

RECENT LITERATURE

EDITED BY FRANK MCKINNEY

ANATOMY AND EMBRYOLOGY

- BORODULINA, T. L. 1960. [Morphological peculiarities of the attachment of the feathers in a bird's wing.] Zool. Zh., **39**: 124-135.—Birds that to an important extent depend upon their long wings to obtain food have prolonged calami proximally, narrow inner wings (secondaries), and well-developed wing-coverts. Birds that do not use their powers of flight for food gathering have short wings, short calami, and less-developed coverts. In the first group, the marginal ligation functions in the partial turning of the secondaries along their longitudinal axis, and during the upward movement of the wing, this allows air to circulate between the feathers and reduces air resistance. The paper reinforces the old theory of Prechtl of the structure of wings. There are fine drawings and photographs. (In Russian; English summary.)—F. J. T.
- SENO, T. and S. SAITO. 1959. A chimaeric duck with the head of a chick. Nature, **184**: B.A. 78-79.—A duck embryo with a grafted chick's head survived through 28 days of incubation (26 days after grafting).—H. C. S.

BEHAVIOR

- BAERENDS, G. P. 1959. The ethological analysis of incubation behaviour. Ibis, **101**: 357-368.—Information on behavioral mechanisms associated with securing conditions suitable for normal development of eggs is summarized. These mechanisms include incubation, egg retrieving, settling, quivering, ruffling, and preening. The activation, inhibition, and interrelationships of these with other internal and external factors are discussed.—J. W. H.
- BAKUS, G. J. 1959. Territoriality, movements, and population density of the Dipper in Montana. Condor, **61**: 410-425.—Study of *Cinclus mexicanus* with color-banded birds mist-netted along 13 miles of stream. Strong winter territorial behavior from November-February; no territory during pairing. Pre-nesting density about one bird for 0.48 miles of stream.—R. E. P.
- CRAMP, S. 1958. Territorial and other behaviour of the Woodpigeon. Bird Study, **5**: 55-66.—Observations made in central London on territory, pair formation, choice of nest site, and copulation in *Columba palumbus*. Territory is thought to function in providing a safe place where pair-strengthening displays and copulation can take place without interference from other Woodpigeons.—F. M.
- DAVIS, D. E. 1959. Territorial rank in Starlings. Animal Behavior, **7**: 214-221.—Territorial behavior and social rank are considered in terms of density. Captive Starlings exhibit social rank, while in the wild this can resemble territorial behavior as the subordinate bird is present only temporarily. It is suggested that the Starling territory is really a special case of social rank in which there are no permanent subordinate individuals.—R. I. S.
- FOREMAN, D. and W. C. ALLEE. 1959. A correlation between posture stance and outcome in paired contests of domestic hens. Animal Behavior, **7**: 180-188.
- GAUNT, A. S. 1959. Behavior in the Purple Martin. Kansas Orn. Soc. Bull. **10**: 14-16.—Data, chiefly ethological, on *Progne subis* in Kansas.—E. E.
- HESS, E. H. 1959. Imprinting. Science, **130**: 133-141.—In Mallard ducklings imprinting is most effective at an age of 13-16 hours and becomes difficult after

- 29-32 hours. Ducklings imprinted in the laboratory to follow a decoy later preferred the decoy to a mallard duck accompanied by ducklings. Chicks imprinted by following spheres of various colors later followed blue spheres the farthest and white the shortest distance. Spheres without mock heads, wings, and tails were more efficient in eliciting the following reaction than spheres with them. The strength of imprinting was found to be proportional to the effort expended by the animal during imprinting. The critical period is reported to be determined at its start by the time necessary for the development of the required motor ability and at its conclusion by the appearance of fear. Use of the tranquilizing drug chlorpromazine permitted a higher degree of imprinting in animals 24 hours of age than in controls; presumably through the inhibition of fear. Imprintability has a genetic basis. Some species proved more imprintable than others. Sheep and guinea pigs were successfully imprinted. Imprinting is stated to be one rigid form of learning that precedes associative learning.—J. C. H.
- HINDE, R. A. 1959. Motivation. *Ibis*, **101**: 353-357.—It is unlikely that a single drive can be used with reference to a number of different characteristics of behavior with the implication that all of these depend on one aspect of the responsible physiological mechanism. Unitary concepts of drive, even when used solely with reference to changes in responsiveness to a constant stimulus, have limited value. There is no need to postulate a drive that "energises" behavior. An important reevaluation.—J. W. H.
- HINDE, R. A. 1959. Some factors influencing sexual and aggressive behaviour in male Chaffinches. *Bird Study*, **6**: 112-122.—Experiments with caged birds indicated many factors: hormones, the immediate external stimulus, the general external situation (influenced by the presence of a dominant male or the possession of a territory), fluctuations in internal conditions lasting minutes or hours, short-term fluctuations in responsiveness consequent upon performance, previous experience, inhibitory effects between sexual and aggressive behavior, and individual differences in responsiveness.—F. M.
- HINDE, R. A. and R. P. WARREN. 1959. The effect of nest building on later reproductive behavior in domesticated Canaries. *Animal Behavior*, **7**: 35-41.—The effects of various degrees of deprivation of nest material and nest site are examined. The female Canary may lay eggs without performing earlier reproductive activities, but laying is delayed and clutch size is abnormal.—R. I. S.
- JOHNSTON, R. F. 1960. Behavior of the Inca Dove. *Condor*, **62**: 7-24.—Description of notes, winter and breeding activities, territory, and aggression with discussion of ethological implications.—R. E. P.
- KILHAM, L. 1959. Behavior and method of communication of Pileated Woodpeckers. *Condor*, **61**: 377-387.—An account of observations in Maryland and Florida of vocalizations, displays, territorial and nesting behavior.—R. E. P.
- KURODA, N. 1960. The flocking behaviour of wintering Brown-eared Bulbuls and their spring departure. *Tori*, **15**: 227-231.—Studies of intraflock relationships, correlation of spring break-up of flocks with food supply and temperature, and *Zugunruhe* in *Hypsipetes amaurotis*. (In Japanese; diagrams and summary in English.)—K. C. P.
- LORENZ, K. Z. 1959. The evolution of behavior. *Scientific American*, **199**: 67-78.—The inheritance of instincts and patterns of behavior is discussed. Behavior as well as morphology is a useful basis for the determination of phylogenetic relationships. The stability of the more deep-seated behavior traits is

