

RECENT LITERATURE

'The Handbook of British Birds.' Vol. 5.—In spite of war and its attendant difficulties, the fifth and concluding volume¹ of this splendid manual is now issued, containing the remaining orders of British birds, the Charadriiformes, Ralliformes, and Galliformes. The treatment, as before, includes a terse statement of the characters, external, skeletal and muscular, of the orders and families, with condensed descriptions of the genera and species, their plumages, habitat, field characters, voice, display, breeding, food, distribution in the British Isles and abroad and their migration as well as notes on allied palaeartic forms. In the preparation of these accounts, a vast amount of literature has been surveyed and the important points brought out, while in the making of the plumage descriptions much material has been critically gone over. Final chapters include corrections and additions to all the volumes, drawn from lately published sources or recent observations by the authors; and at the end is a chapter listing all the species certainly accredited to the British Isles, 520 in number, with a brief summary statement of the occurrence of each. The index covers the entire five volumes. The twenty-two plates, most of them in color, illustrate the greater part of the species, often with two sets of figures to show summer and winter plumages and those of young or immature stages. In addition there are sixty-two text-figures giving details of bills, feet, or points of plumage difference between closely allied birds, so that the whole brings together within relatively small compass the important characteristics of structure and behavior of the sundry species that visit the British Isles.

But the work will not only be of value to European students, but also, since many of the species occur in America as well, it will prove of increasing value to ornithologists on this side of the Atlantic with its fund of well-selected information on many matters of importance, especially on plumages, habits and distribution, as well as on comparison with other closely allied forms. A careful reconsideration of various points in nomenclature has resulted in the adoption of several changes not incorporated in the A. O. U. 'Check-list,' including the following. For the Arctic Tern, the name *Sterna macrura* is used in place of *S. paradisaea*, the application of which is doubtful; *Larus argentatus smithsonianus* is regarded as "barely separable" from British birds of the typical race; for the Iceland Gull, *Larus leucopterus* is regarded as an indeterminate name, and *L. glaucooides* Meyer is adopted instead; the Black Guillemot is placed in the genus *Uria*, with the murre; while the ralline birds, following the researches of Lowe, are accorded ordinal rank, Ralliformes, distinguished by the structure of their feathers and their pterylosis. In the distribution of the Ivory Gull on the western side of the Atlantic, the 'Additions' might have given New Jersey instead of Long Island Sound as the farthest-south record (see *Auk*, 57: 403, 1940). One may express admiration of the British spirit not only for the thorough way in which the authors have cooperated to prepare this great work but in their success in launching it during years of war.—G. M. ALLEN.

¹ Witherby, H. F., Jourdain, F. C. R., Ticehurst, Norman F., and Tucker, Bernard W. *The Handbook of British Birds. Volume 5.* 8vo, xii + 356 pp., 22 pls., text-figs., maps, 1941. H. F. & G. Witherby, Ltd., 326, High Holborn, London. Price 25 shillings.

Witherby's 'Check-list of British Birds.'—This useful handlist¹ includes 520 species and races of birds "fully admitted to the British List," 424 of which are species and 96 are races. Of these, 147 are resident in the British Isles while 52 are regular summer visitors that breed; twenty others have bred occasionally within the past century, thus making a total of 219 birds that are known to breed within the area. In addition, 82 are regular winter visitors or "passage migrants," while 238 are included in the large class of occasional and irregular visitors. One, the Great Auk, is extinct. It is interesting that so large a portion of the 520 birds is made up of the rarer visitors of which some forty or more are American species. It is natural that about three-fourths of these latter are water- or shorebirds that breed mostly in the northern regions of America.

For each species or race, the accepted Latin and English names are given with a very brief statement of the manner of occurrence. These occupy the left-hand pages while the right-hand pages are left blank as a convenience for manuscript notes and additions of the user. It might in a few cases have been better to use the vernacular names of American species as provided in the A. O. U. 'Check-list,' although in others the English usage is undoubtedly to be preferred. Thus "Yellowshank" for our Lesser Yellowlegs undoubtedly is in keeping with British usage but Wilson's Snipe is preferable to American Snipe. On the other hand Kestrel is better for the Sparrow Hawk, since the latter term has long usage in the British Isles for an *Accipiter*, and Nightjar is better than Nighthawk, since the bird is not a hawk at all. An improvement is doubtless the reduction of our Semipalmated Plover to the rank of a subspecies of *Charadrius hiaticula*, but the Latin names of some of the redpolls have an unfamiliar look to an American. The names are compiled from the new 'Handbook of British Birds' in which the details are more fully given concerning such changes.—G. M. ALLEN.

