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DUES FOR 1929

ANNUAL DUES FOR 1929 NOW PAYABLE

This is the Treasurer's first notice to all members that dues for 1929 are now payable to the Treasurer,

Mr. J. W. Stack,
Michigan Agricultural College,
East Lansing, Michigan.

You are earnestly requested to remit at your earliest convenience, thus saving postage expense to the Club, and much time and effort to the Treasurer. A receipt will be returned only if requested.

Life Members	**$100.00**
Sustaining Members	**5.00**
Active Members	**2.50**
Associate Members	**1.50**

The Club values the continued support of every member, and every resignation is received with much regret. At the recent annual meeting at Ann Arbor a very considerable list of delinquent members was reported. Some of these members had been carried for a year or longer. The number in this delinquent list was so great that the Club considered it necessary to authorize and instruct the officers that the WILSON BULLETIN may be sent only to members not in arrears for dues. Accordingly, this action will be put into effect with the mailing of the March BULLETIN. However, those who find it inconvenient to remit by that time will be gladly allowed an extension of time if they will merely communicate with the Treasurer to such effect.

The WILSON BULLETIN again extends the season's greetings to its readers. The past year has been a reasonably prosperous one and we trust that our membership feels a degree of satisfaction with our numerical growth, at least. In spite of a considerable loss by resignation and non-payment of dues our total membership is greater than ever before. And for the first time in our history we close the fiscal year with a comfortable bank balance. We hope, however, that this showing may be merely a stimulus to greater effort.

APR 15 1929

THE
WILSON BULLETIN

A Quarterly Magazine Devoted to the Study
of Birds in the Field
and the Official Organ of the

WILSON ORNITHOLOGICAL CLUB

Edited by
T. C. Stephens, *Editor-in-Chief*
Myron H. Swenk Albert F. Ganier
Alfred M. Bailey R. D. Hissong

Volume XLI
1929

Published Quarterly
by the
WILSON ORNITHOLOGICAL CLUB
at
Sioux City, Iowa

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A Magazine of Field Ornithology

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THE WILSON BULLETIN

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New subscriptions, changes of address, and applications for membership should be addressed to the Secretary. Personal items, news of events in the scientific world, and other notes suitable for our "Notes Here and There" department may also be addressed to the Secretary.

Claims for lost and undelivered copies of the magazine may be addressed to the Editor.

THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist.

The officers for the current year are:
President—Dr. Lynds Jones, Spear Laboratory, Oberlin, Ohio.
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The membership dues are—Sustaining membership, $5.00; active membership, $2.50; associate membership, $1.50 per year.

The following societies are affiliated organizations:
The Nebraska Ornithologists' Union.
The Iowa Ornithologists' Union.
The Kentucky Ornithological Society.
The Tennessee Ornithological Society.

An Impression of the Wood Ibises at 'Gator Lake

From a water-color by George Miksch Sutton

THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY
Published by the Wilson Ornithological Club

Vol. XLI (Old Series) No. 1 March, 1929

Vol. XXXVI (New Series) Whole Number 146

IN THE HAUNTS OF THE WOOD IBIS

BY ERNEST G. HOLT

Illustrated with Photographs by the Author and Frontispiece by George Miksch Sutton

Southern Florida offers perhaps the nearest approach to a bird-lover's paradise to be found anywhere within the boundaries of the continental United States. The extreme end of the peninsula is quite tropical in its faunal and floral affinities, and here one may find many organisms unknown elsewhere in the country. I had read, of course, of the tropical nature of the region, and once, years ago, had even passed by train over the Florida Keys from Key West northward; yet I was entirely unprepared, when a recent field trip for the Cleveland Museum of Natural History took me into the Cape Sable country, to find jungles there that might well have been mislaid by Brazil. Mangroves, that in other places scarcely attain the dignity of trees, here grow to a height of more than sixty feet and form solid forests miles in extent, while the strangling fig and gumbo-limbo abound, and even real mahogany is not rare. Surely one might expect ornithological novelties too. Therefore it was no great surprise to learn that on a small lake a few miles back from the coast a colony of Wood Ibis was nesting.

Until recently the traveler bound for Cape Sable had no choice of means of transportation, at least for the last part of his journey. Progress across country through the Everglades was practically impossible no matter what equipment might be employed, and only a boat of lightest draft was capable of negotiating the vast expanse of mud and shallow water, known as Florida Bay, which guards all seaward approaches to the Cape. Even with proper boats this voyage was not an easy one. Scott journeyed hither many years ago, to be followed in time by Bent and Chapman—pilgrims to an ornithological Mecca—and each has digressed in his account of the bird wonders he beheld to speak of the difficulties of navigation in these waters. Now, thanks to the misguided activities of civilization, a drainage canal has been dug from the western boundary of the Royal Palm State Park southwest-

ward to the coast, and on the mud and rock thrown out during its excavation an automobile road called the Ingraham Highway has been constructed to the little fishing village of Flamingo, just nine miles east of East Cape Sable.

Although we had barely established ourselves in the comfortable lodge at the Royal Palm State Park, and were in no wise prepared for camping out, when information of "the great ibis bird" reached us the decision to visit the rookery was prompt. Through the kind offices of the Park Warden and his family we were soon supplied with a huge box of quilts and other bedding, another of provisions, and a big sack of excelsior (in anticipation of the specimens we expected to stuff); and daybreak of January 25, 1924, found us in the warden's motor truck jolting along through the mists enshrouding the Ingraham Highway.

Leaving the Park, the road passes out at once into open country possessing all the charm that wide-arching skies can lend a landscape. On every side great expanses of grass, broken only by small hammocks of green trees and shrubs, sweep away to a remote horizon—save to the right where a long line of blue in the distance indicates the slash-pine forest growing on the oolite outcrop of Long Pine Key. But we sensed this through the experience of former excursions; on this morning we had covered many miles before the tardy sun finally swept away the mists and made it possible to dispense with the headlights.

By that time we seemed to have passed into a colder climate, a land of low hills, their slopes hoary with frost. But, strangely enough, the very tops of the hills were green. Then, as we drew nearer, the frost resolved itself into trees—stunted cypresses with naked limbs as yet untouched by spring—and we found that it was the peculiar quality of light reflected by the fretwork of pale trunks and branches that had created the illusion. The verdant hilltops were only the higher cores of evergreens about which the cypresses were clustered.

As we progressed, yet other changes came over the landscape. The hoary cypresses were left behind; hammocks became smaller and in them appeared a new character, the *Paurotis wrightii*, somewhat resembling the cabbage palm but more slender and graceful; and clumps of small mangroves became increasingly more evident. Coincidently the ground-level became lower and the soil wetter. Scattered pools, coalescing, assumed the proportions of small lakes, alluring to their shallow waters scores of feathered fisherfolk. At length the road and its mother, the canal, turned due west and entered a veritable jungle of huge mangroves, buttonwoods, and other trees of tropical origin, upon whose branches flourish thousands of bromeliads and orchids,

Slash-Pine Forest

An open growth of warm-tinted boles covering Long Pine Key, an oolite outcrop in the Everglades. Saw palmetto is practically the only undergrowth. The rock underfoot—there is no soil—is jagged, and cruel in the extreme.

Tropical Epiphytes

Bromeliads and orchids burden the hammock trees of southern Florida. The live oak here shown supports a host of air pines.

Here one unconsciously listens for the chatter of monkeys or the screams of parrots, or casts a wary eye into the deep shadows of undergrowth that might well conceal a jaguar. But the truck bumps on without incident. Then a final turn down an outlet canal, and we passed out on the open flat of the Cape Sable prairies to behold before us the hamlet of Flamingo. A mere glance at its half dozen nondescript houses perched on stilts along the shore, and the appropriateness of the name was at once apparent.

However, no favorite son returning from long exile could have hailed the sight more joyously! For full three weary, bone-racking hours we had been clinging to that plunging truck—had been jostled and bruised and mauled until the Everglades themselves would have seemed a haven of rest—while here a drowsy calm lay upon the land, a somnific warmth was in the air, and goldenrod blossoming on the shore gave the lie to January. Little wonder that the coconut palms fringing the beach held a languorous appeal or that the rippling waters of Florida Bay, flashing back the morning sun like a thousand small heliographs, should have awakened memories of a less strenuous life on more southern strands. But we had work to do and there was no time to dream. We had reached the limit of utility of land vehicles and yet many miles lay between us and the ibis colony.

At Flamingo lived a fisherman, known among his fellows as "K", who boasted the fastest launch on the Cape—a 12 m.p.h. boat. He was induced to act in the combined capacity of guide, boatman, and campman. Then ensued the bustle of stowing pots and pans, three five-gallon bottles of amber-colored cistern water, gasoline, and all the other impedimenta with which civilized man forever burdens himself; and, taking in tow a skiff, we put off toward the distant point of waving coconut fronds marking East Cape.

On the mud flats offshore stately Great White Herons stood like immaculate sculptures, while their blue-gray congener, the Ward's Heron, stalked with slow measured tread upon some luckless fishlet—an *hors d'oeuvre*, perhaps. Lines of Florida Cormorants in single file passed low over the water, the heavy birds maintaining an even height by steady, laborious flapping; pelicans, solemn and grotesque, rode the waves like yawls at anchor; and overhead Laughing Gulls and an occasional Royal Tern pirouetted in the sunlight. For more than an hour our boat plowed her nose along toward the palm-clad point, and between the heat, the steady whir of the motor, and the glare from the water we were almost asleep when our pilot eased his craft into the mouth of a drainage canal and drew her up beside a bank of gray mud.

ABORIGINAL AMERICANS

Chief Big Shirt and his family at breakfast. The Seminoles rank, with the Wood Ibis, among the very "first families" of the Everglades.

AN EVERGLADE HAMMOCK

The Palm (*Paurotis wrightii*) seen in this picture is one of the most beautiful plants of southern Florida, and is not found elsewhere in the United States.

Here we paused to lunch, surrounded by black mangroves, saltwort, and myriads of fiddler crabs.

Upon resumption of the journey, a cormorant intent upon his own affairs in the canal was surprised by the onrush of our launch and foolishly tried to outswim it. It was not long though till he too realized that we had the fastest craft on the Cape, dived, and reappeared unharmed in our seething wake. Not so lucky, however, was a nice fat mullet similarly surprised. Once past our propeller it made a wild leap and landed in the skiff—and subsequently in the frying pan.

When a couple of miles due north and straight inland from the coast we turned sharply to the right into the continuation of the main canal down which we had followed in the motor truck, but here there was no sign of road, however bad. In fact the canal itself furnished the only evidence that human beings had ever penetrated to this wild spot, excepting one thing. That loomed before us, startlingly grotesque, suggesting a cross between one of the stilt-legged Flamingo houses and a Dutch windmill! It proved to be an old ditching machine that had been parked here at the scene of its last job, miles from anywhere, and we took possession of it for our camp. Then, as if presaging the success of our quest, a flock of Wood Ibises, alternately flapping and sailing, their long naked necks outstretched, and their black pinions and snowy bodies in sharp contrast against the afternoon sky, passed overhead.

However, the poetic thoughts thus stirred could not linger while we were confronted with the necessity of establishing ourselves in our new abode. Others, most likely coon hunters, had found the ditcher a handy stopping place. All their lives these people have looked upon water as merely a convenient medium upon which to travel, and brooms—why a broom in the hands of a coon hunter would be unthinkable! Anyway, the accumulated evidences of former tenants were great. To make matters worse many of the windows were closed with sheets of canvas. Choking with dust raised by our zealous broom, I tore these away, the while making sage remarks about the hopelessness of a people afraid of fresh air. (And, as usually happens to the newcomer who looks upon the native and all his works in the light of his own superior intelligence, I paid for my folly that very night, shivering in my drenched pajamas, frantically trying to tack back the canvas and shut out a cold driving rain from the north.

The next morning (January 26), a twenty-minute run eastward along the canal brought us opposite the south shore of our objective—Gator Lake. But for the glint of water through a gap in the protecting rim of trees we might easily have passed it by for just another of the

A Homestead Wrested from the Jungles

Note the barrel for catching rain water. The road builders who occupied the tent satisfied their liquid requirements by distilling water from the canal. No potable water is obtainable from wells.