- compared with that of the skeleton in terms of rate of evolutionary change. Examples of the action of selection on traits of behavior are taken from studies of gulls, cichlid fishes, and surface-feeding ducks.—J. C. H.
- MACKENZIE, J. M. D. 1959. Roosting of Treecreepers. *Bird Study*, **6**: 8–14.—*Certhia familiaris* excavates roosting holes in Wellingtonia bark wherever these trees are found in Great Britain.—F. M.
- MARLER, P. and D. ISAAC. 1960. Physical analysis of a simple bird song as exemplified by the Chipping Sparrow. *Condor*, **62**: 124–135.—A study of the physical characteristics of Chipping Sparrow songs utilizing tape recorder for recording and a Sona-graph for analysis. Data will serve as a basis for accurate description of song for comparison of different individuals, and as a basis for study of more complex songs of other species.—R. E. P.
- MARSHALL, J. F., JR. 1960. Interrelations of Abert and Brown Towhees. *Condor*, **62**: 49–64.—Detailed field studies of *Pipilo aberti* and *Pipilo fuscus mesoleucus* in areas of overlap in Arizona and of *fuscus* in California. Little antagonism between species was seen. Pair formation preceded song period in both species, so isolating mechanisms must be visual and in call notes. Includes detailed discussion.—R. E. P.
- PETERSSON, M. 1959. Diffusion of a new habit among greenfinches. *Nature*, **184**: 649–650.—The geographical spread of the Greenfinch's habit of stripping the shrub, *Daphne mezereum*.—H. C. S.
- SALZEN, E. A. and W. SLUCKIN. 1959. The incidence of the following response and the duration of responsiveness in domestic fowl. *Animal Behavior*, **7**: 172–179.
- SCHIEIN, M. W. and E. B. HALE. 1959. The effect of early social experience on male sexual behavior of androgen injected turkeys. *Animal Behavior*, **7**: 189–200.
- SIMMONS, K. E. L. 1959. Anting movements and their relationship to certain other behaviour patterns. *Ibis*, **101**: 368–372.—The author studied anting in various European passerine birds and concludes that most birds deliberately anoint only the wings and incidentally the tail (exceptions occurring in the corvids and icterids). He discusses the relationships of anting to other behavior phenomena especially feather-maintenance acts and concludes that passive anting may be related to and perhaps derived from high-intensity sunning. Active anting may in turn be derived from preening, especially preen-oiling with which it shares movements. Finally, formic acid may supplement the natural preen-oil and may be effective in combating parasites.—J. W. H.
- STEINBACHER, J. 1959. Der Flug der Vögel. *Natur und Volk*, **89** (9/10): 309–325.—A well-illustrated general account of the mechanism of flight in birds. Part of a series of articles published in the same double issue of this journal on flight in prehistoric and modern animals.—E. E.
- THORPE, W. H. 1959. Learning. *Ibis*, **101**: 337–353.—The author discusses recent advances in the study of learning in birds and relates these to our knowledge of "individually modifiable" behavior. Topics included are habituation, response-waning, internal inhibition, trial-and-error learning, "instrumental" conditioning, imprinting, social facilitation (including its evolutionary importance).—J. W. H.
- TINBERGEN, N. 1959. Behaviour, systematics, and natural selection. *Ibis*, **101**: 318–330.—The relationship of behavior to systematics and evolutionary studies

- is discussed in terms of taxonomic use of behavioral characters and phylogenetic interpretation of behavioral data.—J. W. H.
- WARREN, R. P. and R. A. HINDE. 1959. The effect of oestrogen and progesterone on the nest-building of domesticated Canaries. *Animal Behavior*, **7**: 209–213.—Large doses of estrogen induced nest-building behavior in Canaries during the nonbreeding season. Progesterone alone, in the dosage used, did not. Progesterone used in combination with estrogen did not augment or suppress the action of estrogen.—R. I. S.
- WILLIS, E. 1960. Voice, courtship, and territorial behavior of Ant-Tanagers in British Honduras. *Condor*, **62**: 73–87.—Description of behavior, especially vocal and territorial, of two sympatric species with discussion of isolating mechanisms. Includes audio spectrographs.—R. E. P.

DISEASES AND PARASITES

- GEORGE, R. S. 1959. Fleas from nests of the Pied Flycatcher and other species in the Forest of Dean. *Bird Study*, **6**: 132–136.
- GROUPE, V. and F. J. RAUSCHER. 1959. Factors contributing to production of "virus-free" tumors in turkeys by Rous sarcoma virus. *Science*, **129**: 1022–1023.
- JENNINGS, A. R. 1959. Diseases of wild birds, fifth report. *Bird Study*, **6**: 19–22.
- LAKE, F. B. 1958. Treatment of sick and wounded birds. *Bird Study*, **5**: 66–74.
- PRIER, J. E. and R. SULLIVAN. 1959. Development of chick embryo heart cell for the cultivation of poliovirus. *Science*, **129**: 1025–1026.

DISTRIBUTION AND ANNOTATED LISTS

- BAGENAL, T. B. and D. E. BAIRD. 1959. The birds of North Rona in 1958, with notes on *Sula* Sgeir. *Bird Study*, **6**: 153–174.—Studies on two islands of the Outer Hebrides.—F. M.
- DAVIS, T. A. W. 1958. The breeding distribution of the Great Black-backed Gull in England and Wales in 1956. *Bird Study*, **5**: 191–215.—Detailed distribution of *Larus marinus* with data on habitat, nest sites, nesting associations, food, and predators.—F. M.
- EDWARDS, E. P. and R. S. TASHIAN. 1959. Avifauna of the Catemac Basin of southern Veracruz, Mexico. *Condor*, **61**: 325–337.—General description of climate and habitats, some notes, and a systematic list.—R. E. P.
- GULLION, G. W., W. M. PULICH, and F. G. EVENDEN. 1959. Notes on the occurrence of birds in southern Nevada. *Condor*, **61**: 278–297.—Annotated list of birds observed during several years of field studies.—R. E. P.
- HAFER, J. 1959. Notas sobre las aves de la región de Urabá. *Lozania*, **12**: 1–49.—Report on a collection of 175 species in the Gulf of Urabá region, north-western Colombia; the ranges of a number of species are extended westward, including *Chauna chavaria* and *Gampsonyx*. Interesting faunal discussion, with maps. (In Spanish; short English summary.)—E. E.
- LEHMANN, F. C. V. 1959. Observations on the Cattle Egret in Colombia. *Condor*, **61**: 265–269.—Brief description of first breeding colonies for Colombia.—R. E. P.
- MAHER, W. J. 1959. Habitat distribution of birds breeding along the upper Kaolak River, northern Alaska. *Condor*, **61**: 351–368.