Dr. Blanchard on the Annual Cycle of White-crowned Sparrows.—This important paper² gives a detailed account of the behavior of two races of White-crowned Sparrow on the Pacific coast, *Zonotrichia leucophrys nuttalli*, which is the resident subspecies about Berkeley, California, and *Z. l. pugetensis* which breeds from northern California northward into southern British Columbia. Together they occupy a narrow but continuous band along the shore line and are separated from other races. The Puget Sound race is migratory and occurs with the Nuttall's Sparrow as a winter resident at Berkeley. The case is therefore an excellent one for the investigation of varying behavior within a single species. During the non-breeding period the Nuttall's Sparrows remain on their territories but are tolerant of the wintering groups of their own and the visiting race.

In late September and early October the Puget Sound Sparrows reach Berkeley and may be distinguished in the field by a paler plumage and slightly different song. The two races live peaceably together until the first of the year, when the resident birds become more zealous in protecting their individual territories and fighting off others of the species. The more northerly race does not migrate until late March and early April, and soon thereafter was found arriving on its breeding grounds. Careful studies were made of the two races in the field and in the labo-

¹ Witherby, H. F. A Check-list of British Birds with a short account of the status of each (revised edition). Compiled from "The Handbook of British Birds." 8vo, 78 pp., 1941; H. F. & G. Witherby, Ltd., 326, High Holborn, London. Price 5 shillings.

² Blanchard, Barbara D. 'The White-crowned Sparrows (*Zonotrichia leucophrys*) of the Pacific seaboard: environment and annual cycle.' Univ. of California Publ. in Zool., 46: 1-178, 20 pls., 30 text-figs., Nov. 1941.

ratory, and individual banded birds were followed in their activities from year to year. The rate of enlargement and ripening of the testes and the laying on of fat by the migratory race are shown to be different from these phenomena in the resident form, indicating internal responses of a different nature. The study shows that *pugetensis*, the migratory race, differs in various points. Thus it shortens the period of territorial establishment which in *nuttalli* is finished from 6.5 to 8.5 weeks before the first day of incubation and omits the subsequent period of 46 to 59 days between cessation of chasing and fighting and the first day of incubation. Again, the interval between completion of the first nest and laying of the first egg is a day shorter in *pugetensis*, while the interval between the fledging of one brood and laying the first egg for the next is reduced to nine instead of twenty days. On the other hand the more northern bird averages 4.09 eggs to a set against 3.25 in the southern race. The active part of the reproductive cycle is thus less than two-thirds of the time required by the populations of central California with a total difference of nearly two months. All this indicates that the northern breeding population is now physiologically an altogether different race from the more southern *nuttalli*, although the morphological distinction is a matter of slight degree.

The paper includes a vast amount of data, the result of several years of intensive study of the habits of the two races in the field, the macroscopic and microscopic changes in the testes of the two races and the correlation of these with migration, together with various theoretical considerations. Indeed the wealth of detail and the rather difficult style of writing make the story a little hard to follow in places so that one misses a good general summary of the entire discussion, yet realizes that the author has presented a very careful and suggestive piece of work that is of high value.—G. M. ALLEN.

Perry on the effect of adrenalin on the reproductive cycle.—In this important paper¹ the author sets forth a tentative explanation of the annual ripening of the gonads with daily increase of light, an effect which, as is now well known, may be produced experimentally by subjecting birds at off seasons to a gradually longer and longer day. In the series of experiments here described, immature English Sparrows in Ohio, were given, from December to March, an increasing daily dosage of artificial light in two lots, for forty and sixty days, respectively. By this time the males had developed fully black bills and the testes showed advanced stages of spermatogenesis, while the females, although less advanced, showed a stage considerably beyond that of quiescent birds. Half the birds of the two lots were then separated as controls, while the others were given daily injections of one-half minim doses of adrenalin and then returned to their dark cubicles. It was found that in from fifteen to twenty days the males had lost practically all the black of the lower bill and that of the upper bill was paler as in non-breeding birds, while the gonads had regressed to some four per cent of their previous volume; and in the females the ovary had diminished to slightly less than in the normal bird.

In the second series of experiments, birds in February were brought to breeding condition by daily injections of antuitrin (the gonad-stimulating principle from the anterior lobe of the pituitary). When the bills of the males had become completely black (indicative of ripened gonads) half-minim doses of adrenalin were given, and on alternate days, doses of antuitrin, using normal daylight hours. At

¹ Perry, James C. 'The antagonistic action of adrenalin on the reproductive cycle of the English Sparrow, *Passer domesticus* (Linnaeus).' *Anat. Record*, 79: 57-77. 3 pls., Jan. 25, 1941.

the end of the experiment, the gonads had regressed to the quiescent state, as if an antagonistic effect of adrenalin over antuitrin. Histological conditions were corresponding. In the third set of experiments, juvenile birds in the quiescent state were similarly injected on alternate days with antuitrin and adrenalin. After sufficient antuitrin had been given to have caused the birds to become black in the bills if antuitrin alone had been used, it was found that their gonads were in the typical quiescent state. Again adrenalin seemed to have inhibited the gonadotropic effect of the antuitrin. In the final series of tests, daily injections of adrenalin were given at the time of the natural breeding season beginning in early April, and the birds were exposed to normal daylight hours. Controls were held under similar conditions, but were not treated with adrenalin. The result was that the birds given adrenalin showed regression of the testes amounting to about 95 per cent in weight and 92 per cent in volume as compared with the controls, and there were corresponding histological aspects.