Flamingo

A name suggested, perhaps, by the fact that the houses of this tiny fishing village are mounted on stilts. This is a precautionary measure rendered necessary by occasional terrific storms that drive the sea over vast areas of this low coast.

many patches of wooded swamp that at frequent intervals dot the Everglades. Through this gap we could see the mangroves, on what seemed the northern shore, thickly covered with white specks, and across the intervening three-quarters of a mile a strange din reached our ears. With quickening pulses we leaped ashore to moor the launch, and with eager hands dragged the skiff out of the canal, across a few yards of switch-grass turf, and shoved it out on the lake.

Gator Lake is almost circular and very shallow, and the underlying mud very deep. Every stroke of the oars stirred up a thick dark soup. A fringe of big mangroves (*Rhizophora mangle*) screens the lake from the open Everglades which surround it, and, as we hugged close to these while stealing cautiously toward the rookery, many birds were started from the roots and branches. Water-turkeys with a great commotion took wing or with but a single *plop* dived beneath the murky water; Little Green Herons with nervously twitching tails watched our approach for a moment and then darted away screaming into the jumble of mangrove roots; Little Blue Herons, in both blue and white garb, were surprised in the sheltered coves; and scores of Black-crowned Night Herons, still clothed in the streaked dress of adolescence, croaked hoarsely as they flopped out of the shadows. Even a couple of phlegmatic old Brown Pelicans reluctantly sought other perches. But of all the birds we disturbed, none protested so vehemently as the Louisiana Herons. Their explosive, shrieking squawks were well calculated to warn every potential specimen in the neighborhood that the collector was abroad, and we soon came to revile them heartily.

As we drew nearer the northern shore the white-spotted trees detached themselves from the shore line and became mangrove islets, while the spots among the glossy green foliage were resolved into scores upon scores of Wood Ibises (*Mycteria americana*)—the bird we most sought. The peculiar noise we had been hearing was the composite cry of several hundred nestlings, and it now passed from din to pandemonium.

Nearer and nearer crept our boat until the adult ibis watching in idle curiosity decided that all was not well and began to pitch from tree to tree. Though a huge, magnificent bird, the Wood Ibis, with its naked black head and neck and long decurved bill, is a grotesque object at best; when taking off it is superlatively so. As it springs from its perch the wings sweep forward, almost meeting in front, while the head and neck are bent sharply down toward the dangling legs. The resultant posture suggests a small boy who has suddenly realized the inconvenience of green apples!

The Great Granddaddy of All the Crabs

Land crabs of this species, *Cardisoma guanhumi*, are very abundant over the southern Florida littoral and make themselves *persona non grata* with their human neighbors by inroads upon the tomato fields.

The Coast at Flamingo

This point is about nine miles east of East Cape Sable. The indigenous cabbage palm and the introduced coco palm are here seen together.

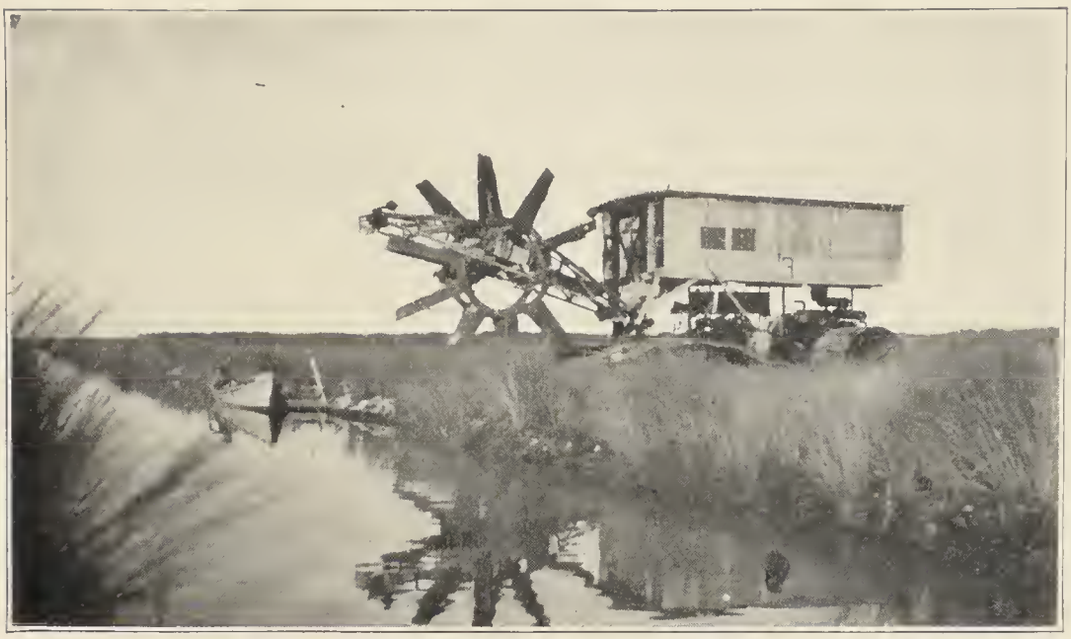
Pushing the skiff well up under the shelter of a large mangrove, we reverted to type for the time being and, like our primal ancestors, took to the branches. Cautiously we crept from limb to limb up to a point from which we could survey the rookery. What a sight to behold! And what a racket!

From this elevated perch could be seen scores of rather flimsy, shallow nests of twigs and vines, arranged in groups over the outer branches of the mangroves, and harboring young in every stage of development from unhatched embryos to nestlings with black pinfeathers in the wings. Many of the latter were standing up boldly in the nests but none had yet ventured out of them to explore the *flora incognita* beyond. The parents, all except the more timid which had departed entirely, had withdrawn to the tops of the highest mangroves and there anxiously awaited the next move on the part of the intruders.

If the adult Wood Ibis is grotesque the young is a caricature! But at least their necks are clothed, and they have good dispositions. When approached too closely they opened their ludicrous mouths and protested, or tried to walk on their wabbly legs, but none ever showed the pugnacity of young Ward's and Great White Herons, which in similar circumstances strike savagely with their formidable beaks.

The young alone were responsible for the outlandish uproar, for the adults are almost voiceless birds. Noise seemed to be both the vocation and avocation of these youngsters and their enthusiasm knew no bounds. Of a clutch of three eggs near-by, one was pipped, and although the chick within could get only the tip of its bill through the orifice, it joined most lustily with its sturdier neighbors in ringing the welkin. The combined efforts of these hundreds of nestlings is beyond the power of pen to describe. An acquaintance who had been having trouble with his radio, upon visiting such a rookery exclaimed, "Now I know where static comes from!"

Our reconnaissance showed the rookery to be divided into two unequal parts, a main division occupying most of a small aggregation of islets just off the north shore of the lake, and a lesser section that had overflowed to the nearest trees of a separate island immediately to the west. All of these islands were little more than clumps of mangroves growing out of the water. Soft muck was the only soil, but, when present at all, it supported a luxuriant growth of giant "sea ferns" (*Acrostichum aureum*) and vines. Gorgeous morning-glory blossoms fell, like a benediction, over all. But this innocent vegetation only served to give one a false sense of security and lead to his complete undoing at the first step ashore, for only alligators and others who travel on their stomachs could find support on such footing.



Our Camp in the Everglades

An old machine that was used to dig the lateral ditches into the drainage canals. The two rooms built over the machinery served admirably as a camp.

Cabbage Hammock

Looking westward from the top of our ditching machine camp. The hammock supplied us with fresh "cabbage," a really delicious vegetable obtained from the heart of the palm.

Upon careful survey, the main section of the rookery was found to be arranged in ten separate groups, the individual nests of which were placed on the peripheral branches of the mangroves at elevations varying from four or five feet above the water to twenty-five feet up in the tops of the highest trees. The largest group contained thirty-three nests (all in a single tree), the smallest, but four; all ten totaled 230!

Mr. Bent has described[1] the structures of a small rookery he examined years ago in the nearby Bear Lake as "large nests, about three feet in diameter, made of large sticks, very much like the nests of the larger herons." These Gator Lake nests were decidedly smaller and flimsier; certainly few attained a diameter of two feet and many were even smaller, and they were rather carelessly constructed of twigs and vines. Indeed, they failed utterly to accord with our preconceived ideas, derived from picture-books, as to how a stork's home should be built. For after all the Wood Ibis is not an ibis, but a stork. This fact is not generally recognized perhaps because our American stork takes so little interest in the census reports.

The usual number of young to the nest was three, though some held only one, while crowded into others there were as many as five. Often there was considerable discrepancy in the sizes of nestlings of the same brood, and in one nestful of four youngsters two were twice the size of their fellows. This indicates that the parents do not wait until all the eggs are laid before beginning to incubate them.

The 27th was cold and raw, with drizzling rain, and we shivered all day in our ditcher camp and thanked our patron saints that we had such a shelter. But the poor ibises were deserted by their saints. When we next saw the rookery we were shocked to find that scores of nestlings, which on former visits had greeted us with such an uproar, now lay cold and silent in their nests, victims of the elements. Other nests contained egg shells and portions of embryos which bore mute witness to the nefarious work of a skulking band of Florida Crows. Still other nests were entirely empty, cleaned out no doubt by the Turkey Vultures which were in constant attendance upon the rookery. The mortality in such a rookery is terrible, and one wonders how a species subject to such vicissitudes during its period of helplessness can possibly maintain its existence.

We had heard that Roseate Spoonbills—"pinks," the natives call them—roosted in the rookery with the Wood Ibis and as a specimen was a great desideratum of the Museum we determined to try for one. Accordingly, late one afternoon we set out to conceal ourselves at

[1]Bent, A. C. *Nesting Habits of the Herodiones in Florida. Auk*, XXI, January, 1904, pp. 28-29.

THE EVERGLADES

View north from our camp. The numerous patches of black mangrove that dot the open stretches of switch grass appear in the distance to form a solid wall of woods.

THE GATOR ROOKERY

A general view of the red mangrove islets as seen from the east. The trees are dotted with the white forms of Wood Ibises, both adults and nestlings.

strategic points in the mangroves and see what strange bed-fellows the Wood Ibises might make. As we approached the rookery a single wary "pink" took flight and though we waited until almost night not another one was seen. However, herons and White Ibises came by scores to roost in the rookery. Little Blue Herons in both blue and white dress, and Louisiana Herons, came singly, by twos, by threes, and by fours—in groups of a single species, and both species together —in almost constant streams, flying with measured wing-beats low over the lake at sunset. White Ibises came in small flocks, flying higher. A few Snowy Herons and American Egrets also appeared. And if the rookery had been noisy with just the nestling Wood Ibises, now it was bedlam itself. Squawks, grunts, groans, whines—almost every conceivable sort of noise—issued from those dark mangroves in the gathering gloom. A romantic hour, an entrancing place! Then a Ward's Heron, another desideratum, suddenly winged into view, silhouetted for a moment against the sunset reflections, and the spell was broken. Motivated by the instinct of the collector, I automatically pressed the trigger—with appalling results. The awful report crashing upon that still atmosphere was terrifying and every one of the hundreds of herons among the mangroves sought, panic-stricken, to leave the rookery at the same instant. Wildest confusion reigned for a moment: then we picked up our poor victim and slipped away into the shadows.

That night aboard the ditcher we were troubled by mosquitoes for the first time, although we were encamped in a land famed far and wide for these friendly little insects. I remember yet the stories my brother, who claims to have cleared the site for Miami while serving in the Spanish-American War, used to tell about the sun-darkening clouds of mosquitoes that settled over his camp whenever the wind blew from the Everglades. Naturally our conversation turned upon mosquitoes, and "K" solemnly assured us that were it summer and we placed the lantern outside of the screens, the mosquitoes would put the light out in five minutes! He said that the natives simply do not go into the 'Glades during the summer months, and that even at Flamingo, on the coast, life is almost unbearable at times on account of the pests. It is not remarkable then that residents of southern Florida should be interested in the fact that small fish, especially top minnows, play an important role in mosquito control. But I was surprised to hear a drainage engineer demand the extinction of the whole heron tribe (which includes the Wood Ibis) because these birds feed upon small fish. One who is familiar with southern Florida must know that, in spite of the combined depredations of the entire heron

A Group of Solemn Youngsters

Incipient flight feathers can be seen as jet black patches in their wings.

Not Mirth

But righteous indignation at our intrusion. Adult birds lose all vestige of down from the head and upper neck and become absolutely bald.

and ibis population, myriads of minnows and other small fish perish every year when the Everglade pools go dry. Next to mosquitoes, the most abundant animals in Florida are fish!