- PHELPS, W. H. and W. H. PHELPS, JR. 1959. Las aves de la Isla La Orchila. Bol. Soc. Venez. Cien. Nat., **93**: 252-266.—An account in Spanish of the 39 species of birds recorded on La Orchila, a Caribbean island off Venezuela. Data on migrants; *Sterna f. fuscata* and *Anous s. stolidus* breed there, and *Phoenicopterus ruber* did so until 1952.—E. E.
- PHELPS, W. H. and W. H. PHELPS, JR. 1959. La nidificación de las aves marinas en el Archipiélago de los Roques. Bol. Soc. Venez. Cien. Nat., **94**: 325-336. Addenda page.—The nesting of marine birds in Los Roques, a group of Venezuelan islands in the Caribbean. Fourteen species are recorded definitely nesting, including such northern forms as *Larus atricilla*, *Sterna h. hirundo*, *S. d. dougallii*, *S. minuta antillarum*.—E. E.
- RAND, R. W. 1959. The biology of guano-producing sea-birds. The distribution, abundance and feeding habits of the Cape Gannet, *Morus capensis*, off the south-western coast of the Cape Province. Div. Fisheries Investig. Rep., no. **39**: 1-36. Dept. Comm. and Ind., Pretoria, Union of South Africa.
- ROUX, F. 1959. Quelques données sur les anatides et charadriides paléarctiques hivernant dans la basse vallée du Sénégal et sur leur écologie. La Terre et la Vie, **106**: 315-321.—Notes on the wintering of palearctic ducks and waders in the lower Senegal valley.—E. E.
- RUSCHI, A. 1960. Chaves analíticas e artificiais para a determinação dos generos e especies de beija-flores do Brasil, com resumida descrição. Bol. Mus. Biol. "Prof. Mello Leitão", ser. divulgação, no. **1**: 1-28. (Mimeo.)—Artificial keys to the identification of the genera, species (88), and geographic forms (129) of Brazilian hummingbirds, with descriptions of each form, and outline of distribution in Brazil.—E. E.
- RUTLEDGE, R. F. and R. H. WATT. 1958. The distribution and status of wild geese in Ireland. Bird Study, **5**: 22-33.
- TOSCHI, A. 1959. Contributo alla ornitofauna d'Etiopia. I. Uccelli raccolti ed osservati in Abissinia dal 1939 al 1942. Ric. Zool. Appl. Caccia, **2**, no. 11: 301-412. (Univ. Bologna.)—Report on over 800 birds collected in Abyssinia from 1939-1942 by representatives of Bologna University and the former Italian Wildlife Service in that country, including observational data by the author. So little has been published on Ethiopian birds that this report has considerable interest. (In Italian; brief English summary.)—E. E.
- WARNER, D. W. and J. R. BEER. 1957. Birds and mammals of the Mesa de San Diego, Puebla, Mexico. Acta Zoologica Mexicana, **2**, no. 4-5: 1-21.—An annotated list of higher vertebrates collected or observed between November 29-December 17, 1951. A number of bird species are added to the recorded avifauna of Puebla. English names are those of Blake's "Birds of Mexico."—E. E.

ECOLOGY AND POPULATION

- BALLANCE, D. K. and G. L. SCOTT. 1959. A winter census on the Wash. Bird Study, **6**: 123-132.—Describes two attempts to estimate the total bird population of the Wash, a large area on the east coast of England.—F. M.
- BOWERS, D. E. 1960. Correlation of variation in the Wrentit with environmental gradients. Condor, **62**: 91-120.—Morphological and color variations were correlated with environmental gradients along a west-east transect in California. Extremities were longer in warmer areas, body mass greater in cooler. Dark forms were less variable than light, reflecting closely variability in habitats utilized by these forms.—R. E. P.

- COTTAM, C. and W. C. GLAZENER. 1959. Late nesting of water birds in south Texas. *Trans. N. Amer. Wildl. Conf.*, **24**: 382-395.—Information on ecology, nest history, nesting abundance, and nesting success gathered during a study of 513 nests of eight species of water birds on the 7,800-acre Welder Wildlife Refuge in south Texas in 1957 and 1958 is given. It is suggested that the importance of environment as a major factor in avian reproduction may not be fully recognized.—S. T. D.
- COULSON, J. C. and E. WHITE. 1959. The post-fledging mortality of the Kittiwake. *Bird Study*, **6**: 97-102.—Annual adult mortality of *Rissa tridactyla* was 12.4 per cent \pm 2.2 per cent at one colony, 7 per cent at another; mortality in first year of life was 21 per cent. Most females breed first when three or four years old.—F. M.
- DIXON, K. L. 1959. Ecological and distributional relations of desert scrub birds of western Texas. *Condor*, **61**: 397-409.—Results of breeding censuses of two plots over two and three years, with description of the habitat. Species composition showed little change, but density fluctuated.—R. E. P.
- HOLLOM, P. A. D. 1959. The Great Crested Grebe sample census 1946-1955. *Bird Study*, **6**: 1-7.
- MACARTHUR, R. H. 1960. On the relation between reproductive value and optimal predation. *Proc. Nat. Acad. Sci.*, **46**: 143-145.—Theoretical discussion of population adjustment to insure continuous yield, under planned harvest and through natural predation.
- MURTON, R. K. 1958. The breeding of Woodpigeon populations. *Bird Study*, **5**: 157-183.—Results of an intensive study on *Columba palumbus*. Data on breeding season, clutch and brood size, incubation and nestling period, breeding success, and nesting habitat are presented. Predation on eggs was proportionately higher at higher nesting densities. Territorial behavior is thought to function in limiting nest density rather than in preventing disturbance during copulation. (Letters discussing territory function and whether this species was originally a hole-nester follow in *Bird Study*, **6**: 81-83, 143-144.)—F. M.
- NAKAMURA, T. 1960. Studies on the fluctuation of numbers of Long-tailed Tits. *Tori*, **15**: 201-213.—Analysis of seasonal composition of flocks of *Aegithalos caudatus trivirgatus*. (In Japanese; English summary.)—K. C. P.
- RANWELL, D. S. and B. M. DOWNING. 1959. Brent Goose winter feeding pattern and *Zostera* resources at Scolt Head Island, Norfolk. *Animal Behavior*, **7**: 42-56.
- RAWCLIFFE, C. P. 1958. The Scottish Mute Swan census 1955-56. *Bird Study*, **5**: 45-55.—Census indicated about 500 breeding pairs of *Cygnus olor*; at least 2,500 nonbreeders occurred in herds.—F. M.
- ROGERS, J. P. 1959. Low water and Lesser Scaup reproduction near Erickson, Manitoba. *Trans. N. Amer. Wildl. Conf.*, **24**: 216-224.—On a one-square-mile study area in the pothole habitat of southwestern Manitoba water-level decreases produced a sharp decline in Lesser Scaup production from 1957 to 1958. Indirect effects such as increased predation, grazing, and mowing were coupled with possible direct inhibitory action. Bag-check data from the Delta Marsh are presented showing that more Lesser Scaup were killed in 1958 than any other species, but the young-per-adult-female ratio was lower than in any other year for which records were available.—S. T. P.
- YAMASHINA, Y. and S. TAKANO. 1959. Report on the Japanese White Stork census. *Misc. Reports of the Yamashina's Inst. for Ornith. and Zool.*, no. **13**:

