed by the other. Toleration, therefore, is not as complete a loss as it would be by allowing a complete stranger in the house. Since there is an imbalanced sex ratio in this species (male surplus) it is to the female's advantage to take on as many males as she can. Therefore, it is argued, one male may *have* to tolerate another to obtain *any* successful reproduction, so it might as well be a brother to minimize the genetic loss. (Things are argued more elegantly and mathematically in the paper.)

Some problems with this study, as I see it, are first, that the causes of the imbalanced sex ratio are unknown, and second, that the entire analysis is based on only seven known brother-brother tolerances.—Jack P. Hailman.

60. Taxon cycles in the West Indian avifauna. R. E. Ricklefs and G. W. Cox. 1972. *Amer. Nat.*, **106:** 195-219.—The idea is this: colonists arrive on islands, they spread geographically, then begin to differentiate and become restricted in range until endemic forms occupy single islands. The authors believe that counter-adaptations are evolved among the previous inhabitants of islands to better compete with the invaders, and that the constant influx of new invaders also helps to drive this "taxon cycle" toward its usual endpoint of extinction. The documentation of the cycle itself is very convincing, although the mechanisms that promote it are difficult to substantiate with critical data.—Jack P. Hailman.

FOOD AND FEEDING

(See also 7, 8, 13, 17, 19, 20, 21, 22, 23, 43, 44, 49.)

61. Regular daylight hunting by Barn Owls. D. S. Blum. 1972. *Brit. Birds*, **65:** 26-30.—The title tells it, and the author solicits further observations on *Tyto alba*. (He could look at Hailman, "Barn Owl hunting during daylight," *Chat*, **24:** 101, 1960.)—Jack P. Hailman.

62. The possible ecological significance of hawking by honeyeaters and its relation to nectar feeders. H. F. Recher and I. J. Abbott. 1970. *Emu*, **70:** 90.—Various species of honeyeaters expend considerable energy catching a few small insects. Chromatographic studies show nectar is a poor source of protein (even though high in calories), so it may be that the birds hawk to get needed protein at the sacrifice of considerable energy. It is interesting to me that DeVore's studies of simple human societies show that gathering by the women amply supplies calories for the whole village, and that the inefficient hunting by the men may be necessary for the proteins alone.—Jack P. Hailman.

SONG AND VOCALIZATIONS

(See 64, 69.)

PHOTOGRAPHY AND RECORDINGS

(See also 23.)

63. More examples of the best recent work by British bird-photographers. E. Hosking and I. J. Ferguson-Lees. 1971. *Brit. Birds*, **64:** 187-189 and plates 21-28.—This is a nice collection, although most of the pictures are the usual portraits. Blackburn's photo of a Robin (*Erithacus rubecula*) in display is my favorite.—Jack P. Hailman.

64. New palearctic bird sound recordings during 1970. J. Boswall. 1971. *Brit. Birds*, **64:** 431-432.—This updates the author's previous useful lists of available recordings, which now number 144 records. One that caught my eye is entitled "Guess the Birds," but the annotation fails to reveal if the answers are included with the record.—Jack P. Hailman.

MISCELLANEOUS

(See also 25.)

65. A historical background of ornithology with special reference to Australia. D. L. Serventy. 1972. *Emu,* **72:** 41-50.—The history is divided into the periods of the early travellers, the great navigating expeditions, the pioneering settlers, the native-born observers, and the Modern period. This is a readable history derived from an address, and as such is deficient in the sort of references that would make the paper a source for detailed digging.—Jack P. Hailman.

66. A critical history of *Emu*. S. Marchant. *Emu,* **72:** 51-69.—For the real history buffs, this paper by the Editor provides a full historical discussion of production, editors, policies, format, illustrations, notices and reviews, indexing, contents, and contributions. It should make good reading for anyone unfortunate enough to find himself with the responsibility of editing an ornithological journal, and, indeed, it might be of interest to potential authors as well.—Jack P. Hailman.