Twenty-five years ago Mr. Bent wrote (*op. cit.*), "The Wood Ibises are not in need of protection; they are extremely shy and wary and well able to take care of themselves;" and not long after, Dr. Chapman observed,[2] "The marshes and swamps, river, lake and sea shore, once animated by snowy plumaged herons, and ibises, and by Roseate Spoonbills, still exist and will long continue to exist as they were when the birds glorified them." But on the balmy January morning when we turned the prow of our launch homeward up the canal, giving the fright of his life to many a little Palm Warbler foraging in the switch grass, our hearts were sad. When we stopped at Gator Lake to pick up our skiff, and paused for a last look at the great white birds perched in their mangrove retreat, I could not but think how wretchedly wide of the mark are the statements of Messrs. Bent and Chapman today. Even at that moment the roadway being extended along the bank of the canal had almost reached the lake. Another season will bring with it an endless stream of automobiles, and, for the first time since its elevation above the waters of the Gulf, this portion of the Everglades will know the taste of dust and the smell of gasoline. After thirty years of continuous occupancy (so "K" informed us), the Wood Ibis must abandon its ancestral home and pass on to yet more remote regions—if there be such—for these strange and interesting birds, spared by the plume hunter can not face the encroachments of civilization.

It is the old, old story of human greed. While in the South alone numberless thousands of acres of good arable land lie idle, real estate speculators are draining the Everglades on the pretext of need for more farm lands. Is it not possible to protect a few of the remaining swamps from the over-zealous utilitarians and set them aside as refuges for such birds as ibis and herons and spoonbills that can not exist apart from these "waste places"? The Gator Lake rookery is inevitably doomed, yet there is still time, though barely enough, to save other rookeries if we act quickly. Let us for the moment forget to ask, "What good is it?", and, realizing our kinship with all animate nature, make an earnest effort to save from extinction this fellow organism.

Carnegie Museum,
Pittsburgh, Pa.

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[2]Chapman, Frank M. *Camps and Cruises of an Ornithologist*. 1908, p. 82.

THE MECHANICAL EXECUTION OF WILSON'S "AMERICAN ORNITHOLOGY"

BY FRANK L. BURNS

Though a little more than a perfunctory perusal of the original edition of the "*American Ornithology*," or of almost any one of the better biographies of Alexander Wilson, might have saved more than one well disposed commentator from erroneous impressions in reference to the personnel and incident in connection with the mechanical execution of that much discussed work, a "rehash," as the petulant critic might term it, seems inevitable especially in the light of some unpublished data and a mass of undigested published notes and letters. It is well known that Wilson's real literary career began early in 1806 when he became assistant editor of the American edition of "*Rees's Cyclopaedia or Universal Dictionary of Arts, Sciences, and Literature*," revised, corrected, enlarged and adapted to this country; published by Samuel F. Bradford, bookseller, and Murry, Fairman & Co., engravers. Wilson's duties included a general supervision of the mechanical department.

The exact terms of his later agreement with Bradford do not appear but it seems that the latter was to furnish the funds for the actual publication and advertisement of the "Ornithology," and the former at his own time and expense, the text, drawings, general supervision, and as it subsequently developed, a personal canvass for subscriptions. This enterprise aimed to show the growing resources of the infant Republic. The publisher determined to spare no expense to attain mechanical excellence and to make the publication in the highest degree creditable to his country. Thomas Amies of the Dover paper mills, carried his patriotism so far as to insist upon domestic rags only in the manufacture of the stock. The much admired letterpress was from new type cast in improved molds by the Scotch-American typefounders, Archibold Binney and James Ronaldson, and printed by the well known Second Street firm of Robert and William Carr.

James Keim furnished the copper plates, and of the engravers, George Murry, chief and best engraver of the natural history illustrations in "Rees's Cyclopaedia," was responsible for Plates 3, 7, 9, 15 and 26, but the last had to be finished by Lawson, and Murry's connection ceased as soon as Wilson realized that he could no longer be depended upon. Benjamin Tanner, a line and stipple engraver of many fine pictures, signed Plate 32 of the fourth volume, and John G. Warnicke, who was associated with Tanner, engraved twenty plates

for the last five volumes, his figure of the Ruffed Grouse being much admired. Alexander Lawson signed fifty of the seventy-six plates and was Wilson's chief reliance, since he worked with equal fidelity and facility from the finished drawing or from mere outline and the actual specimen; in time of stress he was a most efficient and faithful friend of Wilson.

Proofs were made as the engravings progressed, improvements suggested in pencil by the artist, and as fast as John Vallance, noted for the excellence of his script, had lettered the plates, they were delivered to Joseph Brown, the plate printer. Wilson had some slight knowledge of the latter trade through temporary employment with a copperplate printer soon after his arrival in 1794, and now endeavored to introduce printing in colors after the French method which was thought to give the effect of softness to the plumage, and some of the proofs were attempted in colors, but as Ord has remarked, without success. Impressions of the first two plates delivered on May 22, 1807, were intended for advertisement; well colored specimen prints were to be delivered with the prospectus to Bradford's agents in the various cities on the Atlantic coast. It was with this object in view as well as Wilson's own failure to lay on the color smoothly, that induced him to diffidently address his Quaker friend, William Bartram, hoping to enlist his niece Ann in the process, suggesting as a possible aid to lessen the drudgery, Mary Leech, a former pupil and daughter of the "Sorrel Horse" blacksmith with whom he boarded while teaching at the little schoolhouse across the way. His appeal apparently was without success since there appears no further allusion to the matter. A recent writer has stated: "In that day the hand coloring of engravings was a common practice, and shops of colorists were maintained by publishers." In this country at least this art was in its infancy; Bradford, "the most enterprising publisher in America," had no such shop. There was not a single professional colorist in Philadelphia at this time; indeed Ord relates that Wilson had great difficulty at first in fixing the proper tints over the engravings and that he had to experiment unaided by the council or example of others.

Charles Robert Leslie, who became a celebrated painter as a pupil of Benjamin West, was at this time an apprentice to Bradford and Inskeep, and writes that he assisted Wilson to color some of his first plates, working from specimens of birds. He further comments upon the artist's drawings and how carefully he had counted the number of scales on the tiny tarsi and toes of his subjects.

Wilson has stated in the preface of his second volume that hitherto the whole materials and mechanical parts have been the production of the United States, except the colors, for which he was indebted to Europe. In that volume some beautiful native ochres were introduced, and one of the richest yellows was from the laboratory of Peale and Son of the Museum, and other tints of equal excellence were confidently expected from the same quarter. Wilson certainly became the expert colorist through his work on these early volumes.

Wilson's success in his southern canvass was not great, yet the edition of 200 sets was oversold (458 sets were eventually subscribed for at $120 the set of ten volumes) and the publishers found it expedient to increase the edition to 500 although this necessitated the resetting of the type for the first two volumes for the additional 300 copies, which, with the slight changes in the text, became actually a second edition. Therefore, before Wilson's departure for the Mississippi valley early in 1810, he employed Alexander Rider, John H. Beck, and Prosper Martin, as colorists to finish a batch of 800 or more prints obviously of the initial volumes of the original edition. This work was evidently done at the homes of the colorists, the rate was fixed at twenty-five cents per sheet, and the whole submitted for his approval early in January, when volume two was published.

Doubtless the mechanical work upon the "American Ornithology" had not materially progressed beyond Lawson's steady grind during Wilson's long absence in 1810, but soon after his return from New Orleans, Lawson delivered all but two of the engravings for volume III (Plates 19-22 on September 13, and Plates 24 and 23 on October 8 and 15, for which he receipted to the amount of $339). On September 14 Brown had made 3,208 additional impressions of plates for volumes I and II (second edition) and 800 for volume III, and October 10, 930 additional prints of the first four plates of the latter volume, for which he was paid at the rate of $1.50 per hundred. Evidently there was no delay in apportioning the sheets among the colorists, Rider, Beck, Anna C. Peale, Eliza Leslie and Louise Adelersterren; since some finished plates of the initial volume were returned for binding by September 22, and all of the first two volumes, second edition, were finished by November 3 and the third volume well under way. The last three colorists contributed no work to the latter volume, Prosper Martin and John H. Hopkins filling in up to January 15, 1811, when the plates of that number were about completed.

The work of Alexander Rider probably occurs more or less in every volume, he appears to have been the only professional "fancy painter" of that time in Philadelphia, as well as the most rapid and

industrious. Dunlap's assertion that Rider came from Germany in 1810 in company with Krimmel, the portrait painter, has been copied by all later biographers. In fact he worked for Wilson in 1809, and doubtless came to America possibly prior to 1808 as assistant to A. Enslen, botanical collector for the Austrian Emperor (*Cf. Ord, Am. Orn.*, vol. ix. p. 71). Enslen died in Philadelphia about 1812. Rider was later employed by C. L. Bonaparte, both as colorist and artist, not always satisfactory in either capacity. Malvina Lawson refers to him as the Swiss painter in oil who also understood water colors, but in order to facilitate his work ruined a great many sheets by the introduction of opaque colors. Prince Bonaparte in an outburst of impatience wrote Lawson: "That confounded Rider has enraged us to a pretty considerable extent. Look at volume first, all the red and orange tints have been obliterated! Shame on him for employing such colors!"

Among the talented amateur artist-colorists of the earlier volumes of Wilson's "Ornithology," Anna Claypoole Peale, niece of Charles Willson Peale, became an excellent miniature painter. Eliza Leslie always sent her kid brother Tom with her modest output and he took the brunt of Wilson's criticism. She was only less talented than her brother and upon a visit to London made excellent copies of many of her brother's and Sir Joshua Reynold's pictures. She however gave up painting for literature and her writings were immensely popular for the time.

John Henry Hopkins, later Bishop of Vermont, resided with his mother in Philadelphia where she conducted a fashionable school for young girls. The young man of eighteen years was the drawing master and was very glad to secure so lucrative and apparently congenial employment as that of colorist; but after a few brief months of mechanical repetition, most gladly threw down the brush. Many years later he intimated that Wilson took no chances on the fading of the beautiful tints of life but whenever possible shot a fresh bird for his colorist to match by. It is said that in water colors Hopkins had no superior in this country and that Wilson was very much pleased with his work. Later in life he wrote some humorous verses entitled "The Colorist's Lament," after a somewhat similar experience.

In the preface of the fourth volume, written September 12, 1811, Wilson announced that the correct execution of the plates would be rendered more secure by the constant superintendance of the author and by the coloring being done in his own room by two able assistants whose skill and attention leave little to fear in this department. Heretofore the great precision requisite in this last process and the

difficulty of impressing every one with similar ideas of neatness and accuracy has been a constant source of anxiety, loss, and delay.

Volumes V and VI were probably colored by Rider and another, probably Beck, under the conditions as set forth, but Volume VII was colored chiefly by Wilson himself, for he writes Bartram, April 21, 1813, "I have been extremely busy these several months, my colorists having all left me; so I have been obliged to do extra duty this last winter." This additional task meant the coloring of upward of 4000-4500 sheets, of which his most rapid colorist had averaged about thirty daily in the earlier volumes; nevertheless, the apparently indefatigable author further contemplated coloring the chief part of the eighth volume also. To the remonstrations of friends he said, "Life is short and without exertion nothing can be performed!" The publisher, who long since had found the expense burdensome, was glad to reduce the series from ten to nine volumes in agreement with the author.

It is thought that Rider finished the coloring of the two posthumous volumes edited by George Ord, and the latter's significent remarks in substance tell the whole story. Independently of that part of his work which was his particular province, viz, drawing his subjects and writing their life histories, he was necessitated to occupy much of his time in coloring the plates; his sole resource for support being in that employment, as his duties as assistant editor of the Cyclopaedia had ceased. If this work could have been done solely by himself he would have been relieved of much anxiety, his mind being daily ruffled by the negligence of his assistants and much of his precious time was spent in the irksome employment of inspecting and correcting the imperfections of others. This waste of his stated periods of labor he felt himself constrained to supply by encroachment on his hours of rest. But the true cause of this extraordinary toil was his poverty. To support the heavy expense of procuring materials and other unavoidable expenditures, his only resource, as has been stated, was in coloring the plates.

Berwyn, Pa.