1-17 [505-521].—Contribution by the Japanese Association for Bird Preservation to the International Census of the White Stork proposed at the Xth Conference of I.C.B.P., S. Rhodesia, 1957. The Japanese breeding population of *Ciconia ciconia boyciana* has greatly decreased since the early 19th Century. Recommended protective measures are listed. (In Japanese; English summary.)—K. C. P.

YAPP, W. B. 1959. The birds of high-level woodlands. The winter population. *Bird Study*, **6**: 136-140.

GENERAL BIOLOGY

BOCHENSKI, Z. 1958. Nesting habits of the Collared Turtle Dove [*Streptopelia decaocto*]. *Bird Study*, **5**: 19-21.

COULSON, J. C. and E. WHITE. 1958. Observations on the breeding of the Kittiwake. *Bird Study*, **5**: 74-83.—Studies on a colony of *Rissa tridactyla* in Northumberland from 1949 to 1957. Data on incubation and fledging periods, clutch and brood size, breeding success, and growth rate of chicks are presented.—F. M.

CRIGHTON, M. I. 1959. Attacks by birds on Caddis Flies. *Bird Study*, **6**: 22-25.

DAVIES, S. J. J. F. 1958. The breeding of the Meadow Pipit in Swedish Lapland. *Bird Study*, **5**: 184-191.—In comparison with British birds breeding began two months later, clutch size was 1.2 eggs larger; hatching success was higher, but nestling periods were the same.—F. M.

FRITH, H. J. 1959. Incubator birds. *Scientific American*, **201**: 52-58.—An account of the reproduction of the Megapodiidae. The Mallee Fowl (*Leipoa ocellata*) maintains the nest mound temperature within a range of 90°-95°F, and some individual males keep the temperature within a degree of 92°. The heat comes directly from the sun or is produced by the fermentation of organic matter within the mound. The male may vary its method of temperature control with differences in daily weather. When a heating unit was introduced into the nest mound and the temperature raised, the male took the actions needed to lower the temperature within the mound.—J. C. H.

HARRISON, C. J. O. and J. FORSTER. 1959. Woodlark territories. *Bird Study*, **6**: 60-68.—Observations on nesting habitat, nest sites, and territorial behavior in *Lullula arborea*.—F. M.

HINDE, R. A. 1959. Seasonal variations in clutch size and hatching success of domesticated canaries. *Bird Study*, **6**: 15-19.

KURODA, N. 1959. Field studies on the Grey Starling, *Sturnus cineraceus* Temminck. 2. Breeding biology (part 3). Misc. Reports of the Yamashina's Inst. for Ornith. and Zool., no. **13**: 31-48 [535-552].—Covers differences between eggs of 1st and 2nd clutches, incubation period (12 days), growth and development of nestlings, feeding rates correlated with brood size, nest sanitation, etc. (In Japanese; tables and a good summary in English.)—K. C. P.

LACK, D. and E. LACK. 1958. The nesting of the Long-tailed Tit. *Bird Study*, **5**: 1-19.—Observations on roosting, nest sites, laying dates, clutch size, visits to the nest, and nesting losses in *Aegithalos caudatus*. "The frequency with which three or four parents feed one brood is attributed to the high rate of nest destruction, the restricted breeding season and the absence of territorial behaviour."—F. M.

PITELKA, F. A. 1959. Numbers, breeding schedule, and territoriality in Pectoral Sandpipers of Northern Alaska. *Condor*, **61**: 233-264.—Extensive data on

- breeding, habitat, density, and timing with a discussion of field work at Pt. Barrow. The pair bond is short, the males leaving early in summer. Nests are usually away from male territories. Reasons for the early departure of the males are considered, and possible systematic relationships are discussed.—R. E. P.
- ROWLEY, J. S., and R. F. ORR. 1960. The nest and eggs of the Slaty Vireo [*Neochloe brevipennis*]. Condor, **62**: 88–90.
- RYDER, R. A. 1960. The grouse of Colorado. Colo. Outdoors, **9**: 1–7.—Distribution, ecology, food habits, reproductive behavior, and management are discussed.
- SELANDER, R. K. 1960. Sex ratio of nestlings and clutch size in the Boat-tailed Grackle. Condor, **62**: 34–44.—Sex ratio of nestlings of broods of two to five shows no significant deviation from 1:1. Clutch most frequently three or four, rarely two or five.—R. E. P.
- TACHIBANA, S. 1960. Notes on some birds breeding on the coast of Oppa Bay, Miyagi. Tori, **15**: 195–200.—Notes on breeding biology of *Motacilla alba*, *Nycticorax nycticorax*, *Larus crassirostris*, *Apus pacificus*, and *Cephus carbo*. (In Japanese; English summary.)—K. C. P.
- TICKELL, W. L. N. 1960. Chick feeding in the wandering albatross *Diomedea exulans* Linnaeus. Nature, **185**: 116–117.—Evidence to indicate that the young are fed during the fledgling period.—H. C. S.
- WILLIAMSON, K. 1959. Changes of mating within a colony of Arctic Skuas. Bird Study, **6**: 51–60.—Study of *Stercorarius parasiticus* colony at Fair Isle showed that birds breed for the first time at age of three to five years. One-year-old matings are most unstable, probably because many younger birds are late in attaining breeding condition and in returning to colony; early-returning partners of the previous year may have mated already with older birds. Members of old-established pairs are closely synchronized in time of return and attainment of breeding condition; these pairs are seldom broken.—F. M.