BOOKS AND MONOGRAPHS

67. *Birds as Biological Indicators.* F. J. Turček. 1972. Quaestiones geobiologicae 10, Slovenskej akadémie vied, Bratislava. 64 p. (In English, summaries in Russian, French, German, and Slovakian.)—A general in ancient Rome was waiting for indications of success before setting out on a campaign, this to come through the holy augurs' interpretation of the temple birds' manner of feeding. The subjects being unresponsive, he exclaimed (or words to that effect): "Well, if they will not eat, perhaps they will drink," and threw the unfortunate fowl in the water. Modern bioclimatology would bring bird augury up to date by more varied observations. Here we ave an information-packed summary of many miscellaneous records of recent date. An "indicator" is defined as a conclusion drawn of association between any organism or its population and any condition of the environment. According to biological statistics, an association implies some category of observations which tend to occur along with some other category of observations more often than can be ascribed to chance alone. The questions concerned here are: what do birds indicate, and how do birds indicate? The material is organized under eight topics: (1) weather and climate, discussed under various modes: wind and air currents, strong indication found in flights of swifts and swallows; barometric pressure, cyclones and precipitation, changes in climate; (2) soils and earthquakes; (3) water conditions and fishing; (4) landscape (biotic communities, ecosystems); (5) forest stands and their condition, including forest types, forest successions, conditions in groves or individual trees, i.e., whether aged or insect-infested may be indicated by birds present; (6) indication of (other) organisms, covers location of other species and their population level, e.g., Honeyguides' behavior, indicators of bark beetle occurrence in conifers, emigration as indication of seed crop failure; (7) pesticide indication, i.e., of birds as accumulators of pesticide residues, use of canaries to warn of gas in mines; and (8) as radioactivity indicators, i.e., radioactive accumulations in feathers, transportation of radionucleides. Following each of these topics is an extensive bibliography. Pertaining to each topic more research is needed and even in progress. The one general method is plain and prolonged field observation with adequate record-keeping. Altogether this is a most remarkable ecological document.—Leon Kelso.

68. *The Lovely and the Wild.* Louise de Kiriline Lawrence. 1968. New York, McGraw-Hill Book Company. $6.95. 228p. This is a book about life, about all forms of life: red squirrels, snowshoe hares, least flycatchers. Mrs. Lawrence's reverence for the land and its creatures mark this as a work following in the tradition of Aldo Leopold's *A Sand County Almanac.*

Mrs. Lawrence is a self-taught naturalist. Her learning experiences are freely related throughout the early chapters. She moves away from an early conception of nature "red in tooth and claw" toward an intense interest in animal behavior and a gradual understanding of ecology. Throughout the book she clings to the fight or flee dichotomy as an overused explanation for most everything. ". . . I began to take notes, naively written as if I were speaking to the birds directly. . . . This seemed to lead us, the birds and me, into a more intimate relationship. It also led me into an entirely anthropomorphic appreciation of the birds and their behavior. But for a long time I remained blissfully ignorant of even the existence of that long word and certainly of its meaning and the impediments it posed to the art of objective observation." She never really escapes her anthropomorphic tendencies, although she later minimizes them and, despite all, her observations are extraordinarily detailed, extraordinarily sensitive.

Her use of the present tense to relate observations combines well with her descriptive abilities and attention to detail to give the reader a sense of making the observation himself. The change to past tense for interpretation or reflection lends a meditative, even wistful mood to the text. In addition to the fine text the book is amply and beautifully illustrated by Glen Loates. The pen and ink sketches, mostly of animals, convey a sense of warmth and vitality that alone is worth the price of the book.

The book closes with a discussion of animal population trends about her home in the Pimisi Bay region of Ontario over the past 25 years. It is a discussion made all the more meaningful by the vivid pictures that have gone before. "Silent spring! Has Rachel Carson's prevision really come true? Let scientific research take care of the complexity of its causes. Here I am dealing only with a trend that in this one region emerges with convincing insistence from the events I have observed and recorded over the past two and a half decades. If by silent spring we mean the stillness that has descended upon the forest where formerly the voices of the woodland birds used to fill the dawn and the morning hours with their continuous and varied chorus, then, indeed, Rachel Carson's silent spring is upon us today, a portentous reality."—Edward H. Burtt, Jr.

69. The morphology of the syrinx in passerine birds. P. L. Ames. 1971. *Peabody Mus. Nat. Hist. Bull.*, **37**: 1-194.—The long awaited publication of Ames' Ph.D. dissertation on the passerine syrinx will be greeted with mixed feelings by avian morphologists and systematists. On the one hand, the paper is undoubtedly the most comprehensive survey of the structure of the avian syrinx to be published, and his conclusions will be cited by many future workers. However, many will probably find his discussions rough going because of poor organization. Furthermore, because of the complexity of his presentation, many of his systematic and evolutionary conclusions will have to be viewed with measured skepticism until such time as they can be analysed in more detail.