THE HUNGARIAN PARTRIDGE IN NORTHWEST IOWA

BY CHAS. J. SPIKER

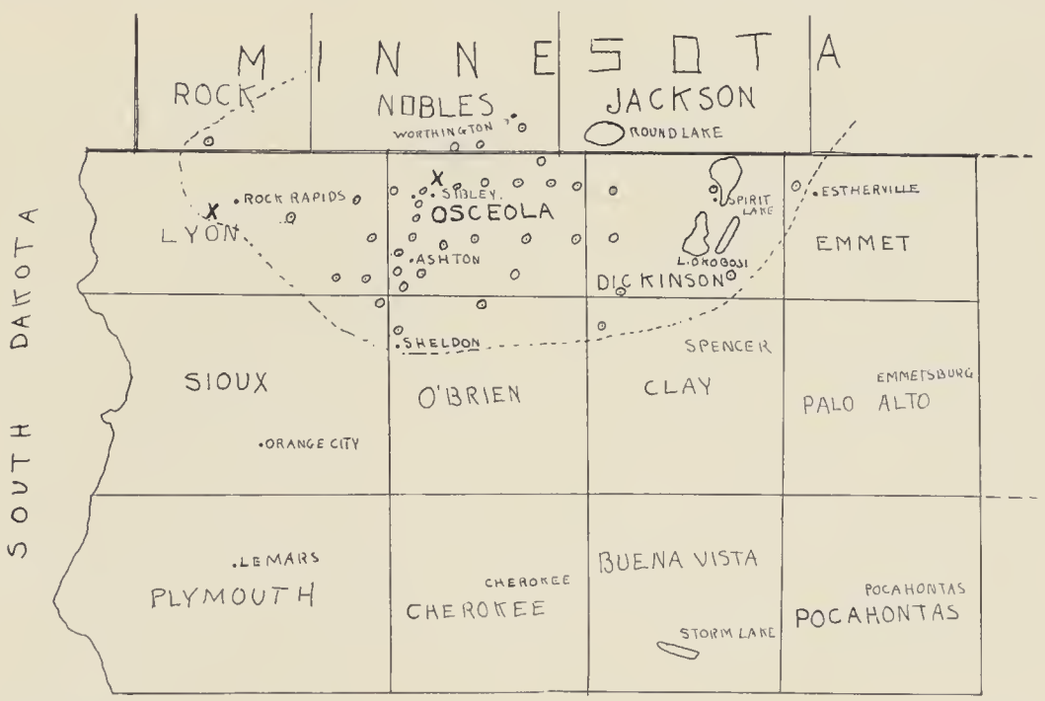
I believe the introduction of any species of bird or other animal into an area to which it has not been indigenous is a more or less questionable procedure. The importation of such may come about through the most generous and altruistic of motives, but the results may be more far-reaching than might be supposed on the face of the matter. In this regard we have ever before us the shining example of the English Sparrow, and more lately of the European Starling. In the matter of game birds, with which this paper is strictly concerned, we have also the example of the Ring-necked Pheasant, which should be a warning as well. This bird is very easy to propagate, increases rapidly, and once settled in a suitable habitat, holds its own through a period of adjustment and usually reaches a continued era of prosperity for itself.

On the other hand, there are cases of the introduction of exotic forms which apparently have made little difference in the status of the biota of which they became a part; their position becomes complementary rather than antagonistic. Despite opinions to the contrary, and which I shall make mention of later on, I believe this to be true of the Hungarian Partridge (*Perdix perdix*). This species is now and, I believe, will for some time to come, prove an interesting addition to our Middle Western avifauna wherever it is able to gain a foothold. Its characteristic traits much more resemble those of the American Quail or Bob-white, rather than those of the Ring-necked Pheasant. More than either of these species, however, it requires strictly open country for successful existence; consequently our Iowa prairies are especially well adapted to the needs of this bird.

The center of observations from which the data included in this paper were obtained, was Ashton, Iowa, when I was teaching in that village from September, 1926, through May, 1928. Ashton is located in the southwest corner of Osceola County, one of the two counties in this section of the state into which the partridge was first introduced. The burden of this paper, however, must be the present status of the bird, as exact data regarding the purchase and introduction of individuals were not available, due largely to an apparent laxity in the keeping of the records of the State Fish and Game Department at that time.

I am indebted for what information I was able to gather regarding the first planting of the birds, to Mr. Fred Brown, a veteran tailor of Sibley, Iowa, who was at the time of the introduction of these birds

deputy game warden for this area. Mr. Brown tells me that so far as he was able to recall, the first planting of the birds took place in the spring of 1913 when he liberated twelve pairs of Hungarian Partridges several miles northeast of Sibley. Others were placed about the same time and in similar numbers near Rock Rapids, in Lyon County, but Mr. Brown could not furnish me exact information regarding the work done in that county. The two counties lie adjacent to each other, and in the fifteen years since that time the birds have spread to the following counties in Iowa: Dickinson, Emmet, Clay, O'Brien and Sioux, and to Rock, Nobles, and Jackson Counties in



Map of northwest Iowa and a portion of southwest Minnesota, to show the present range of the Hungarian Partridge. An X indicates an approximate point of introduction. The small circles indicate the points where the birds were actually seen. The dotted line indicates the approximate present range.

Minnesota. The importing of more individuals the next year was considered, but the outbreak of the war in Europe prevented further activity in that line, and it has not since been resumed.

There is no more charming bird on the Iowa landscape than the Hungarian Partridge, nor one which better deserves protection at the hands of those who have brought it from its native haunts to become acclimated and adjusted to new environments. While it is not highly colored, like the Ring-necked Pheasant, yet it is a beautiful bird and merits a great deal of enthusiasm from an aesthetic point of view as well as the more mercenary point of view of the sportsman. In size it is somewhat larger than the Bob-white, and has some of the char-

acteristics of this species. Seen as it flies directly away from the observer, especially as it first takes off from the ground or spreads its tail in alighting, it presents its very distinguishing field mark. This is the rich russet of the tail feathers, visible only in flight, and concealed by the upper coverts when at rest, but greatly resembling the sheen of that of the Red-tailed Hawk. If one be so fortunate as to behold the bird on a bank about on a level with his eyes or slighlty above him, as it has upon two or three occasions occurred with me, he will note the black crescent just below the breast, practically in the middle of the belly, but so located that the bird must be in just the exact position for this mark to show itself.

Another striking characteristic of the Hungarian Partridge is its call note. Not unmusical, and yet not conspicuous unless listened for, it is especially noticeable on a still spring evening, when there is little or no breeze, and the shadows of dusk follow the disappearance of the sun. There is a single two-syllabled chuckling note which may be represented somewhat by the syllables "kee-uck", the second syllable being rather raspy or throaty as compared to the first which is high pitched and nasal. Upon being flushed, the bird takes off with the startling whirr of wings characteristic of this family, uttering the while a rapid cackling which diminishes to the above given notes repeated several times and with a gradually increasing interval between them. In the immediate vicinity of Ashton it is not unusual to hear from four to eight of these birds calling at the same time and from as many different directions.

From Rock Rapids east to Spirit Lake and from Worthington south to within a few miles of Sheldon, the Hungarian Partridge may be said to be a common resident, and there is probably in that area hardly a square mile but supports several pairs. I recall a drive I took one evening last spring (1928) from Ashton to Sibley, a distance of eight miles, when I saw twelve pairs along the roadside during the course of the drive.

The species is gregarious during the winter, beginning to flock in October and continuing till the last of February. During this season they frequent the stalk fields left after the picking of the corn. When the gregarious spirit is upon them they are exceedingly wary and are up and away almost as they see the hunter enter the field. The startling noise with which they take flight and their extremely rapid coursing across the field make them a very difficult target, and although many attempts are made by poachers, few birds fall as victims. By the latter part of February, however, there comes a change, when they begin breaking up and pairing off, and at this time they

appear to lose some of their wariness. They will be found more often in the roads and along roadsides, and as automobiles speed up, the birds simply squat at the side of the road and remain motionless, seldom flying away unless there is immediate danger of their being run over. Because of this trait they fall an easy victim to the speeding car, and quite often I have found individuals lying dead in the road.

Referring to a phase intimated at the beginning of this essay, that of the effect on native bird life of the introduction of these birds, I have found a diversity of opinion regarding the ultimate value of the species as game birds, also conflicting opinions regarding their ability

Mounted Hungarian Partridge
Front View

Mounted Hungarian Partridge
Side View

to adjust themselves to the presence of other birds of this nature. Importations of the species have been carried on in Canada for the past twenty years and observers there certainly must be in a position to know whereof they speak when it comes to a discussion of the Grey Partridge, as the bird is invariably referred to there. The *Canadian Field-Naturalist* (Ottawa) has recently published some excellent material on the subject of the introduction of foreign species of game birds, and I should like to quote one or two of these articles relative to the species' ability to get along with other varieties.

In his "Birds of Western Canada" (Ottawa, 1926), Mr. P. A. Taverner makes the following comment (p. 161): ". . . there is one

thing to be borne in mind— that we cannot have foreign species except at the expense of competing native ones. It is notable that wherever this [Hungarian Partridge] or other introduced species have increased to any extent, the resident Grouse and Prairie Chicken have decreased in a similar degree. Sportsmen and the game departments of the various provinces should face this fact squarely and decide whether they prefer foreign to native game; they cannot well have both in the same area."

Mr. William Rowan in the *Canadian Field-Naturalist* (Vol. XLI, 1928, pages 98-101), makes reply to Mr. Taverner's statement as follows: "Mr. Taverner puts his case much more forcibly and with seeming conviction, but it would have materially added to the weight of his views if he had adduced the evidence on which they are based. . . . Some 16 pairs were liberated also at Alix in April, 1909, but, according to Horsbrugh (*Ibis*, Oct., 1915, p. 681), these had disappeared by 1911. . . . The few birds liberated at Alix (good chicken country) apparently failed to establish themselves. Had they been the aggressive birds they are so frequently represented to be, the story might conceivably have been otherwise."

Sportsmen in Alberta, where much of the Canadian work has been done, are concerned chiefly with the manner in which the Hungarian Partridge can adjust its relations to the Prairie Chicken. Since the Prairie Chicken has been for so long a minus quantity in northwest Iowa, it need not concern us so much, but we do need to think of the partridge in its relation to the Ring-necked Pheasant. Northwestern Iowa has not until fairly recently been afflicted with this pernicious bird, but they are on the increase, and farmers have told me that with the coming in of the Ring-necked Pheasant, the partridges are departing. Perhaps a concrete example would be admissable here. Mr. Raymond Rowe, a farmer living a few miles northwest of Sibley, while plowing late last fall (1927), observed something of a commotion in a little swale a short distance from his plowing. Prompted by curiosity he walked over to the place and flushed half a dozen partridges and three Ring-necked Pheasants. On the ground before him lay the bleeding bodies of three partridges newly killed. It was just dusk, and doubtless the smaller species had crept into the long grass to spend the night and had been fallen upon by the pheasants who were already there. Stories are also told of the destruction of the nests of the Hungarian Partridge by pheasants.

From an economic point of view, the Hungarian Partridge feeds almost entirely upon insects during the summer, and in winter upon the seeds of noxious weeds and upon gleanings from the picked fields.

It does not have the corn-pulling proclivities evidenced by the Ring-necked Pheasant in the spring planting season. Its economic status, in fact, is practically that of the Bob-white, from which we have no fear.

The characterization of the Hungarian Partridge given by Mr. T. E. Randall, *Canadian Field-Naturalist* (Vol. XLI, 1927, pp. 86-87). is a fine one and I append it here in closing: "Fast on the wing, clever at hiding, bold to the point of rashness in defence of their young brood, hardy during the extreme cold of our winter, he is, all-in-all, a most desirable addition to the game list of our Western land."

New Hampton, Iowa.

SOME SHOREBIRD RECORDS FOR THE MIAMI VALLEY, OHIO

BY BEN J. BLINCOE

Having near at hand a rather favorable locality for the study of shorebirds during the autumn migration, I have had the good fortune to observe several species apparently of rather rare occurrence in Ohio except in the lake shore region. The species here mentioned were observed at Englewood dam, located on the Stillwater River about ten miles north of the city of Dayton and one of the five great dams forming a system of flood prevention in the Miami Valley. During the dryer parts of summer and early autumn, coinciding with the fall migration of these birds, numerous mud flats and islets appear about the small lake above the dam, offering to passing sandpipers and plovers a wayside resting station. In identifying the following species I have used 8x binoculars, and have consulted Chapman's "Handbook," Dawson's "Birds of Ohio," and other books and literature in the ornithological periodicals pertaining to nearby localities.