The author concludes therefore that adrenalin is antagonistic to the gonadotropic hormone, the failure of which is thus responsible for the regression of the secondary sex character of black bill, as well as for that of the gonads. In light-stimulated birds, adrenalin causes regression of these structures, and the same is true of birds stimulated with antuitrin, while again, regression of the gonads occurs in normal breeding-season birds, if they are treated with adrenalin. The mechanism of this effect is not fully known.

It is known that muscular activity stimulates adrenalin secretion while at the same time reducing the adrenalin content of the gland. Here, the author suggests, is a possible explanation of Rowan's results. This investigator produced in experimental birds an increase in size of gonads by subjecting them by mechanical device to longer hours of *exercise* instead of light, and also found that Starlings in busy London were, by increased wakefulness, brought to a condition of well-developed gonads by February 10, while those in the country a week later, were nearly quiescent. The result of increased exercise is to decrease the available adrenalin in the blood, so that "as it falls below its gonadal antagonistic value the anterior pituitary-gonad mechanism is enabled to function." With diminution of activity the adrenalin again reaches the threshold where its antagonistic value suppresses the gonadotropic effect. (But see the following paper.)

While thus the conflicting views of Bissonnette and Rowan may be brought into harmony, we have yet to explain why in the tropics, where light is uniform and length of day nearly constant, wintering migrants show enlarged gonads before they leave for the north. Again, what are the stimuli for the ripening of the gonads in resident tropical species? Does the reduction of light intensity in a rainy season have an effect? Is there a physiological rhythm in tropical birds that partly replaces the effect of light and exercise in northern species? It seems therefore that much more experimental work must be done with birds of low latitudes before the complete solution of these problems is attained.—G. M. ALLEN.

Toxic effect of Adrenalin on young Pigeons.—The experiment described herewith was undertaken to test further J. C. Perry's theory ("The antagonistic action of adrenalin on the reproductive cycle of the English Sparrow, *Passer domesticus* (Linnaeus)," *Anat. Record* 79: 57-77, 3 pls., 1941) that adrenalin acts as an antagonist to the gonadotropic hormones in birds. Four series of squabs (*Columba livia*) were used in this work and given the following treatments: (1) uninjected controls; (2) birds injected with one and one-half rat-units of pituitary extract per day; (3) birds injected with the same amount of gonadotropic substance and three

and one-half minims of adrenalin 1/1000 dilution (Parke Davis); (4) birds injected with the same amount of gonadotropic substance and 175 mg. of Witte's peptone in one cc. of water (a rat-unit is here defined as the minimum total amount of pituitary extract which, injected twice daily into twenty-one-day old female rats, will produce in four days an ovarian weight increase 100% greater than normal). The gonadotropic substance was injected into the loose skin of the neck in the morning, and the adrenalin or Witte's peptone was injected into the pectoral muscles in the evening. The birds were injected for two days, given one day's rest, injected for four more days and killed at the beginning of the eighth day of the experiment. Both males and females were injected since no way was known to sex the birds while they were still alive.

Male squabs are very sensitive to the gonadotropic hormones and show great enlargement of testes over very short periods of treatment. Females, on the other hand, though they do respond to gonadotropic injections, react much more slowly. It was hoped that by using male birds a short-term test of Perry's premise could be carried out. His method of injecting the sparrows with adrenalin in the pectoral muscles was followed in the pigeons. According to body weight, to give the squabs an equivalent dose of adrenalin, approximately 6.5 minims would be necessary. However, this dose was found to be so lethal that it was reduced to 3.5 minims daily. The results of the experiments are shown below. The average body-weights of both males and females as well as males alone is included to give a more nearly accurate check.

EXPERIMENT 1

CONTROLS

	<i>Original weight</i>	<i>Final weight</i>	<i>Testes weight</i>
No. 1	375 grams	376 grams	21.6 milligrams
No. 2	299 "	295 "	17.9 "
No. 3	357 "	335 "	66.7 "
No. 4	375 "	350 "	46.7 "
Average	351 "	339 "	38.2 "

Average weight change for males, — 12 grams.

Average weight change for males and females, — 13 grams.

EXPERIMENT 2

GONADOTROPIC

No. 1	340 grams	324 grams	155.8 milligrams
No. 2	332 "	315 "	330.7 "
No. 3	408 "	390 "	94.5 "
No. 4	274 "	258 "	201.2 "
No. 5	347 "	369 "	213.0 "
No. 6	324 "	387 "	213.2 "
No. 7	219 "	217 "	106.1 "
Average	321 "	323 "	187.8 "

Average weight change for males, + 2 grams.

Average weight change for males and females, — 3 grams.