Before proceeding to my main comments, it should be pointed out that certain editorial policies apparently account for some of the problems encountered in the organization of Ames' paper. I refer especially to the placing of all the illustrations in plates at the end of the text. In numerous instances this will inconvenience the reader and prohibit efficient reading of the paper. Placing plates together might be necessary and justifiable with photographs but is questionable with line drawings such as used here.

Ames begins with a brief history of syringeal morphology, methods of study, and nomenclature. The bulk of the paper follows these sections and includes a detailed description of the syrinx in the suboscines, with only eight pages being devoted to all the oscines. There are short sections on development, variations, and then a rather detailed summary of the morphology characteristic of each suboscine group. Finally, there is a brief review of passerine classification, an out-of-place section on adjectives of syringeal morphology ("-myodean," "tracheal," and "bronchial"), and sections on the evolution and taxonomic value of the syrinx.

My first major criticism is that there is no general introduction to the paper. Why did the author undertake this study? Was his main goal descriptive, evolutionary, taxonomic, or all three? One has to wait until the section on variation (p. 100) before reading "Although the main purpose of this study is to establish relationships among genera and higher categories. . . ." If one assumes he was attempting to examine all three aspects, it would have been better if he had discussed early in the paper some of the theoretical aspects underlying the interpretations of his data.

Prior to undertaking the description of the syrinx in the various passerine taxa, Ames has a short discussion (p. 14-16) of the nomenclature to be used. The reader will immediately run into difficulties. His most glaring omission at this point is a discussion of the "intrinsic" musculature although he repeatedly mentions these muscles later in the text. Some intrinsic muscles are pictured in plate 1 to which the reader is referred, and they should have been discussed on p. 16 with the extrinsic muscles. On p. 20 Ames has additional nomenclatural comments for the Furnarioidea, on p. 33 for the Tyrannoidea, and on p. 87-91 for the oscines. Although it is a personal preference, I think that consolidation of all the basic descriptions, definitions, and nomenclature, along with adequate illustrations, in one place would have facilitated understanding of the paper.

The bulk of the data is presented in a section some 77 pages in length. Ames records an incredible amount of detail on syringeal morphology but most of this will be unintelligible even to the expert morphologist. The synthesis of these data is to be found in two later sections. I was disappointed that the syringes of more species were not illustrated. Thus Ames pictures one dendrocolaptid (50 species in family), one furnariid (20 spp.), four formicariids (234 spp.), two cotingids (92 spp.), and 19 tyrannids (364 spp.), to give some idea of the coverage. It is highly questionable whether this is sufficient to illustrate adequately the variation present in the suboscines. Most of us interested in studies such as this one depend a great deal on the illustrations to give us some notion of the reliability of the author's methods and results; in general, morphological description is deadly even to the morphologist. Thus, even though Ames' illustrations are of excellent quality, one would have liked more of them.

Perhaps the most useful section of the paper is the morphological summary (p. 108-126) in which there is a detailed outline of each aspect of syringeal morphology and the taxa characterizing each subdivision of the outline. Once we have a better understanding of the probable primitive-derived sequences of the various syringeal characters (see below), then this summary will be extremely valuable for interpreting certain relationships.

The two final sections of Ames' monograph discuss the evolution of the syrinx and his systematic conclusions. In general, I think Ames has produced a well-reasoned and even-tempered approach to these subjects. Unlike some workers dealing with what is essentially a "single character" Ames does not attempt to provide quotable conclusions regarding the systematic position of all the groups he studied. Indeed, in several cases he states the syrinx is taxonomically worthless within certain groups. Ames presents a very interesting and stimulating account of the probable evolutionary trends for the various features of the passerine syrinx. Even if future workers take issue with him, Ames at least has provided the basis for a meaningful discussion, and more systematists should include such a treatment for their characters (e.g., in bones, muscles, proteins, etc.). I think he provides a reasonably valid argument for recognition of the primitive "picopasserine" syrinx, and most importantly, he does not attempt to relate those passerine groups having this primitive syrinx. This is a welcome change from many previous anatomical studies in which various workers have followed this line of incorrect reasoning, It will take much more detailed analysis than is possible here to offer comments on most of his systematic conclusions, but my general "feeling" is that we probably can have a reasonable degree of confidence in them. Once again, I think the use of some illustrations would have greatly strengthened his evolutionary arguments. Some figures showing the postulated evolutionary sequences of the different cartilages and muscles would have made the paper much more understandable.