Northern Phalarope. *Lobipes lobatus*. A single bird was observed on September 7, 1924; the following note referring to this individual is extracted from my notebook: "It was extremely active, even appearing nervous; swimming about rapidly it frequently took wing, flying a short distance (a few feet or several yards), dropping back into the water, nearly always turning about suddenly after alighting. Seemingly it pursued a course in one direction no longer than a few seconds, then turning quickly proceeded in the opposite direction or, perhaps, took wing, but almost immediately returning to the water. These actions I attributed to its oceanic habitat where obviously the bird must act quickly to avoid an impending wave. It was not seen running along the shore during about thirty minutes observation,

though once it was seen on a small gravel-bar where it went to arrange its feathers after having bathed; here a Killdeer ran at it, knocking down and walking over the phalarope. After this uncouth reception it again took to the water nearby." With half a dozen shorebirds near the phalarope it was possible to compare its size, length of bill, etc., and color markings were readily observable.

Dowitcher. *Macrorhamphus lymnodromus griseus.* One was observed at close range on July 15, 1927, in company with Yellow-legs, Pectoral and Semipalmated Sandpipers. It is probable that this bird is referable to the subspecies *scolopaceus;* Dawson states that both forms are rare migrants in Ohio, and Butler makes the same statement for Indiana; however Butler states that "of all the references to the Dowitcher only one refers to the short-billed form" (*griseus*).

Stilt Sandpiper. *Micropalama himantopus.* About sunset of July 15, 1927, I discovered one of these birds in company with about sixty individuals of several common species of shorebirds. It was inclined to associate mainly with a group of about fifteen Yellow-legs, and while these fed principally in shallow water, the slightly smaller and much darker sandpiper was singled out as confining its feeding activities on the mud flat. As the bird tilted the tail upward in reaching down to pick up food, the heavily barred underparts were very noticeable and a decided contrast with the light underparts of the Yellow-legs; there was a distinct line over the eye contrasting with the dark crown; even the rufous coloring about the back of the head was perceptible, while comparison of bill and legs with all species present was easily accomplished. Its actions closely resembled no other species present, the bird appearing less vivacious than its associates.

Red-backed Sandpiper. *Pelidna alpina sakhalina.* A flock of five was observed on October 18, 1924, and a single individual on November 16, 1924.

Sanderling. *Crocethia alba.* A single bird was observed on September 13, 1925.

Willet. *Catopthrophorus semipalmatus.* While observing a mixed flock of shorebirds on August 16, 1924, a Willet glided down to the mud flat alighting within thirty feet of me. It appeared as a giant beside the Yellow-legs, the largest birds present before its arrival; in flight the broad white band through the wing was quite conspicuous. The bird quickly perceived that it was under observation and flew to a small island about fifty yards distant. A local game

warden, who also saw this bird while I watched it, remarked that it was the first "curlew" he had ever seen here. The subspecific identity of this bird is, of course, questionable; Dawson does not attempt to designate the geographic race to which belongs the single specimen mentioned in his "Birds of Ohio."

Golden Plover. *Pluvialis dominica dominica.* Two observed September 16, 1923. Although once common as an Ohio bird its recent scarcity suggests publication of my only record for this locality.

Piping Plover. *Aegialitis meloda.* A single bird observed August 16, 1924; accompanied several other species on a mud flat; a Semipalmated Plover near it rendered identification doubly certain. Dawson remarks that this is a rare bird in the interior of Ohio.

In addition to the eight species above referred to, ten members of the *limicolae* occur at Englewood Dam more or less regularly as migrants and two species, the Killdeer and Spotted Sandpiper, breed quite regularly. Whatever may have been the effect on the land birds, the building of this dam certainly has had a salubrious effect on waterbird life.

Dayton, Ohio.

EASTER BIRDS OF LITTLE EGYPT*

BY ALVIN R. CAHN AND A. SIDNEY HYDE

The Easter vacation period of April 14 to 19, 1927, was spent by the writers on an automobile field trip from Champaign in the corn belt region of east central Illinois, southward to that part of the state known as "Little Egypt"—the southernmost portion of Illinois. The route lay through Dr. Ridgway's Bird Haven near Olney, and thence via Mt. Carmel, Carmi and Herrin to Alto Pass in northern Union County, the southern tip of Illinois, and a few miles east of the Mississippi River. The first night camp was made in the woods south of Mt. Carmel; the remaining four days and nights were spent at and about Alto Pass, the highest point in the state, and a portion of the glorious Ozark highlands.

Observations on birds were made at all times possible—from daylight to dark, daily. The list for the trip comprises 112 species, and it is believed that enough intensive field work was accomplished in Union County to warrant the publication of the results. The coun-

*Contribution from the Zoological Laboratory of the University of Illinois, No. 337.

try is so wild and there has been so little contributed to a knowledge of its fauna, that the writers feel that it is high time a beginning was made. Though the dates involved in the present investigation may seem a bit early for satisfactory bird study, yet it is only in the case of some of the summer residents which arrive late in the season that it was impossible to ascertain something as to the abundance of these species during their breeding season.

An attempt was made to determine the ecological position which the birds occupy in the various associations represented in this region. In pursuance of this idea, four distinct associations are recognized, and a description of each association precedes the list of birds which characterize or breed in it. The names of species in each list are arranged in the order of decreasing abundance, in accordince with the ever more prevalent recognition among field naturalists of the importance of the ecological relations of organisms. Following this ecological discussion, a list of all species seen is given in approved A. O. U. order.

Association I. Upland Oak-Hickory Forest

This is by far the most important and extensive association included in the area studied, and comprises the wonderful old forests which so beautifully clothe all of the Illinois Ozarks, excepting only small cleared areas. It constitutes about 90 per cent of the area investigated. It is a region of steep, rolling hills, with numerous local outcrops of great masses of rock bearing beautiful fossils of Lepidodendron, and with streams numerous and full. The trees are of reasonable size, the full grown forest trees averaging sixty feet in height, one foot in diameter at breast height, and running about 2,700 board feet per acre.

The principal trees are as follows. Among the oaks, seven species are found: black (*Quercus velutina*), Spanish (*Q. falcata*), red (*Q. rubra*), white (*Q. alba*), post (*Q. stellata*), scarlet (*Q. coccinea*), and blackjack (*Q. marilandica*). Three species of hickory: pignut (*Carya glabra*), mockernut (*C. alba*), and shagbark (*C. ovata*). The beech (*Fagus grandifolia caroliniana*) constitutes from 14 to 40 per cent of the forests, varying with the locality, and occupies ravines and north-facing slopes. Other characteristic trees are: butternut (*Juglans cinerea*), walnut (*Juglans nigra*), elm (*Ulmus americanus*), mulberry (*Morus rubra*), cucumber (*Magnolia acuminata*), tulip (*Liriodendron tulipifera*), red gum (*Liquidambar stryacifolia*), black cherry (*Prunus serotina*), coffee tree (*Gymnocladus dioica*), sugar maple (*Acer saccharum*), silver maple (*Acer saccharinum*), black

Nesting site of the Carolina Wren. Union County, Ill. The nest is at the base of the oak tree, in the righthand corner. Photograph by Dr. H. L. Schantz.

Nest and Eggs of the Carolina Wren. The nest contained three eggs well along in incubation. Photograph by Dr. H. L. Schantz.

gum (*Nyssa sylvatica*), dogwood (*Cornus florida*), American hornbeam (*Ostrya virginiana*) and sassafras (*Sassafras variifolium*). The woods have but little shrubby undergrowth, and the herbage consists of such typical woods flowers as the violet and may-apple.

The birds of the Oak-Hickory Association may be grouped as follows:

Abundant Species

Breeders and Residents: Tufted Titmouse, Carolina Wren, Whip-poor-will, Cardinal, Carolina Chickadee, Red-headed Woodpecker, Mourning Dove, Towhee.

Migrants: Parula Warbler, Goldfinch. Some individuals breed here, probably.

Common Species

Breeders and Residents: Red-bellied Woodpecker, Blue Jay, Downy Woodpecker, Cowbird, Turkey Vulture, Crow, Bob-white, Summer Tanager, Scarlet Tanager.

Migrants: Myrtle Warbler, Palm Warbler, Least Flycatcher, White-throated Sparrow.

Uncommon Species

Breeders and Residents: Crested Flycatcher, Wood Thrush, Red-eyed Vireo, Yellow-throated Vireo, Wood Pewee, Hairy Woodpecker, Pileated Woodpecker, White-breasted Nuthatch, Red-tailed Hawk, Barred Owl, Screech Owl, Cooper's Hawk.

Migrants: Cedar Waxwing, Hermit Thrush, White-crowned Sparrow, Junco (very late for the species), Song Sparrow, Rose-breasted Grosbeak, Black-throated Blue Warbler, Black-throated Green Warbler, Blackburnian Warbler, Brown Creeper, Magnolia Warbler, Black and White Warbler.

Ia. Bushy Clearings in Oak-Hickory Association

Scattered throughout the forest are bushy clearings covered with a thick growth of blackberry, raspberry and young sassafras. Most of the areas are on hillsides, though one rather extensive and important one was found in a stream valley. These areas were found to have certain very distinctive birds, found nowhere else:

White-eyed Vireo, Prairie Warbler, Blue-winged Warbler, Yellow-breasted Chat. The Cardinal, Brown Thrasher, Catbird and Towhee occur here also, but are less exclusive or selective.

Association II. Cypress Swamp

Typical swamp woods near large streams. From one inch to three feet of water over much of the forest floor. The trees tend to be large,

and there is a rather luxuriant undergrowth and herbage where not drowned out. The dominant trees are: bald cypress (*Taxodium distichum*), swamp white oak (*Quercus bicolor*), tupelo (*Nyssa sylvatica*), sweet gum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*) and elm (*Ulmus americanus*). The predominant ground-cover species are: poison ivy (*Rhus toxicodendron*), buttercup (*Ranunculus* sp.), *Trillium* spp., blue phlox (*Phlox divaricata*) jewelweed (*Impatiens* sp.) seedlings, and many varieties of ferns.

Breeding Birds: Tufted Titmouse, Carolina Wren, Blue-gray Gnatcatcher, Red-headed Woodpecker, Blue Jay, Crested Flycatcher, Prothonotary Warbler, Red-eyed Vireo, Parula Warbler, Wood Thrush, Yellow-throated Vireo, Red-shouldered Hawk, Green Heron, Cardinal, Orchard Oriole, Broad-winged Hawk.

The Magnolia Warbler and Field Sparrow were found about the edge of the dense swamp.

Association III. Open Fields

Pastures, hay fields, corn fields, and truck gardens all appeal to those species of birds which prefer open situations, and hence these have all been grouped together under a single heading.

Breeding Birds: Meadowlark, Prairie Horned Lark, Killdeer, Dickcissel, Grasshopper Sparrow, Vesper Sparrow, Marsh Hawk.

Migrant: Bobolink.

Association IV. Aquatic

Included under this heading we have such areas as flooded fields and roadsides, as well as the streams and rivers proper. It will be remembered that the dates included in this visit mark the early stages of the greatest flood southern Illinois and states farther south have ever experienced. Corn fields were actually lakes, roads often rivers, and water was everywhere during our visit.

Breeding Species: Spotted Sandpiper, Green Heron, Pied-billed Grebe, Virginia Rail, Sora.

Migrants: Solitary Sandpiper, Scaup Duck, White-fronted Goose.

V. Birds of General Distribution or of Local Situations

A number of species were so general in their distribution that it is found impossible to class them as belonging to any one or two associations:

Field Sparrow, Chipping Sparrow, Robin, Bluebird.

At the great cliffs bordering the Mississippi Bottoms the following species were noted, and are possibly breeders:

Turkey Vulture, Chimney Swift, Black Vulture, Mississippi Kite.

Other species, found in local situations too well known to need special mention in most cases, follow:

Maryland Yellowthroat, Migrant Shrike, Flicker, Phoebe, Purple Martin, Cedar Waxwing, Red-winged Blackbird, Mockingbird, House Wren, Bewick's Wren, Barn Swallow, Bank Swallow, Kingbird, Kingfisher, Rough-winged Swallow, Indigo Bunting, Sparrow Hawk, Baltimore Oriole, Ruby-throated Hummingbird.