EVOLUTION AND GENETICS

- BOCK, W. J. 1959. Preadaptation and multiple evolutionary pathways. Evolution, **13**: 194–211.—In many groups of birds the articulation between the quadrate bone of the upper jaw and the articular bone of the lower jaw is supplemented by a second articulation in which the medial process of the mandible reaches the basitemporal plate. This secondary articulation forms a medial brace, which functions to prevent disarticulation of the lower jaw in birds such as the Black Skimmer having feeding habits that may cause the mandible to be jerked suddenly backwards. The elongation of the medial process of the mandible during the early stages in its evolution was in response to a selection force for a larger surface for the attachment of stronger jaw muscles. Once the medial process reached the basitemporal plate, it was preadapted for a new function, that of preventing disarticulation, which established a new selection force acting on the process. Differences in the nature of the medial brace in various groups of birds are suggested to be multiple evolutionary pathways of response to the same selection force. By analogy the difference existing in the mammalian jaw hinge may be due to its having evolved several times independently.—J. C. H.
- BRILES, C. O., W. H. MCGIBBON, and M. R. IRWIN. 1959. Additional alleles affecting red blood cell antigens in the chicken. Genetics, **44**: 955–965.

- DANFORTH, C. H. 1958. *Gallus sonnerati* and the domestic fowl. Jour. Heredity, **49**: 167-169.—Reports that *Gallus domesticus* and *G. sonnerati* were successfully crossed and also their hybrid offspring. Some instances of infertility occurred. It is suggested that the relationships of *G. sonnerati*, *G. gallus*, and *G. domesticus* be considered as unsettled.—J. C. H.
- DYRENDAHL, S. 1958. Hereditary tremor in ducks. Jour. Heredity, **49**: 214-216.
- GILMOUR, D. G. 1959. Segregation of genes determining red cell antigens at high levels of inbreeding in chickens. Genetics, **44**: 14-33.
- KOSIN, I. L. and H. ISHIZAKI. 1959. Incidence of sex chromatin in *Gallus domesticus*. Science, **130**: 43-44.
- LANDAUER, W. 1959. A lethal mutation in Dorking fowl. Jour. Heredity, **50**: 137-139.
- MELLEN, W. J. 1959. Hereditary exencephaly in the fowl. Jour. Heredity, **50**: 127-130.
- NEWCOMER, E. H. 1959. Chromosomal translocation in domestic fowl induced by X-rays. Science, **130**: 390-391.
- TAIBEL, A. M. 1957. Analisi di un primo gruppo di fattore del corredo cromosomico della anatra muschiata (*Cairina moschata domestica* L.). Suppl. Ricerca Scientifica, **27**: 1-7.—Analysis of a group of chromosome factors affecting pigmentation in domestic Muscovy Ducks. (In Italian; English, French, and German summaries.)—E. E.
- TAIBEL, A. M. 1958. Un nuovo "fattore di ripartizione", causa della "pezzatura bianca al capo e al terzo superiore del collo", nel corredo cromosomico dell'anatra muschiata (*Cairina moschata domestica* L.). Ann. Sperimentazione Agraria, n.s. **12**, no. 2: 537-553.—A new "color distribution gene" as a cause of white head spotting in the domestic Muscovy. This character occurs in the wild in the related Asiatic *Cairina scutulata*. (In Italian; English summary.)—E. E.
- WERRET, W. F., A. J. CANDY, J. O. L. KING, and P. M. SHEPPARD. 1959. Semi-albino: a third sex-linked allelomorph of silver and gold in the fowl. Nature, **184**: 480.

MANAGEMENT AND CONSERVATION

- BASKETT, T. S. and R. E. TOMLINSON. 1959. Bobwhites and benefit payments. Trans. N. Amer. Wildl. Conf., **24**: 289-303.
- DILLON, O. W., JR. 1959. Food habits of wild mallard ducks in three Louisiana Parishes. Trans. N. Amer. Wildl. Conf., **24**: 374-382.—Presents the results of content analysis of 106 gullets and 125 gizzards from mallards taken in Cameron, Acadia, and Vermilion Parishes, Louisiana. Acre for acre, crop residues and weed seeds associated with rice culture produce quality foods far in excess of that produced by natural marsh land. Mallards prefer rice fields for feeding, loafing, and courting, returning to the marshes only because of human disturbance. Preservation and management of both habitat types are essential.—S. T. D.
- FRILEY, C. E., JR. 1959. Controlled goose shooting at Michigan's Swan Creek Highbanks. Trans. N. Amer. Wildl. Conf., **24**: 245-260.
- LYON, J. L. 1959. An evaluation of woody cover plantings as pheasant winter cover. Trans. N. Amer. Wildl. Conf., **24**: 277-289.—Based on the observed reaction of pheasants to winter weather conditions, it was concluded that deciduous woody windbreaks, considered simply as winter cover, probably have no justification in pheasant management.—S. T. D.

- NELSON, U. C. and H. A. HANSEN. 1959. The Cackling Goose—its migration and management. Trans. N. Amer. Wildl. Conf., **24**: 174–187.—Past and present breeding ranges, migration routes, harvest and mortality data, and population estimates are discussed for the Cackling Goose (*Branta canadensis minima*). Banding has shown that only one population exists with a single, restricted breeding ground, the protection of which is one of the primary management needs. Restoration of ancestral breeding areas through the eradication of feral foxes on the Aleutian Islands is also important.—S. T. D.
- SCHEFFER, P. M. 1959. Farming for waterfowl in the Pacific Flyway. Trans. N. Amer. Wildl. Conf., **24**: 238–244.—Describes a program of development and management on 5,100 acres of private land in Oregon and California during 1957 and 1958, which is concerned primarily with the production of waterfowl foods by farming methods.—S. T. D.