In conclusion, there is much to praise in this paper but one should not try to minimize the shortcomings. The poor organization and lack of illustrations will hamper its critical study for all but the most diligent systematists. On the other hand, the paper does contain some extremely valuable systematic data, and for his patience and thorough work Ames is to be congratulated. We can only hope that he will continue to produce additional studies on syringeal morphology.—Joel Cracraft.

70. *Birds of Chukotsk Peninsula and Wrangel Island. Part I.* (Ptitsy Chukotskogo poluostrova i ostrova Vrangelya. Chast I.) L. A. Portenko. 1972. "Nauka" Press, Leningrad division. 424 p., illustrated. (In Russian.) (Price uncertain.)—The first of this two-part and evidently greatest compendium on arctic ornithology by the outstanding Russian zoogeographer reached Dr. R. S. Palmer of Albany, N. Y. along with news of the author's death this year. It is the culmination of a lifetime of work, beginning in 1931, by one who, since early in the century, has been an ambassador between his nation's and North American ornithologists. The circumstances render completion of the edition problematical, but those wishing this "must" for a complete bird library can only plan their contacts now.

In this first part a history of field exploration and introduction is followed by accounts of the loons, tubinares, anatids, raptors, gallinae, cranes, and shorebirds. As examples of comprehensiveness there are 17 pages on the King Eider, *Somateria spectabilis*, whereas the Pacific (Common) Eider, *S. mollissima v. nigrum*, is favored with 41. Specific material is paragraphed as: local names, distribution and abundance (nesting season, single birds, seasonal), summer movements and haunts of single birds, breeding, molt, fall flight, behaviorisms, food, weights, economic significance, subspecific systematics, and specimens.

The second part is planned to include the remaining orders, with also geographic, ecologic, and other chapters on this Asiatic area projecting closest to American territory—with a bibliography which, probably, only this author could have assembled.—Leon Kelso.

71. *Reason and Experience: The Representation of Natural Order in the Work of Carl von Linne.* J. L. Larson. 1971. University of California Press, Berkeley, VII, 171 p. $7.50.—Bring a thing to or near extinction and what do you get? Enormous concern, then, but not before. So it is now with systematics. With so much pontification and postmortem thinking, it becomes imperative, with so much academic straining over what to do, to recall what systematics, or taxonomy was really all about in the first place. This means detailed examination of the real philosophy and intent of the essential founder Linne, or more familiarly, Linnaeus. Larson's attempt to explain all this results in a book that is not to be looked through, but read. The philosophical essentials of higher categories, families, genera, and species, and nomenclature in general, essentially far from glamorous, are here rendered in compulsively intriguing fashion, indicating that after all, systematics is Scandinavians' meat. Concerning Linne: "He passes from stone dwellings of coral to the plantain tree, from fossil shells to butterflies, from lilies to hawks, in his attempt to show that the objects in nature are an endless sea, and that man's wisdom scarcely suffices to investigate the foot of a fly. Man, says Linne, need not wish for new worlds and new wonders, for this world is so great that it surpasses our ability to explore its surface, and so intricate that we cannot understand the artful construction of the least of its denizens.

"Had God chosen, Linne continues, He might have created everything for the sustenance of man in one formless mass; but it was God's intention to place before man's eyes a plenitude of new and admirable objects; in man God implanted the curiosity to inquire who he is, whence he comes, whither he is going, for what purpose he is created, and by whose benevolence he is preserved. This faculty of curiosity, when cultivated and systematized, becomes natural history, a science which teaches us to see the Creator glorified in His work, and to discover his intention by comparing His works." (p. 151). Whoever may not concur with all this might nevertheless find it refreshing reading. Personally, author Larson finds even the secondary literature relating to the Linnaean system now so large that it frustrates inquiry, thus tending to rival the infiniteness of nature itself. "The thought of no other naturalist—save perhaps Aristotle or Darwin—has received more attention." This should prove that Linne indeed had something exceptional.—Leon Kelso.