A list of all of the species observed, in the order of the A. O. U. check-list, follows. The number after the name of each species refers to the association in which the bird was found. When more than one number appears, the first represents the association most important to the species in question. For reference, the numbers representing the associations are repeated:

I. Upland Oak-Hickory.
Ia. Bushy Clearings in Oak-Hickory.
II. Cypress Swamp.
III. Open Fields.
IV. Aquatic.
V. General or Local Situations: Miscellaneous.

Podilymbus podiceps	Pied-billed Grebe	4
Marila affinis	Scaup Duck	4
Anser albifrons gambeli	White-fronted Goose	4
Ardea herodias herodias	Great Blue Heron	4
Butorides virescens virescens	Green Heron	2, 4
Rallus virginianus	Virginia Rail	4
Porzana carolina	Sora	4
Actitis macularia	Spotted Sandpiper	4
Tringa solitaria solitaria	Solitary Sandpiper	4
Batramia longicauda	Upland Plover	3
Oxyechus vociferus	Killdeer	3
Colinus virginianus virginianus	Quail	1
Zenaidura macroura carolinensis	Mourning Dove	1, 5
Cathartes aura septentrionalis	Turkey Vulture	1, 5
Coragyps urubu	Black Vulture	5
Ictinia mississippiensis	Mississippi Kite	5
Circus hudsonius	Marsh Hawk	3
Accipiter cooperi	Cooper's Hawk	1
Buteo borealis borealis	Red-tailed Hawk	1
Buteo lineatus lineatus	Red-shouldered Hawk	2, 1
Buteo platypterus	Broad-winged Hawk	2, 1
Cerchneis sparveria sparveria	Sparrow Hawk	5
Strix varia varia	Barred Owl	1
Otus asio asio	Screech Owl	1
Ceryle alcyon alcyon	Kingfisher	5

Dryobates villosus villosus	Hairy Woodpecker	1
Dryobates pubescens medianus	Downy Woodpecker	1
Sphyrapicus varius varius	Yellow-bellied Sapsucker	1
Phloeotomus pileatus abieticola	Pileated Woodpecker	1
Melanerpes erythrocephalus	Red-headed Woodpecker	1
Colaptes auratus luteus	Northern Flicker	1, 5
Antrostomus vociferus vociferus	Whip-poor-will	1
Chaetura pelagica	Chimney Swift	5
Archilocus colubris	Ruby-throated Hummingbird	5
Tyrannus tyrannus	Kingbird	5
Myiarchus crinitus	Crested Flycatcher	1
Sayornis phoebe	Phoebe	5
Myiochanes virens	Wood Pewee	1
Empidonax minimus	Least Flycatcher	1
Otocoris alpestris praticola	Prairie Horned Lark	3
Cyanocitta cristata cristata	Blue Jay	1
Corvus brachyrhynchos brachyrhynchos	Crow	1, 3
Dolichonyx oryzivorus	Bobolink	3
Molothrus ater ater	Cowbird	3, 1
Agelaius phoenicius arctolegus	Red-winged Blackbird	5
Sturnella magna magna	Meadowlark	3
Icterus spurius	Orchard Oriole	2, 5
Icterus galbula	Baltimore Oriole	5
Astragalinus tristis tristis	Goldfinch	1
Pooecetes gramineus gramineus	Vesper Sparrow	3
Ammodramus savannarum	Grasshopper Sparrow	3
Zonotrichia leucophrys leocophrys	White-crowned Sparrow	1
Zonotrichia albicollis	White-throated Sparrow	1
Spizella passerina passerina	Chipping Sparrow	5
Spizella pusilla pusilla	Field Sparrow	3, 1a
Junco hyemalis hyemalis	Junco	1
Peucaea aestivalis aestivalis	Bachman's Sparrow	3
Melospiza melodia melodia	Song Sparrow	1a, 5
Melospiza georgiana	Swamp Sparrow	5, 1a
Pipilo erythropthalmus erythropthalmus	Towhee	1
Cardinalis cardinalis cardinalis	Cardinal	1, 1a
Hedymeles ludovicianus	Rose-breasted Grosbeak	1
Passerina cyanea	Indigo Bunting	1, 2
Spiza americana	Dickcissel	5
Piranga erythromelas	Scarlet Tanager	1
Piranga rubra rubra	Summer Tanager	1
Progne subis subis	Purple Martin	5
Hirundo erythrogaster	Barn Swallow	5
Iridoprocne bicolor	Tree Swallow	5
Riparia riparia	Bank Swallow	5
Stelgidopteryx serripenis	Rough-winged Swallow	5
Bombycilla cedrorum	Cedar Waxwing	5
Lanius ludovicianus migrans	Migrant Shrike	3
Vireosylva olivacea	Red-eyed Vireo	1
Vireosylva gilva gilva	Warbling Vireo	5
Lanivireo flavifrons	Yellow-throated Vireo	1

Vireo griseus griseus	White-eyed Vireo	1a
Mniotilta varia	Black and White Warbler	1
Protonotaria citrea	Prothonotary Warbler	2
Vermivora pinus	Blue-winged Warbler	1a, 1
Compsothlypis americana usneae	Northern Parula Warbler	1
Dendroica aestiva aestiva	Yellow Warbler	1, 1a
Dendroica caerulescens caerulescens	Black-throated Green Warbler	1
Dendroica coronata	Myrtle Warbler	1
Dendroica magnolia	Magnolia Warbler	1
Dendroica fusca	Blackburnian Warbler	1
Dendroica virens	Black-throated Green Warbler	1
Dendroica palmarum	Palm Warbler	1
Dendroica discolor	Prairie Warbler	1a
Seirus noveboracensis novcboracensis	Water-thrush	5
Oporornis formosus	Kentucky Warbler	1a
Geothlypis trichas trichas	Maryland Yellowthroat	5
Icteria virens virens	Yellow-breasted Chat	1a
Setophaga ruticilla	Redstart	1
Mimus polyglottos polyglottos	Mockingbird	5
Toxostoma rufum	Brown Thrasher	5
Dumetella carolinensis	Catbird	1a, 1
Thryothorus ludovicianus ludovicianus	Carolina Wren	1
Thryomanes bewicki bewicki	Bewick's Wren	5
Troglodytes aedon aedon	House Wren	5
Certhia familiaris americana	Brown Creeper	1
Sitta carolinensis carolinensis	White-breasted Nuthatch	1
Parus bicolor	Tufted Titmouse	1
Penthestes carolinensis carolinensis	Carolina Chickadee	1
Regulus satrapa satrapa	Golden-crowned Kinglet	1
Regulus calendula calendula	Ruby-crowned Kinglet	1
Polioptila caerulea caerulea	Blue-gray Gnatcatcher	1
Hylocichla mustelina	Wood Thrush	1
Hylocichla guttata pallasi	Hermit Thrush	1
Planesticus migratorius migratorius	Robin	1a, 5
Sialia sialis sialis	Bluebird	5

Zoological Laboratory,
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Urbana, Ill.

THE WILSON BULLETIN

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EDITORIAL

The Colored Plate in this issue requires some explanation and comment. Mr. George Mikseh Sutton has very kindly permitted us to reproduce his painting to accompany the article by Mr. Holt. Our regular income does not permit us to furnish illustrations by the costly 4-color process. But this picture of the Wood Ibises is so beautiful and so appropriate in this issue that the Editor has voluntarily taken a plunge in presenting it. A small part of the cost has already been subscribed through correspondence. The Editor is trusting that enough members, upon seeing the plate, will indicate their approval by sending a small donation toward the expense. We realize that this sort of solicitation may be undignified in a pretentious journal; but if it brings pleasing results our critics may be mollified. We have on hand at the present time another equally beautiful painting in color, to accompany an equally interesting article, which we shall publish in the near future if it can be financed. If we should fortunately receive more than enough money to pay for the plate in this issue, the excess will be made the nucleus of a fund for the other plate. When our endowment fund becomes a little larger and productive, the interest from it will help to furnish these desirable illustrations.

The Annual Membership roll will be published as usual in the June issue. Last year, for the first time, the date of beginning of membership was included in the roll. Because of faulty records some mistakes were made in these dates. In the next roll it is hoped to eliminate as many of these errors as possible. The Secretary would be glad if members would notify him of any inaccuracies as to date of joining, or in address.

Recent Newspaper Dispatches indicate that the people of Hawaii are proposing to import song birds on a large scale, not for commercial purposes, but purely for aesthetic reasons. In the long run bird protection will find its strongest argument in the realm of sentiment.

Nevertheless, at almost the same time there appears an Associated Press dispatch from the Black Hills of South Dakota (January 22, 1929) telling of an irruption of rodents, which "are making life miserable for the Jones County farmers." It is said that 1,300 acres of corn has been destroyed in one county, and that on one tract alone 2,154 field mice have been destroyed by poison. This abnormal multiplication of rodents followed promptly a war on "vermin," including hawks, owls, crows, and snakes, just a short time ago.

And yet, within the past year we clipped the following item from the editorial column of some newspaper: "When scientists of the present day get to talking about scientific achievements, for public consumption, they probably impress themselves and others who do not know that professional scientists have had little part in such developments. Practically all of the important new things originate outside of recognized scientific circles."

This should abate, somewhat, scientific conceit! Progress is slow. Just when we think that beliefs in witchcraft and intolerance have been outgrown, and that the open mind has become the rule of mankind, something happens to shake our optimism. Progress is, however, pretty sure.

In Opening the New Year it becomes necessary to record some changes in our official staff. Mr. Thos. H. Whitney has served in the capacity of Vice-President for the past four years. During this time he has initiated the incorporation of the W. O. C. and the establishment of a trust agreement, from which it is hoped in the natural course of events may grow an appreciable endowment fund. Mr. Whitney's term of office marks a distinct service to the organization, and his efforts are recognized and appreciated. He is succeeded by Mr. George Miksch Sutton. Mr. Sutton needs no introduction, but we may say that at present he is a member of the staff of the Pennsylvania State Board of Game Commissioners, being in charge particularly of ornithological research and educational work. Mr. Sutton received his preliminary education in the middle west, and later went east, as so many of our good men have done. He is now spending some of his spare time in graduate work at Cornell University. While he is a prolific writer, he is best known as a painter of birds. We will not attempt to name all of the magazines or books in which Mr. Sutton's work has appeared in color; but we will notice that *Outdoor Life and Recreation* has begun a series of bird paintings by Mr. Sutton. The first colored plate in this series was of the Prairie Chicken, and appeared in the February number. Mr. Sutton has been especially kind to the Wilson Bulletin.

After three years of faithful service Mr. Gloyd insisted that he be relieved of official duties in order that he might pursue his graduate research. Mr. Gloyd's pleasing personality was evident even in his correspondence, and while the debt is all ours, yet we feel that Mr. Gloyd has a host of friends to his credit as a result of the three terms of office. It takes an energetic secretary to keep our membership roll at par, and in this respect Prof. Gloyd did his duty well, and we thank him.

Prof. Gloyd is succeeded in the office of Secretary by Jesse M. Shaver, Professor of Zoology at Peabody College, Nashville, Tenn. Many of us became acquainted with Professor Shaver at our two Nashville meetings, and remember him as a genial six-footer, who can make a good speech of welcome. During the past year he received his doctorate from the University of Chicago; and it has been said that Dr. Shaver's degree was the first one ever granted by this University in ornithology. Incidentally, for this is an interesting point, Dr. Jones received his degree at Chicago years ago on a thesis on nestling down, but we do not know that his major (or minor) was designated as ornithology.

We cordially welcome these new officers, with confidence in their determination to make this year one of progress and achievement.