MIGRATION AND ORIENTATION

- CORNWALLIS, R. K. 1959. An immigration of winter visitors. Bird Study, **6**: 68–72.—Analysis of a heavy movement of Turdidae from southern Sweden and Denmark across southern England to Ireland on November 5–6, 1954. Banding recoveries supplement direct observations to give a clear picture of the migration and its relation to weather conditions.—F. M.
- CORNWALLIS, R. K. 1959. Bird observatories. Ibis, **101**: 424–428.—There are now 14 major bird observatories in and around the British Isles (with several less fully equipped or part-time stations). Functions are the visual observation and counting of birds, banding, and critical examination in the hand. Contributions are being made to the study of migration (drift, origins, routes, and destinations of migrants). Measurements, weights, molts, sex and age character of living birds are also being studied. The use of radar and studies of astronavigation are innovations that should increase the contributions of these observatories.—J. W. H.
- GOODACRE, M. J. 1959. The origin of winter visitors to the British Isles. Bird Study, **6**: 37–50.—Introduces a series of papers analyzing banding recoveries. Wintering Blackbirds (*Turdus merula*) come from western Europe. In general, those breeding farther north winter farther north in the British Isles; those breeding farther south winter mainly in southern England.—F. M.
- GOODACRE, M. J. 1959. The origin of winter visitors to the British Isles. 2. Chaffinch (*Fringilla coelebs*). Bird Study, **6**: 102–108.—Chaffinches breeding in Norway and Sweden winter in the southern parts of the British Isles. Many fly south from Scandinavia in autumn to Belgium and Holland to make the narrow sea crossing into England.—F. M.
- GOODACRE, M. J. 1959. The origin of winter visitors to the British Isles. 3. Brambling (*Fringilla montifringilla*). Bird Study, **6**: 108–111.—Banding recoveries suggest that the pattern of autumn migration is similar to that of the Chaffinch.—F. M.
- GOODACRE, M. J. 1959. The origin of winter visitors to the British Isles. 4. Starling (*Sturnus vulgaris*). Bird Study, **6**: 180–192.—Analysis of selected banding recoveries shows that Starlings breeding in northern Europe winter mainly in the north of the British Isles. Those breeding farther south winter in the south; the most easterly breeding population winters mainly in the east.—F. M.

- GRAUE, L. C. and J. G. PRATT. 1959. Directional differences in Pigeon homing in Sacramento, California and Cedar Rapids, Iowa. *Animal Behavior*, **7**: 201-208.
- ISHIZAWA, J. 1960. On the distribution and migration of *Locustella o. ochotensis*. *Tori*, **15**: 214-226.—Analysis of 141 specimens picked up at 17 lighthouses since 1924. Subjects covered are migration period and routes, sex ratio, gonadal development, and fat deposition. (In Japanese; English summary.)—K. C. P.
- KOBAYASHI, K. 1959. Notes on Osaka Bay waders. 1-115. Kobe, Japan.—A seven-year study of 39 species of shorebirds at a mudflat at Osaka, Japan. Spring migration lasts about 50 days; autumn migration about 90 days. In spring the peak in number of species comes earlier than the peak in number of individuals; in autumn the opposite is true. Although there is a good English summary, not only the text but also the legends to the tables and graphs are exclusively in Japanese.—E. E.
- KRAMER, G. 1959. Recent experiments on bird orientation. *Ibis*, **101**: 399-416.—Pigeons raised in open aviaries exhibit homeward orientation, but those raised in aviaries with palisades allowing vision only of the sky (down to 30° above horizon) or in aviaries allowing a view of a sector of the north sky and horizon exhibit no such orientation. Orientation is influenced by spatial factors (such as variation due to direction, site of release, site of loft, region). Cloud cover causes decrease in orientational facility. Homing is best in August, poorest in January, there being a consistent parallelism to temperature. Correlation with interdiurnal barometric change is also present.—J. W. H.
- LACK, D. 1958. Swifts over the sea at night. *Bird Study*, **5**: 126-127.
- LACK, D. 1958. Weather movements of swifts 1955-1957. *Bird Study*, **5**: 128-142.—Southward movements in summer, mostly before the time of autumn departure, were observed on the east coast of England. They occurred with a depression centered over northern England or Scotland.—F. M.
- LACK, D. 1959. Migration across the sea. *Ibis*, **101**: 374-399.—The author reviews the literature of trans-sea migration and is concerned mainly with migrations of small passerines for which such journeys seem hazardous. Trans-sea migration is discussed under geographic headings, including the Gulf of Mexico, eastern Pacific, eastern Asia, western Asia, New Zealand, the Mediterranean, western Atlantic, Biscay, and the North Sea. General problems of physiology, weather, long crossings, sea barriers, drift, and navigation are discussed. Some passerines migrate at least 600 miles over sea. Premigratory fat probably is enough for 24-36 hours of flight. Following coast lines may precede and follow trans-sea migration of diurnal migrants and has no guiding significance.—J. W. H.
- SCHMIDT-KOENIG, K. 1960. The sun azimuth compass: one factor in the orientation of homing pigeons. *Science*, **131**: 826-828.—Experiments with free-flying pigeons confirm previous findings from birds in training cages. Pigeons kept in lightproof rooms with artificial day/night cycles offset 6 hours (both plus and minus) and 12 hours from the natural cycle had, on the average, a corresponding deviation in direction of attempted homing when released on sunny days. The fact that a small number of birds homed rapidly and unerringly despite their shifted "biological clocks" suggests that factors additional to the sun azimuth compass are operative.—K. C. P.
- SPENCER, R. 1959. Progress and prospects in ringing. *Ibis*, **101**: 416-424.—The history of bird-banding in Great Britain is outlined with a discussion of recovery

rates (47,465 recoveries through 1957, representing 190 species, but few with more than 25 recoveries), future prospects, and suggestions for improved efficiency in operations. Tables show the species banded, recovery rates, and places of recovery of birds. Too many different banding schemes in Europe, varied conservation practices, and a failure so far to concentrate on the banding of species whose movements are of greatest interest are three principal problems.—J. W. H.