EXPERIMENT 3

GONADOTROPIC PLUS ADRENALIN

	<i>Original weight</i>	<i>Final weight</i>	<i>Testes weight</i>
No. 1	308 grams	283 grams	138.2 milligrams
No. 2	418 "	373 "	107.3 "
No. 3	353 "	362 "	106.6 "
No. 4	363 "	370 "	105.2 "
No. 5	383 "	320 "	181.0 "
No. 6	244 "	197 "	47.1 "
No. 7	242 "	200 "	93.1 "
Average	330 "	301 "	111.2 "

Average weight change for males, — 29 grams.

Average weight change for males and females, — 36 grams.

EXPERIMENT 4

GONADOTROPIC PLUS TOXIC SUBSTANCE

No. 1	247 grams	223 grams	114.6 milligrams
No. 2	286 "	285 "	72.7 "
No. 3	444 "	411 "	217.2 "
No. 4	244 "	244 "	57.1 "
No. 5	292 "	293 "	168.0 "
No. 6	337 "	308 "	198.7 "
No. 7	291 "	281 "	70.0 "
Average	306 "	292 "	128.3 "

Average weight change for males, — 14 grams.

Average weight change for males and females, — 19 grams.

Experiments 1, 2, and 3 were run together before Experiment 4. In all, nine birds were killed by the adrenalin injection. The pectoral muscles of all adrenalin-treated birds were extremely discolored and often edematous at the places of injection. These facts, coupled with the great loss of weight in these birds, suggest strongly that the moderate inhibition shown by the adrenalin-gonadotropic-treated birds when compared with the birds treated with gonadotropic hormone alone, might be simply a toxic effect. Accordingly, the fourth series were injected with sub-lethal doses of a toxic substance, Witte's peptone (peptonum seccum), kindly supplied by Dr. E. B. Astwood, with the results shown in the fourth table.

It will be seen that the testes weights of individual birds given the same treatment vary greatly. This is due to the difficulty of obtaining a large series of birds of precisely the same age. The writer therefore feels that each average of testes weights should be taken as an indication rather than as an exact figure. Keeping this in mind, it is apparent that adrenalin was incapable of inhibiting testes growth very successfully, since the testicular weights of the adrenalin-gonadotropic-treated birds are three times those of the normal birds. Moreover, the birds treated with toxic substance and gonadotropic hormone also showed a decrease in weight of testes when compared with birds treated with gonadotropic hormone alone. The toxic-treated birds did not lose as much weight as the adrenalin-treated ones.

nor were their pectoral muscles badly discolored, and only one bird was killed by the treatment. If a larger toxic dose had been used it is probable that the inhibition of testes growth might equal that of the adrenalin-treated birds.

The writer's criticism of Perry's work is twofold:

(1) The effect of injected adrenalin as an antagonist to the gonadotropic hormones is difficult to explain in view of its transient existence in the blood stream. The statement in Starling's 'Principles of Human Physiology' (1930) still holds true: "When adrenalin is injected into the blood stream the effect is only temporary. It is not excreted in the urine but disappears rapidly from the blood. Since it is easily oxidized and is extremely unstable in alkaline solution we may conclude that, after performing its excitatory function, it is destroyed by oxidation in the fluids." In Perry's third set of experiments especially, where adrenalin was injected only every other day it seems remarkable that it was capable not only of inactivating the gonadotropic hormone present in the blood, but also of nullifying the effects of this hormone injected twenty-four hours previously.

(2) It is felt that the injection of $\frac{1}{2}$ -minim of 1/1000 adrenalin is a pathological rather than a physiological dose. Using the same dose in proportion to body weight the average dose for a man would be seventy-five c.c.! As low as two c.c. in one injection can be fatal to a man. It is well known that, in mammals, toxic substances and inanition will produce a profound reduction of normal gonadal development and alter the effect of injected hormones.

It is probable, in view of the evidence given here, that adrenalin injection inhibits the action of the gonadotropic hormones in pigeons not because it is a specific antagonist to the gonadotropic hormones, but because its toxicity renders the birds incapable of responding as markedly as they would if they were healthy. It is suggested that this condition might also apply in the case of Perry's work with sparrows.

The author wishes to express his thanks to Dr. F. L. Hisaw for supplying the experimental birds and for much kind and helpful advice.—CHARLES P. LYMAN, *Biological Laboratories, Cambridge, Massachusetts.*

Lehmann on Attwater's Prairie Chicken.—This bird, *Tympanuchus cupido attwateri*, is a slightly smaller and more buffy race of the Northern Prairie Chicken.¹ It formerly ranged from extreme southwestern Louisiana southwestward along the entire coast of Texas. The map giving its present and probable former distribution, illustrates graphically how it is now restricted mainly to some half dozen isolated parts of its one-time range. The preferred habitat is the better-drained prairies of this region, for it avoids the salt-marsh areas, except to a limited extent in winter.