GENERAL NOTES

Conducted by M. H. Swenk

A Hybrid Field-Vesper Sparrow.—Several times during May I was within a few feet, and studied with a glass as long as I chose, a bird that was evidently a cross between the Field Sparrow and the Vesper Sparrow. The general appearance was of the Field Sparrow with the typical head markings and flesh colored bill. The wings were barred as in the Field Sparrow, but the lesser coverts were solid bright bay as with the Vesper, while the tail was distinctly like that of the Vesper Sparrow, having the outer feathers white.—E. A. Doolittle, *Painesville, Ohio.*

The Bald Eagle in Arkansas.—On the morning of August 29, 1928, a friend of mine called me out of a local confectionery, and pointing up, wanted to know what kind of a bird that was, soaring over the valley. A glance was sufficient to tell that it was a Bald Eagle (*Haliaeetus leucocephalus*), for the white head and tail flashed in the sunlight like a mirror as he turned. A small crowd soon gathered, and twenty or thirty people watched the bird as it circled over the valley, at a rather low elevation, until after three or four minutes it straightened away to the west, and was soon out of sight. This is the only record for me, and the bird has been reported only three or four times from the Arkansas Ozarks in the past ten years.—J. D. Black, *Winslow, Ark.*

Strangulation of Gulls.—While at Chase Lake, North Dakota, on an expedition of the Chicago Academy of Sciences, during June, 1928, I found several dead Ring-billed Gulls (*Larus delawarensis*) which seemed to have died of strangulation. Upon further examination the deaths were found to have been caused by the gulls attempting to swallow whole Richardson's Spermophiles. In all the specimens examined, the spermophiles were caught in the throat, head first, with the hind feet and tail extending out of the mouth, as if the gulls had tried to swallow the mammals head first.

The gulls probably picked up dead spermophiles, as the farmers had been killing them with poisoned oats. The death of the gulls could not have been caused by the poisoned rodents, as in no case was a spermophile even slightly digested, so that undoubtedly the gulls died of strangulation.—E. V. Komarek, *Oak Park, Ill.*

Trapping Juncos and White-throats.—Our yard, this last spring (1927), had many Slate-colored Junco and White-throated Sparrow visitors, but we did not succeed in trapping many until we began using the prepared bird seed bought at the stores.

Even so, we were not securing as many as we should until we began setting the traps in the bottom of our fish pond, which had been drained for winter and not yet filled again.

We found that a light litter drawn over some seed scattered over the bottom of the pond enticed the little rascals, who enjoyed scratching like small chickens, and the outside food did not prevent them from entering the traps. Some mornings we had birds in every trap, without exception.—Edward A. Everett, *Waseca, Minn.*

Tactics of the Domestic Pigeon in Evading the Duck Hawk.—On April 12, 1928, while stopping briefly to examine the cliffs at Dauphin, Dauphin County, Pennsylvania, where Duck Hawks (*Rhynchodon peregrinus anatum*) live,

and probably nest, I learned of an unusual method employed by pigeons in evading their dreaded foe, the Duck Hawk. The pigeons, upon seeing the hawk towering above them, preparatory to striking, fly with teriffic haste down toward the main highway. As the Duck Hawk poises before his plunge the pigeons arrange themselves under the telegraph wires, and fly along one after the other, just beneath the wires. The hawk swoops, but always veers off when it sees the wires. Goshawks have been known to kill themselves by flying into mesh wire while making their attack upon poultry; evidently the Duck Hawk does not commit such folly. I understand from local residents that the pigeons which pass the cliffs now regularly fly near the road, ready to dart to cover under the wires at the first sight of their enemy. How different are these tactics from those of the flocks of shore-birds in the North Country which swarm into the sky and mill about in a confused mass, awaiting the dreaded plunge of their pursuer.

Robins, Flickers, Meadowlarks, and Blue Jays which fly by the cliffs are struck down with comparative ease. These smaller birds apparently have not learned of the protection the telegraph wires might afford.—George Miksch Sutton, *Game Commission, Harrisburg, Pa.*

Some Cowbird Experiences in Columbus, Ohio.—On May 22, 1928, at about 9:15 A. M., a male Cowbird (*Molothrus ater ater*) alighted on an old shed near our house, giving his high pitched call—"*seeee*." Soon a female Cowbird arrived near by, whereupon a Field Sparrow and a male Indigo Bunting also appeared, and scolded. The female Cowbird then disappeared, but shortly afterwards returned with an egg in her bill, which she ate at leisure, contents and shell, while an unfortunate Song Sparrow protested. With a satisfied air she hopped on to the fence, wiped her bill and flew away.

On June 8, 1928, I discovered a nest of the Maryland Yellowthroat (*Geothlypis trichas trichas*) in a patch of weeds in the same vicinity. In it were two warbler eggs and no less than four Cowbird's eggs. All were warm. The warblers did not show themselves at all. I unwisely removed all of the eggs of the parasite, without thinking until later of the shock it would be to the warbler to find such a radical change in her household. The unappreciative warbler promptly deserted her own eggs. The Cowbird eggs remained in the house for five hours at a temperature of 68°F. Then I cracked one, and the horrid little reptilian creature inside waved its fore paw and opened its bill! The egg that closely resembled this one in its markings was also nearly ready to hatch, but the others, which were like each other but slightly different from the first two, were fresh.—Margaret M. Nice, *Columbus, Ohio.*

The Hudsonian Chickadee in Michigan.—On July 28, 1928, in spruce forest on a sandy plain south of the Huron Mountains, about fifteen miles from the shore of Lake Superior and at an elevation of about 900 feet above the lake, I came on a band of chickadees and kinglets which included both the familiar Black-capped Chickadee (*Penthestes atricapillus atricapillus*) and the Hudsonian Chickadee (*Penethestes hudsonicus*) and both the Golden-crowned Kinglet (*Regulus satrapa satrapa*) and the Ruby-crowned Kinglet (*Regulus calendula calendula*). Walking in the clear and rather open stand of spruces, and hearing chickadee notes which seemed not wholly familiar, I squeaked, and presently the little coterie was all about me. There were two or three Black-caps, but the majority of the chickadees, a half dozen, more or less, were Hud-

sonian. And the latter were the more confiding, for they flitted within a few inches of my head. I noted each distinctive detail—the dusky chestnut crown, the duller underparts and the wing feathers with no more than a suggestion of white edgings. The kinglets were silent; there were only a few of them, but the crown patch of one, the absence of crown patch of others, and the intermittent fluttering of the wings as the birds hopped from twig to twig, made identification sure. The occurrence of these two rare birds in July is, in the case of the Hudsonian Chickadee at least (a species scarcely migratory at all), little less than demonstration of nesting. Of the Ruby-crowned Kinglet, Barrows wrote (1912) that it probably was not to be found nesting within the state of Michigan.—Bayard H. Christy, *Sewickley, Pa.*

Some Interesting Ohio Records.—Yellow Rail (*Coturnicops noveboracensis*).—Westerville, May 16, 1928. Also, a specimen of this species was found dead near the Huron Marshes south of Willard, on July 16, 1928.

Black Rail (*Creciscus jamaicensis*).—Bumgardner's Pond, Franklin County, April 4, 1927, and Alum Creek Swamp, Westerville, April 3, 1927. Probably a considerable number of both of these species breed in favorable localities of the state but are easily missed because of their small size and secretive habits.

Purple Gallinule (*Ionornis martinicus*).—On May 17, 1928, I collected a perfect specimen of this gorgeously painted species at the Alum Creek Swamp, Westerville. There are about a half dozen published Ohio records for this casual migrant, and this seems to be the first specimen taken in the state since 1917. The skin is now in the Wheaton Club Collection of the Ohio State Museum at Columbus.

Stilt Sandpiper (*Micropalama himantopus*).—Richard E. Durst and the writer observed seven individuals on April 27 and 28, 1928, in company with a flock of sixty-eight Golden Plovers, feeding in a surface pond in western Madison County. Spring records of this sandpiper are much rarer than records made in the fall.

Prairie Hen (*Tympanuchus americanus*).—Richard E. Durst and myself recorded a female of this species at Bay Point, May 26, 1928. It was discovered while sunning itself in the clearing of an old wagon road, and ran slowly ahead of us for about 200 yards at a distance of from thirty to sixty feet, following the deep rut formed by the wagon wheels. The bird seemed little frightened by our presence and we did not succeed in flushing it until the distance between us was cut to less than twenty feet. The head and neck, the barring of the heavy plump body, the short feathered legs and the very short tail with prominent black bars were all clearly observed, both with the naked eye and by the aid of 8x binoculars, removing all possibility of confusion with any other species. This bird was thought by many to have become extinct in Ohio a number of years ago, as there have been no recent records. Evidently a few scattered individuals have been able to survive in unusually favorable habitats, as it is unlikely that the species would ever be able to reestablish itself in the state once it had been completely wiped out. Several rumors of birds resembling Prairie Hens have come from the Huron Marshes region and it is altogether possible that they may sometime be found there, or somewhere in the Oak Openings region west of Toledo.

Lawrence's Warbler.—On May 27, 1928, I studied for some time a peculiar hybrid warbler that I discovered along the northern edge of the Huron Marshes

southwest of Willard. The bird had the typical plumage of a Lawrence's Warbler (the black throat and ear patches of the Golden-winged Warbler and the yellow crown and underparts and the two whitish wing bars of the Blue-winged Warbler) with one exception. Between the two white wing bars was a solid patch of gold, similar to the wing bar of the Golden-wing. The bird was singing a song indistinguishable from those of a half dozen Blue-winged Warblers singing nearby. The occurrence of this hybrid is interesting in connection with the record of a pair of typical Brewster's Warblers feeding young at Neotoma, Hocking County, on June 11 and 12, 1927. In 1928, only the male Brewster's Warbler returned, singing the same low pitched "*sweive, eze, eze, eze*" song of 1.8 seconds duration, as that heard the previous year, or varying it with a "*sweeze, sweeza, zai-ze-e-e-e-e*" song, lasting only 1.1 seconds. The first syllables were very rapid, but the last was long drawn out and had somewhat of a plaintive quality. Several Brewster's Warblers, in addition to these records, were recorded near Columbus during the summer months of 1928.—Lawrence E. Hicks, *Fredericktown, Ohio.*

Birds in Western Texas.—During the months of July and August, 1928, I was working in Uvalde, Texas, about ninety miles west of San Antonio. As the flora, fauna and climate there were quite different from any I had formerly experienced, I made it part of my business to examine the various organisms found there. Not the least of these were the birds. Unfortunately, I did not have time to make a careful survey of the region. I was also handicapped by a lack of books and keys for identification. Certain species were so conspicuous, however, that they could not pass unnoticed. These I have listed as follows:

1. Killdeer (*Oxyechus vociferus*). Very common. Strange to say, I never saw one of these birds on the ground.

2. Scaled Quail (*Callipepla squamata*). Common. Often seen crossing the road. Texans call these birds "blue quail."

3. Mexican Ground Dove (*Chaemepelia passerina pallescens*). These little birds are common even in the towns. The wings are conspicuously reddish.

4. White-winged Dove (*Melopelia asiatica asiatica*). Without doubt one of the commonest birds in West Texas. It is as large as a domestic pigeon, and is eaten by the people. Doves are common even in town. Their peculiar harsh "*coo*" can be heard on all sides throughout the day.

5. Turkey Vulture (*Cathartes aura septentrionalis*). Very common. This is a bird of the country, and spends most of its time in the air. I have seen them, however, on fence posts.

6. Black Vulture (*Coragyps urubu*). Not as common as the last species. The ranchmen, who claim that Black Vultures carry anthrax, make constant war upon the birds. The only individuals that I saw close at hand were feeding on a dead jack rabbit in the road.

7. Road-runner (*Geococcyx californicus*). Very common. Often seen crossing the road or seated on fence posts. One lived back of the Government station.

8. Red-bellied Woodpecker (*Centurus carolinus*). Common.

9. Scissor-tailed Flycatcher (*Muscivora forficata*). These birds are to be seen at any time, especially on telegraph wires. When flying, the tail often resembles a trailer or some foreign substance.

10. Arkansas Kingbird (*Tyrannus verticalis*). Hardly common, although some were seen near the Government station on several occasions.

11. Vermilion Flycatcher (*Pyrocephalus rubineus mexicanus*). These beautiful birds were common in the brush, but they were very timid, and could only be studied at a distance.

12. Western Goldfinch (*Astragalinus psaltria*). These pretty birds behaved very much like their eastern relatives. Like them they were fond of bathing under lawn sprinklers. They were very numerous.

13. Desert Sparrow (*Amphispiza bilineata deserticola*). I saw only one of these birds. Itw as on a fenee wire not fifty feet from me.

14. Cardinal (*Cardinalis cardinalis cardinalis*). Very common, even in town.

15. Western Blue Grosbeak (*Guiraca caerulea lazula*). A single flock of these was seen in the valley of the Frio River.

16. Western Mockingbird (*Mimus polyglottos leucopterus*). Numerous everywhere, but especially so in town. Often came to lawn sprinklers.