PHYSIOLOGY

- DAWSON, W. R. and H. B. TORDOFF. 1959. Relation of oxygen consumption to temperature in the Evening Grosbeak. *Condor*, **61**: 388-396.—Measurements give basal metabolic rate (BMR) of 2.5 cc O₂/gm/hour, indicating that the birds do not adapt to cold by increased BMR. Zone of thermoneutrality from 10°C to at least 31°C. Measures of skin temperature suggest the feathers are the major heat conservers.—R. E. P.
- DISNEY, H. J., B. LOFTS, and A. J. MARSHALL. 1959. Duration of the regeneration period of the internal reproductive rhythm in a xerophilous equatorial bird, *Quelea quelea*. *Nature*, **184**: 1659-60.—A brief postnuptial period of sexual regeneration exists.—H. C. S.
- FARNER, D. S. and D. L. SERVENTY. 1959. Body temperature and the ontogeny of thermoregulation in the Slender-billed Shearwater. *Condor*, **61**: 426-433.—Body temperature of active adults was 40-41°C, higher in morning than evening, lowest in incubating birds. Chicks attain thermoregulation in burrow within a few hours of hatching but improve for four days.—R. E. P.
- DE FRANCISCIS, P. and W. LANDAUER. 1959. Combined effects of cortisone and insulin on developing chicken embryos. *Nature*, **184**: 101-103.
- FRINGS, H., A. ANTHONY, and M. W. SCHEIN. 1958. Salt excretion by nasal gland of Laysan and Black-footed Albatrosses. *Science*, **128**: 1572.
- FRINGS, H. and M. FRINGS. 1959. Observations on salt balance and behavior of Laysan and Black-footed Albatrosses in captivity. *Condor*, **61**: 305-314.—Successfully maintained these species by providing only sea water for drinking and supplementing this with more salt.—R. E. P.
- HARTMAN, F. A. and K. A. BROWNELL. 1959. Liver lipids in hummingbirds. *Condor*, **61**: 270-277.—Liver weights and lipid contents of several species of hummingbirds were significantly greater after noon than before. The same held for many other species of insectivorous birds, but lipid levels were significantly lower in them than in hummingbirds.—R. E. P.
- HÖHN, E. O. 1959. Prolactin in the cowbird's pituitary in relation to avian brood parasitism. *Nature*, **184**: 2030.—Cowbird pituitaries contain as much prolactin as those of Redwings. Failure of female cowbirds to form brood patches is therefore due to lack of response to the hormone.—H. C. S.
- JOWSEY, J. R., R. M. BLAKELY, and H. I. MACGREGOR. 1959. Effect of thioctic acid on gain in body-weight by turkey poults. *Nature*, **184**: 1323-1324.—Effect is negligible.
- MACFARLAND, L. Z. 1959. Captive marine birds possessing a functional lateral nasal gland (salt gland). *Nature*, **184**: 2030-2031.—All the albatrosses, boobies, penguins, and a frigatebird, cormorant, flamingo, and gull that were tested possessed a functional salt gland.—H. C. S.
- MAINARDI, D. 1959. Immunological distances among some gallinaceous birds. *Nature*, **184**: 913-914.—Phasianus, Numida, and Meleagris have close affinity

- while *Gallus* and *Coturnix* are remote from one another and from all other species.—H. C. S.
- MARSHALL, A. J. and D. L. SERVenty. 1959. Experimental demonstration of an internal rhythm of reproduction in a transequatorial migrant (the Short-billed Shearwater *Puffinus tenuirostris*). *Nature*, **184**: 1704–1705.—Photostimulation has little or no effect.—H. C. S.
- MICHElsen, W. J. 1959. Procedure for studying olfactory discrimination in pigeons. *Science*, **130**: 630–631.—“A discrimination based on olfactory stimuli was established in two pigeons by an operant conditioning procedure. Results from control sessions demonstrate that the discrimination can be attributed only to the presence or absence of olfactory stimuli.” (Author’s abstract.)
- MILLER, A. H. 1959. Response to experimental light increments by Andean Sparrows from an equatorial area. *Condor*, **61**: 344–347.—Testes of six immature males enlarged in response to 16-hour photoperiods at an age when White- and Golden-crowned Sparrows are refractory.—R. E. P.
- MILLER, W. J. 1960. Sexual dichromatism in two species of the Columbidae. *Condor*, **62**: 45–48.—Injections of sex hormones alter plumage color of *Streptopelia tranquebarica* but not of *Columba livia*.—R. E. P.
- NAGRA, C. L. and I. O. BUSS. 1959. Change in body weight associated with onset of ovarian recrudescence and oviposition in pheasants. *Condor*, **61**: 348–350.—Body and ovary weights increase in spring.—R. E. P.
- PADGETT, C. A. and W. D. IVEY. 1959. *Conturnix* Quail as a laboratory research animal. *Science*, **129**: 267–268.—This species is recommended to embryologists and physiologists because of its hardiness, ease of handling, precociousness, and great laying ability.—J. C. H.
- SAWYER, W. H. 1960. Increased water permeability of the bullfrog (*Rana catesbiana*) bladder *in vitro* in response to synthetic oxytocin and arginine vasotocin and to neurohypophyseal extracts from non-mammalian vertebrates. *Endocrin.*, **66**: 112–120.—Results show that avian (at least the chicken) neurohypophysis contains oxytocic properties and that the natural hormone may be arginine vasotocin.—H. C. S.
- SCHLUMBERGER, H. G. and H. J. RUDOLPH. 1959. Growth-promoting effect of a transplantable pituitary tumor in parakeets. *Endocrin.*, **65**: 902–908.—Evidence to indicate that the avian pituitary is capable of producing a growth hormone.—H. C. S.
- SELANDER, R. K. 1960. Failure of estrogen and prolactin treatment to induce brood patch formation in Brown-headed Cowbirds. *Condor*, **62**: 65.—Implants of three mg. pellets of estradiol in *Molothrus ater* and in a male canary. Brood patch formed in latter, but not in cowbirds even after daily additions of 50 IU Prolactin.—R. E. P.
- WOLFSON, A. and D. P. WINCHESTER. 1959. Effect of photoperiod on the gonadal cycle in an equatorial bird, *Quelea quelea*. *Nature*, **184**: 1658–1659.—Birds subjected to 8, 12¾, and 16¾ hour photoperiods showed gonadal recrudescence at a similar rate; those on eight hours regressed within two months, whereas others maintained their reproductive capacity.—H. C. S.