A careful survey of the bird's present status indicates a total population of less than nine thousand individuals or about one per cent of its probable numbers before the country was developed by white men. Its total range in the course of the last one hundred years has been reduced more than 93 per cent. While in later times protection has apparently somewhat increased its numbers, it has now reached a low point from which real recovery may be extremely difficult. Human factors against the bird include the appropriation of much of the best part of its range for agriculture, uncontrolled prairie fires, overgrazing and hence destruction of cover, the development of oil fields, the cutting of drainage canals and the

¹Lehmann, Valgene W. 'Attwater's Prairie Chicken, its life history and management.' No. Amer. Fauna, no. 57, 65 pp., 14 pls., 1941; U. S. Fish and Wildlife Service, Washington, D. C. Price \$0.40 (Superintendent of Documents, Washington).

mowing of grassy areas. Of adverse natural factors extremes of weather are of great importance. A wet breeding season, especially in May, when it is at its height, often transforms large areas into shallow lakes, killing both eggs and young; while excessive heat in summer is again a factor to which the birds are sensitive. The encroachment of brush on prairie lands has rendered thousands of acres of once-favorable country now an unsuitable habitat.

There is an excellent account of the life history, courtship, mating, nesting, development of the young, food, flocking and seasonal activities; and finally a chapter on management, with an account of census methods, directions for habitat improvement, and precautions to be used in harvesting the crop. One cannot but feel, however, that the outlook for Attwater's Prairie Chicken is far from bright even if the various recommendations given could all be followed out forthwith, for as the author concludes, "In the absence of ample reservations for the species all other favorable factors together cannot be counted on to save the bird from extinction." However, while its days may be numbered, we may at least be glad that the author has given us a good account of the bird, its habits and its habitat, and has pointed out what may still be done for its present continuance.—G. M. ALLEN.

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- CHRISTISON, A. F. P. Notes on the birds of Chagai [Baluchistan]. *Ibis.*, (14) 5: 531-556, fig., Oct. 1941.
- COFFEY, BEN B. Summer range of mid-South Towhees. *The Migrant* (Memphis, Tenn.), 12: 51-57, Sept. 1941.—In southwestern Tennessee the race *canaster* is the breeding bird, but in the northern and northeastern part it is the typical Red-eyed Towhee. A resumé of records is given.
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- COLLINGS, WALTER E. The food of the Blackbird (*Turdus merula* L.) in successive years. *Ibis*, (14) 5: 610-613, Oct. 1941.

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- COTTAM, CLARENCE, AND WILLIAMS, CECIL S. Wilson Snipe perches on telephone pole. *Condor*, 43: 293, Nov. 17, 1941.
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- HOSKING, ERIC J. "Yellow" Wagtails feeding young with dragonflies. *British Birds*, 35: 129, Nov. 1, 1941.
- HOYT, J. SOUTHGATE Y. Through the year with the Pileated Woodpecker. *Audubon Mag.*, 43: 525-528, fig., 23 Dec. 1941.—Brief survey of activities.
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- JACKSON, HARTLEY H. T. Summer birds of northwestern Wisconsin. The Passenger Pigeon (Madison, Wisc.), 3: 87-90, Oct. 1941.—The first part from Loon to ducks.
- JACKSON, HARTLEY H. T. Holboell's Grebe at Tomahawk [Wisc.]. *The Passenger Pigeon (Madison, Wisc.)*, 3: 91, Oct. 1941.
- JACKSON, HARTLEY H. T. Summer birds of northwestern Wisconsin. (Continued. Part 2). *Passenger Pigeon (Madison, Wisc.)*, 3: 95-98, Nov. 1941.
- JACKSON, V. W. American Rough-legged Hawk, a victim of its prey. *Canadian Field-nat.*, 55: 129-130, Nov. 1941.—Marsh shrews had eaten through the wall of the crop causing death.
- JANSSEN, RAYMOND E. Feathered migrants of the posts. *Chicago Nat.*, 4: 71-78, 5 figs., Sept. 1941.—There are some 5000 stamps showing birds.

- JONES, EVELYN. Short-billed Marsh Wren. The Flicker (Minneapolis), 13: 35, Dec. 1941.—Breeding at Duluth.
- JONES, MYRLE L. How to make a Christmas bird census. Iowa Bird Life, 11: 73-74, Dec. 1941.
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- LAKELA, OLGA. Notes on the less common birds of the Duluth area. The Flicker (Minneapolis), 13: 37-38, Dec. 1941.—Includes mention of Blue Goose on June 1; a pair in immature plumage stayed for two weeks.
- LASKEY, AMELIA R. An Indigo Bunting in December at Nashville. The Migrant (Memphis, Tenn.), 12: 60, Sept. 1941.
- LASKEY, AMELIA R. Spring record of a Goshawk at Nashville. The Migrant (Memphis, Tenn.), 12: 61, Sept. 1941.—Third record of the bird for Tennessee.
- LASKEY, AMELIA R. An eight year old Mockingbird. The Migrant (Memphis, Tenn.), 12: 62, Sept. 1941.—A banded bird at least this age at Nashville, Tennessee.
- LASKEY, AMELIA R. An instance of Mockingbird bigamy. The Migrant (Memphis, Tenn.), 12: 65-67, Dec. 1941.—Color-banded male mated with two females, each of which nested, but both sets of eggs were destroyed.
- LASKEY, AMELIA R. Brown Thrasher defense of the nest. The Migrant (Memphis, Tenn.), 12: 70, Dec. 1941.—Observer struck in the temple by a defending bird.
- LEACH, E. P. Recovery of marked birds. British Birds, 35: 149-153, Dec. 1, 1941.—Compilation for sundry species of British banded birds.
- LEACH, E. P. Scandinavian Herring-gull in Yorkshire. British Birds, 35: 159-160, Dec. 1, 1941.—A bird banded on Kharlov Island, off the Murmansk coast, was killed near Leeds, Feb. 16, 1940.
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- LEWIS, HARRISON F. [A southward movement of Canada Jays in Ontario.] The Passenger Pigeon (Madison, Wisc.), 3: 94, Oct. 1941.
- LEWIS, HARRISON F., AND PETERS, HAROLD S. Notes on birds of the James Bay region in the autumn of 1940. Canadian Field-nat., 55: 111-117, Nov. 1941.—With supplementary lists of 48 species seen on Akimiski Island and 33 seen on Strutton Islands, James Bay.
- LEWIS, MARY F. W. Watery pastures. Audubon Mag. 43: 511-520, 4 figs., 23 Dec. 1941.—Bird life in Florida.
- LOCKE, S. BARRY. Plum Island bird-life increases. Bull. Massachusetts Audubon Soc., 25: 201, Jan. 1942.—Shorebird migration of Aug. 1941.
- LOFTON, JOHN M., JR. Southern sanctuary, Cape Romain Refuge, where eagles soar with ducks in the Carolina twilight. Amer. Forests, 48: 10-14, 48, 7 figs., Jan. 1942.

- LOVELL, HARRY B. A successful method of preventing Starling roosts. *Wilson Bull.*, 53: 237-238, Dec. 1941.—A noise-making device, and movement by a hose.
- LOWE, WILLOUGHBY P. Barred tails in British birds. *Ibis*, (14) 5: 617, Oct. 1941.
- LUCAS, DANIEL. Adventures with a Sparrow Hawk. *The Flicker* (Minneapolis), 13: 32, Dec. 1941.—Male did most of the hunting, bringing food to the female, who gave it to the young.
- MACKWORTH-PRAED, C. W., AND GRANT, C. H. B. Systematic notes on East African birds.—XXVIII. *Ibis*, (14) 5: 617-618, Oct. 1941.—Occurrence of European Golden Plover in East Africa is invalidated.
- MANFIELD, H. The Australian Ground Parrot in captivity (*Pezoporus wallacus*). *Avic. Mag.*, (5) 6: 172-174, Sept.-Oct. 1941.
- MANNIX, DANIEL P. Death on swift wings. *Saturday Evening Post*, 16, 81, 83, 84, figs., Nov. 8, 1941.
- MANVILLE, RICHARD H. Crossbills breeding in northern Michigan. *Wilson Bull.*, 53: 240-241, Dec. 1941.—Both Red and White-winged species breeding in late January and early February, 1941.
- MATHEWS, GREGORY. *Aethya* 1816 versus *Aythya* 1822. *Emu*, 41: 162, Oct. 1941.
- MAYFIELD, GEORGE R. August, the silent month for bird song—II. *The Migrant* (Memphis, Tenn.), 12: 45-46, Sept. 1941.
- MAYR, ERNST. Borders and subdivision of the Polynesian region as based on our knowledge of the distribution of birds. *Proc. Sixth Pacific Sci. Congress*, 4: 191-195, 1941.—Four main regions are defined by their characteristic birds.
- MAYR, ERNST. The origin and the history of the bird fauna of Polynesia. *Proc. Sixth Pacific Sci. Congress*, 4: 197-216, 1941.—Derivation mainly from the west, with a lack of American relatives.
- MAYR, ERNST. Birds collected during the Whitney South Sea Expedition. XLVII. Notes on the genera *Halcyon*, *Turdus* and *Eurostopodus*. *Amer. Mus. Novitates*, no. 1152, 7 pp., Oct. 31, 1941.—With descriptions of fourteen new races from Oceania.
- MAYR, ERNST, AND AMADON, DEAN. Birds collected during the Whitney South Sea Expedition. XLVI. Geographical variation in *Demigretta sacra* (Gmelin). *Amer. Mus. Novitates*, no. 1144, 11 pp., Oct. 13, 1941.—Distribution of the gray, the white and the mottled phases of the two races of the species.
- MILLER, ALDEN H. Habitat selection among higher vertebrates and its relation to intraspecific variation. *Amer. Naturalist*, 76: 25-36, Jan. 1942.
- MILLER, ALDEN H. A review of centers of differentiation for birds in the western Great Basin region. *Condor*, 43: 257-267, 3 figs., Nov. 17, 1941.
- MILLER, RICHARD F. Nesting of the Great Horned Owl in Salem County, New Jersey. *Oölogist*, 58: 94-95, Aug. 1941.
- MITCHELL, EARL T. An isolated Ruddy Duck colony. *The Flicker* (Minneapolis), 13: 23-24, Dec. 1941.—In a pothole near St. Paul, Minnesota.
- MOFFITT, JAMES. Eleventh annual Black Brant census in California. *California Fish and Game*, 27: 216-233, figs. 59-62, Oct. 1941.—A total census of over sixty-one thousand birds was made, more than last year. Eelgrass shortage, beginning to become marked in 1940-41, may cause a decline in numbers in succeeding censuses.
- MOFFITT, JAMES. Notes on the food of the California Clapper Rail. *Condor*, 43: 270-273, Nov. 17, 1941.—The "exotic horse-mussel (*Modiolus demissus*)" constituted 66 per cent of the animal food.