TAXONOMY AND PALAEOLOGY

- BLACKWELDER, R. E. “1959” [=1960]. The present status of systematic zoology. *Syst. Zool.*, **8**: 69–75.—Covers three chief topics: (1) a penetrating criticism

- of the somewhat snobbish division of systematics into Old, or "morphological," and New, or "biological"; (2) a progress report on the Directory of Zoological Taxonomists (about 7,000 names; publication expected late in 1960); (3) a suggestion that much of the name changing that has given taxonomy a bad reputation is due to careless work and insufficient knowledge of earlier literature.—K. C. P.
- CAIN, A. J. 1959. Taxonomic concepts. *Ibis*, **101**: 302-317.—An engrossing review of the evolution of avian taxonomic and related concepts from Ray and Willughby to the present, including cogent critical comments.—J. W. H.
- GILLIARD, E. T. 1960. Results of the 1958-1959 Gilliard New Britain Expedition. 1. A new genus of honeyeater (Aves). *Amer. Mus. Novitates*, **2001**: 5 pp.—*Vosea whitemanensis*, new genus and species, from Wild Dog Range, Whiteman Mts., New Britain, allied to *Melilestes*, *Melidectes*, and *Lichmera*. Eight specimens were obtained in original forests between 3,500 and 5,600 feet elevation.—K. C. P.
- JOHNSGARD, P. A. 1960. Hybridization in the anatidae and its taxonomic implications. *Condor*, **62**: 25-33.—Diagrammatic summaries of recorded hybrids in the family by tribes with discussion of relationship indicated.—R. E. P.
- MACDONALD, J. D. 1959. Old and new lines in taxonomy. *Ibis*, **101**: 330-334.—Using specific examples in living birds, the author discusses the employment of distributional variation, form and behavior, form and function in taxonomy, and the necessity of using all of these in achieving systematic goals.—J. W. H.
- MAYR, E. 1959. Trends in avian systematics. *Ibis*, **101**: 293-302.—Current and past concepts of systematics and developments in this field are reviewed. "New Systematics," with the replacement of a monotypic by a polytypic species concept, a morphological by a biological species viewpoint, is now being supplemented by another advancement characterized by descriptions of population structures of species in terms of geographical isolates, population continuants, zones of secondary intergradation, and by renewed study of higher categories.—J. W. H.
- MILLER, A. H. 1960. A blackish race of the Gray Seedeater of northern South America. *Condor*, **62**: 121-123.—*Sporophila intermedia anchicayae* from the valley of the Rio Anchicaya, Colombia.
- MOREAU, R. E. 1959. The classification of the Musophagidae. *Systematics Assoc. Publ. no. 3*: 113-119.—Contains interesting discussion of the unique pigments of turacos, turacin (red) and turacoverdin (green).—E. E.
- PARKES, K. C. 1960. Geographic variation in the Lesser Tree-swift. *Condor*, **62**: 3-6.—Study of *Hemiprocne comata* adds rectrices as character, retains two subspecies.—R. E. P.
- SALOMONSEN, F. 1960. Notes on flowerpeckers (Aves, Dicaeidae). 1. The genera *Melanocharis*, *Rhamphocaris*, and *Prionochilus*. *Amer. Mus. Novitates*, **1990**: 28 pp.—The sequence of genera proposed by Mayr and Amadon in 1947 is accepted, except that use of *Prionochilus*, 1841, rather than *Anaimos*, 1853, is resumed. Characters and distribution of species and subspecies admitted in the three most primitive genera are discussed. The two New Guinea genera *Melanocharis* and *Rhamphocaris* share a character unusual in passerines in that females are decidedly larger than males. In a list of examined type specimens, the author designates lectotypes for *Prionochilus plateni* Blasius and *P. johannae* Sharpe.—K. C. P.

- SALOMONSEN, F. 1960. Notes on flowerpeckers (Aves, Dicaeidae). 2. The primitive species of the genus *Dicaeum*. Amer. Mus. Novitates, **1991**: 38 pp.—Discusses 15 of the 35 species of *Dicaeum* admitted. The forms currently lumped into *D. agile* are divided among three species, *agile*, *everetti*, and *aeruginosum*; distribution of this group and of *D. trigonostigma* subsp. are mapped. One new name is introduced, *Dicaeum aureolimbatus laterale*, to replace *Pri-nochilus sanghirensis* Salvadori, preoccupied when the species is transferred to *Dicaeum*.—K. C. P.
- TORDOFF, H. B. 1959. A condor from the upper Pliocene of Kansas. Condor, **61**: 338–343.
- VAURIE, C. 1960. Systematic notes on Palearctic birds. No. 39. Caprimulgidae: a new species of *Caprimulgus*. Amer. Mus. Novitates, **1985**: 10 pp.—*C. centralasicus*, described from a single British Museum specimen from Goma, western Sinkiang, China. Resembles *C. aegyptius* (with which it had been confused) in pale coloration, but is thought to be more closely related to *C. nubicus* and *C. mahrattensis*. Relationships among Palearctic species of *Caprimulgus* are discussed. The reported occurrence of *C. aegyptius* in Chinese Turkestan is based on two specimens (one the type of *centralasicus*, one now lost), and requires confirmation.—K. C. P.
- VERHEYEN, R. 1959. Revision de la systématique des Falconiformes. Bull. Inst. Roy. Sci. Nat. Belg., **35**, no. 37: 1–51.—The Falconiformes are divided into four suborders, Cathartae, Pandiones, Accipitres, and Falcones. The groups usually treated as subfamilies are elevated to families. Diagnoses are provided for the higher groupings down to tribes. A synoptic classification of the entire order down to the species level is supplied. Some of the conclusions are surprising and some not explained, notably the transfer of *Asturina* (of which Verheyen had no skeletal or anatomical material) from its usual place as a subgenus of *Buteo* (or an ally) to a subgenus of *Astur*, here considered to belong in a different tribe. Whatever one's opinion of the author's taxonomic conclusions, the vast amount of comparative data compiled and made available in this paper should prove useful to students of the birds of prey.—E. E.
- VERHEYEN, R. 1959. Les plongeurs (Gaviae) et les grèbes (Podicipitides) dans les systèmes de classification. Bull. Inst. Roy. Sci. Nat. Belg., **35**, no. 44: 1–12.—On the basis of 200 taxonomic characters, the loons and grebes are found not to be closely related. The loons are made a suborder of Verheyen's Alci-formes, being said to be allied to the Alcidae, particularly *Uria*. The grebes are made a suborder of Ralliformes, allied to the Heliornithidae.—E. E.