- MOORE, ROBERT T. Three new races in the genus *Otus* from central Mexico. Proc. Biol. Soc. Washington, 54: 151-160, Nov. 17, 1941.—New races are: *Otus asio suttoni* from Portezuelo, Hidalgo; *O. a. sortilegus* from Atoyac, Jalisco; and *O. vinaceus seductus* from Apatzingan, Michoacan.
- MOORE, ROBERT T. Notes on *Toxostoma curvirostre* of Mexico, with description of a new race. Proc. Biol. Soc. Washington, 54: 211-216, Dec. 8, 1941.—Describes a new race, *T. c. celsum*, ranging from southeastern Arizona and east to southern New Mexico, southward east of the Sierra Madres through Chihuahua and Durango.
- MOREAU, R. E. Ringed European Storks in East Africa. Ibis, (14) 5: 616-617, Oct. 1941.
- MOREAU, R. E. AND W. M. Food-offering and copulation by European Roller in winter quarters. Ibis, (14) 5: 614, Oct. 1941.—In late March at Amani, Tanganyika.
- MOREAU, R. E. AND W. M. Piracy by *Lanius collaris humeralis*. Ibis, (14) 5: 614-615, Oct. 1941.—Robbing a roller of its prey.
- MOREAU, R. E. AND W. M. Birds eating a "distasteful" grasshopper. Ibis, (14) 5: 615, Oct. 1941.
- MOTTERSHEAD, G. S. The Griffon Vulture in captivity. Avic. Mag., (5) 6: 158-159, pl., Sept.-Oct. 1941.—After nesting five years unsuccessfully, the egg of 1940 hatched after 58 days of incubation, and the young bird was successfully reared.
- NEBRASKA ORNITHOLOGISTS' UNION. N. O. U. cooperative bird migration list for spring of 1941. Nebraska Bird Review, 9: 35-41, Dec. 1941.
- NICE, MARGARET MORSE. The rôle of territory in bird life. Amer. Midland Naturalist, 26: 441-487, 1941.—Six types of 'territory' are recognized. History and theory, with a good bibliography.
- NICHOLS, MONIQUE L. Black Tern in Berkeley Aquatic Park. The Gull (San Francisco), 23: 40, Nov. 1941.—On Oct. 5, 1941.
- NORRIS, ROBERT. Philadelphia Vireo in South Georgia. The Oriole (Atlanta, Ga.), 6: 50, Dec. 1, 1941.
- NORRIS, ROBERT. Some nesting data on the Acadian Flycatcher. The Oriole (Atlanta, Ga.), 6: 51-52, Dec. 1941.—In Georgia.
- ODUM, EUGENE P. Winter homing behavior of the Chickadee. Bird-Banding, 12: 113-119, July 1941.—Of 21 birds (color-banded) released 1.5 to 1.75 miles from their winter feeding ranges, twelve returned, two remained near the point of release for a month, and seven disappeared.
- ODUM, EUGENE P. Variations in the heart rate of birds: a study in physiological ecology. Ecological Monogr., 3: 299-326, July 1941.—In six small species after exercise the rate exceeded 1000 a minute.
- ODUM, EUGENE P. Technics in life history study. The Oriole (Atlanta, Ga.), 6: 29-35, Sept. 1941.—On problems and methods of study.
- OLDHAM, CHARLES. Duration of life of Arctic Skua. British Birds, 35: 160, Dec. 1, 1941.—A bird identified by its small size and great tameness returned yearly to the Isle of Foula for 23 summers.
- PEARSON, T. GILBERT. Alden Hadley—my Hoosier friend. Audubon Mag., 43: 533-536, 2 figs., 23 Dec. 1941.
- PELZER, WALTER C. Second State Burrowing Owl record. The Passenger Pigeon (Madison, Wisc.), 3: 91, Oct. 1941.—On the Lake Michigan shore in Sheboygan Co., Wisc., a specimen was collected Oct. 8, 1941.

- PETERS, HAROLD S. The Turkey Vulture in New Brunswick. *Canadian Field-nat.*, 55: 129, Nov. 1941.—Four at Scotch Lake, May 3, 1924, and an adult near Allendale, June 16, 1940 (preserved).
- PETERSON, ROGER T. Symbols of Nature in art. *Audubon Mag.*, 43: 403–412, 4 figs., Oct. 1941.—Birds in Egyptian, Chinese and Christian designs.
- PETERSON, ROGER T. Billions of birds. *Bull. Massachusetts Audubon Soc.*, 25: 149–154, fig., Nov. 1941.—Bird censuses in the United States.
- PHELPS, WILLIAM H., AND GILLIARD, E. THOMAS. Seventeen new birds from Venezuela. *Amer. Mus. Novitates*, no. 1153, 17 pp., Nov. 26, 1941.—Sixteen races and a new species, *Basileuterus zimmeri*. A map shows the localities.
- PINTO, OLIVERIO. Sobre a nidificação de *Poliiocephalus dominicus speciosus* (Arribalzaga). *Papéis Avulsos Dept. de Zool.*, São Paulo, 1: 237–239, July 12, 1941.
- PINTO, OLIVERIO M. DE OLIBEIRA. Sobre uma nova raça Amazonica em *Tachyphonus surinamus* Linné. *Papéis Avulsos Dept. de Zool.*, São Paulo, 1: 209–211, May 9, 1941.—Description of a new race, *T. s. saturatus*, from Santa Cruz, right bank of Rio Eirú, Brazil.
- PITELKA, FRANK A. Summer records from the Bodega Bay region, California. *Condor*, 43: 294–295, Nov. 17, 1941.
- PORTER, SYDNEY. Ornithological monographs as an aid to aviculture. *Avic. Mag.*, (5) 6: 166–168, Sept.–Oct. 1941.—With a partial list of special monographs.
- POWELL, BERT. Do birds think? *The Migrant* (Memphis, Tenn.), 12: 47–48, Sept. 1941.
- PRICE, JOHN B., AND DANFORTH, C. H. A persistent mutation in the California Quail. *Condor*, 43: 253–256, 3 figs., Nov. 17, 1941.—Persistence of a pallid mutation in the wild, since at least 1896.
- QUAY, T. L. Smoky Mountain birds. *The Chat* (Raleigh, N. C.), 5: 56, Sept. 1941.
- RABB, JOE C. Nesting of the American Bittern in Currituck County, North Carolina. *The Chat* (Raleigh, N. C.), 5: 62, Sept. 1941.
- RAHN, HERMANN. The development of the chick pituitary with special reference to the cellular differentiation of the pars buccalis. *Journ. Morph.*, 64: 483–512, 3 pls., May 1, 1939.
- RAHN, HERMANN. The distribution and development of the melanophore hormone in the pituitary of the chick. *The Collecting Net*, 16: no. 5, 2 pp., July 26, 1941.
- RAHN, HERMANN, AND DRAGER, GLENN A. Quantitative assay of the melanophore-dispersing hormone during the development of the chicken pituitary, *Endocrinology*, 29: 725–730, Nov. 1941.
- RAHN, HERMANN, AND PAINTER, BEN T. A comparative histology of the bird pituitary. *Anat. Record*, 79: 297–311, 3 pls., Mar. 25, 1941.—Comparison of topography in different birds.
- RAMSEY, RALPH, JR. A Red-breasted Nuthatch in Atlanta. *The Oriole* (Atlanta, Ga.), 6: 50, Dec. 1941.—The fourth record for the region.
- REIF, CHARLES B. Minnesota nesting record, 1941. *The Flicker* (Minneapolis), 13: 27–31, Dec. 1941.—Survey of nesting species in the State.
- REIF, CHARLES B. Courtship and nesting of the Red-eyed Vireo. *The Flicker* (Minneapolis), 13: 35–36, Dec. 1941.
- REYNOLDS, ARIEL AND LAUREL. A trip to see Black Brant. *The Gull* (San Francisco), 23: 39–40, Nov. 1941.
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- SCHORGER, A. W. The Bronzed Grackle's method of opening acorns. Wilson Bull., 53: 238-240, 2 figs., Dec. 1941.—Cut open by a special palatal ridge.
- SCHWARTZ, CHARLES AND ELIZABETH. The call of the prairie. Audubon Mag., 43: 413-422, 7 figs., Oct. 1941.—Excellent close-up photographs of Prairie Chicken; its management in Missouri.
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- SMITH, STUART. The instinctive nature of nest sanitation. British Birds, 35: 120-124, 2 figs., Nov. 1, 1941.—Stimulation of young to extrude the fecal sac.
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- STATON, JACK. Display in Blackbirds. British Birds, 35: 107, Oct. 1, 1941.—Communal singing at dusk.

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