17. Verdin (*Auriparus flaviceps*). Onc of these birds was seen near Asherton.

18. Cactus Wren (*Heleodytes brunneicapillus couesi*). The only one seen lived near the Government station. It was often seen in company with a Texas Bewick's Wren.

19. Texas Bewick's Wren (*Thryomanes bewickii cryptus*). A single individual was scen daily at the Government station.—Cyril E. Abbott, *Elgin, Ill.*

Nesting of the Yellow-throated Warbler in Volusia County, Florida.—While camping with William Leon Dawson, three miles west of Maytown, Volusia County, Florida, I found three nests of the Yellow-throated Warbler in the course of construction, between 8:00 A. M. and 10.00 A. M., April 1, 1927. We had been there three days, photographing nests of the American Egret in the dense, boggy cypress swamps, and, having the blinds set, I decided to go in search of Prothonotary Warbler nests, as the birds were to be heard singing from several points in thc swamp. I had watched and listened to a singing male for some time, but could ncver see the fcmale, so searched every possible stub for the nest, but without avail. I gave it up, as I figured it was too early for this species to begin nesting. It might be well to here record one nest of the Prothonotary Warbler, found May 15, 1923, with three well incubated eggs, too far gone to save. The nest was placed in a rotten cypress stub four or five feet above the water, in an open spot in the big cypress swamp about eight miles southwest of Kissimmee, Osceola County, Florida. This was discovered by Mr. Fred W. Walker.

Coming back to my story, I sat down to rest and heard several male Yellow-throated Warblers singing from the tall, moss-covered cypresses, and soon saw a female alight on the moss-covered trunk of a tree quite close to me. She fed for perhaps ten minutes and I saw her eat at least ten worms. At last she flew away to a cypress, and I watched her. It was not long before she flew rapidly, and in a straight line, to a point back of me and I hastened over to where I had last seen her, but I could not see anything of her. I sat quietly a few minutes and then saw her coming towards me with nest-material in her bill. She flew directly to the nest-tree, alighting on a limb, remaining about a second, and flying into a clump of moss hanging from the under side of the lower limb of a cypress about thirty feet up. The nest was three feet from the trunk of the tree. Both birds brought nest-material, and the male placed his, soon flying away in the same direction. Sometimes the birds would fly directly to the moss

clump, but more often they alighted on a limb near the nest before entering, never hesitating but a few seconds. Once one of the birds alighted in a nearby tree before flying to the nest. I watched for about fifteen minutes, and the trips averaged about one minute apart.

Hearing a Blue-gray Gnatcatcher uttering its "*tee tee tee*" or "*zee zee*" notes over and over again in song, I thought I would give them a glance, and in five minutes I had seen a bird flying to a horizontal cypress limb about forty-five feet up. I watched the bird adding material to her nest, which was nearly built. Soon the male came and perched beside her, to inspect her work, uttering his teasing little song. I watched them a few minutes and passed on to locate other nests of the Yellow-throated Warbler, as I could hear several males singing.

In a little while I saw a small bird fly to a clump of hanging moss, in a tall cypress, forty feet up, and six feet out from the trunk, on a lower limb. This bird proved to be a female Parula Warbler. The male sang in the top of a cypress tree not far away but did not assist in nest-building. I watched her for a few minutes and her trips were every one or two minutes—not longer.

These three nests were all in the same little strand of cypress and within a radius of not over 200 feet. Going to another strand, which was separated by a small pool of open water, I soon found a second nest of the Yellow-throated Warbler. This was located four feet from the trunk of a cypress on a lower limb, in hanging moss suspended on the under side of the limb. This bird worked faster than the other and sometimes made two trips a minute. The male sang from thirty to sixty feet away, and once came to the nest while she was there, but was not seen to assist in carrying materials. The female did not go farther than 100 feet to gather material, and went in different directions, sometimes back to the same place, as if it was especially suited to her needs. She would fly to the moss-covered trunk of a cypress and pull and tug at the fibers until they were loosened, and then immediately fly to the nest, entering always by the north entrance and leaving by the west side. This was not varied. I stood in plain view of the tree fifty feet away, but it did not disturb the birds in the least, and they paid not the slightest attention to me. Even nest-material was gathered within forty feet of me.

About 300 feet beyond this nest I located another by seeing the bird fly to a tall cypress, fully sixty feet up. I watched this tree for fifteen minutes before she returned again. It was evident that towards the middle of the day the birds cease their activities, as when I returned and passed by the other nests no birds were to be seen moving about.

As we broke camp that day and left for Cape Sable, nearly 400 miles away, and did not return until April 18, I did not get an opportunity to visit this interesting place again. Yellow-throated Warblers are fairly common in the cypress swamps in the pine woods and flat-woods country, in many Florida counties, but I have never been able to locate their nests until this season, and then only by accident.—Donald J. Nicholson, *Orlando, Fla.*

An Unusual Nesting Site of the Dickcissel.—On June 19, 1925, I noted a Dickcissel (*Spiza americana*) flush from a cylindrical mass of vines of the Virginia Creeper and Wild Grape, covering a fence post. The nest was placed on the top of the post, solidly anchored among the vines, and contained four eggs. As my work caused me to pass the place many times, I had plenty of views of the female leaving the nest. The eggs, which appeared to be well incubated, were missing on June 24.—Oscar P. Allert, *McGregor, Iowa.*

BIRD PHOTOGRAPHY

Conducted by Alfred M. Bailey

[Editor's Note. We are proposing to have from time to time a department on bird photography, and Mr. A. M. Bailey, Director of the Chicago Academy of Sciences, has consented to take charge of it. Mr. Bailey has had very much field experience in the Rocky Mountain region, in Alaska, and along the Gulf Coast. We hope to make the department a useful medium of exchange of ideas and experiences in matters of equipment, methods, subjects, results, etc. The instalment in this issue is elementary, and intended for beginners; later on, there should be plenty of material of interest to more experienced bird photographers. The frequency and success of this department will depend entirely upon the response of our readers. It is not intended that the Editor must furnish all of the copy. We invite our readers to submit their ideas of various outfits, their successes and failures with certain equipment, their special knowledge of unusual opportunities for bird photography, etc. Photographs which illustrate any of these things are also desired, and will be published in limited numbers.]

Bird students have many fields of investigation before them. Some work out the geographic boundaries of the different species, some the economic importance of birds in their relation to man, and others study birds merely for the enjoyment of being afield where they may, for the time being, be away from the crowds of the cities. Louis Fuertes once told me that the real reason he enjoyed being with birds was because he liked to paint them. Nagozruk, the eskimo collector of the Chicago Academy of Sciences at Cape Prince of Wales, said that he liked birds because he soon got tired of walrus meat! And so, the most of us have some particular reason why we are interested in bird life, and many have hobbies we like to ride. I think I receive more real enjoyment in trying to secure pictures of birds than in any other out-door study, and it is my desire to give the general methods employed, that others, if they wish, may also have the pleasure of watching birds from a blind and photographing them as they return to their nests.

The following notes are intended for nature lovers who have not attempted to picture birds, or for those who have had poor success, and are not meant for field men experienced in nature photography. I think most out-door photographers will agree with me that they take pictures like the Irishman plays the fiddle—to plagiarize a comparison I read somewhere or other—"neither by music nor ear, but, be jabbers, by main strength." Each species presents a different problem, and a good bit of hard work and tiresome waiting is often necessary before the worth-while results are obtained, but on the whole, it is fairly simple to photograph if one takes the time.

The equipment need not be expensive. The best camera to start with is the one you have. I am not going to go into the matter of lenses, focal length, exposure, and other details which may be obtained in any little handbook of photography, or which may be explained, in so far as is necessary for practical use, by a professional photographer. However, you may not have a machine and are desirous of obtaining one, so there are two things to consider, (1) the work you want to accomplish, and (2) the amount of money you have to spend. There is no camera that will do all kinds of work. If you can have just one camera, and desire one to carry around at all times, then I should suggest a hand machine of not over a 4x5 size. I find a 3½x4¼ a very fine one, for it is ideal to print contact lantern slides and you can make excellent enlargements. The machine can be fitted with a direct view finder so that you can hold it at

arm's length and take pictures. These cameras have the advantage of having a good depth of focus; they usually work as fast as 1-250 of a second, and you can have it with you at all times. There is nothing so discouarging as having a camera too heavy to tote around.

If, however, you can afford only one camera, and desire it for the sole purpose of photographing birds and mammals *from a blind*, I should recommend that you purchase a graflex with a long focus lens. The 4x5 revolving back auto graflex with Zeiss Tessar f.4.5 lens is an ideal outfit. It works to 1-1000 of a second and gives a much larger image than would be obtained with the small hand camera with its lens of much shorter focal length. The graflex has the advantages that you can watch your bird in the ground glass until it is in a pleasing position, and you can be sure of having it in sharp focus.

Films are far better than plates for the nature photographer. They are lighter and will not break. There are a few old stand-patters who insist on using plates, but films have so many advantages that I would never carry plates into the field. I have a friend who is at the head of one of the large western museums. He never felt as if he were out in the open unless he was carrying forty or fifty pounds of photo glass around in the shape of negatives. For years he insisted that you could not take pictures with films. Last spring, I met him as he was leaving for South America. We discussed cameras, and when I asked how many pounds of glass he was carrying, he shamefacedly admitted he had fallen by the wayside—he was carrying a film camera. For the beginner, I should recommend roll film, as they are convenient and safe. But when one has had a little experience, I believe cut films, used in either film holders, or in a magazine which will carry twelve, are ideal. They can be obtained in the several grades, just as with plates.

Before attempting to photograph birds, it is necessary to know your camera: it is essential to know how to secure a sharp negative—one in proper focus—with a given object at any distance. With the average amateur equipment, the closer the photographer can get to his bird, the better, and as most small cameras focus to within six feet, it would be well to make a series of experimental exposures at different distances. Note for instance, how sharp a picture you may obtain with your camera set at ten feet at f.6.3. Then cut down the diaphragm to f.11 and note the added depth obtained. If one is able to take good out-door pictures, he will be able to photograph birds, for the problems involved are identical.

There are three methods by which the photographer may get near his prospective subject. One is to stalk the bird until he is close enough. This is not practical, and in most cases is not recommended except when the bird can be approached in no other way. Another method is to set the machine on a tripod and take pictures from a distance, with a string to trip the camera. This too is unsatisfactory. To take pictures from a blind is by far the best method. And any kind of a blind will do, so long as the photographer remains concealed; it must have a top as well as sides. The smaller the blind is, the better, of course, but I have obtained very good results with big bulky tents made of burlap sacks. The umbrella blind has been used with good success. It is merely a large umbrella, with heavy curtains dropping around and the whole fastened up with cords. The pole of the umbrella is always in the way, however, and I greatly prefer my blind to be supported with a pole in each corner which will allow

more elbow room. The walls of the blind should be dark in color, and of heavy enough material that the birds cannot see through it, when the sun is at the back.

Now, we will assume that the novice at bird photography has learned to use his camera. If he has a 2½x4¼ hand camera, with Zeiss Tessar lens, for instance, he knows that he can set his camera for taking pictures at twenty-five feet and cut the diaphragm down to f.11, and that all objects from fifteen feet in front of the machine, approximately, to infinity, will be in sharp focus. He finds a place where shore birds work along the edge of a pond and erects his blind twenty-five to thirty feet from the water's edge, so the sun will be from behind and to one side. He conceals himself and waits for the birds. A flock of Dowitchers swirl in and alight twenty feet in front of him, and after probing a bit in the soft mud, they rest quietly in a more or less compact band. There is scarcely any motion, the birds are in a group, the light is right, so we have bird photography in its simplest phase. Instead of taking one picture, however, the photographer should take a dozen using different speeds. I make a practice of cutting down the diaphragm of my camera from f.11. to f.16. whenever the light is strong enough, but I rarely cut down farther. If the photographer will make notes on the exposures, he will find what speeds will stop motion. In the above example, even 1-25 of a second might catch the birds, but 1-50 of a second would probably give better results. If the birds are running about 1-100 of a second, or less, may be necessary. The secret of success is to take many pictures and keep notes on your exposures; it is far better to know what results one may obtain with his camera, to know what it will do under given conditions, than to understand why. Good photographs are secured through trial and error. There never was a photographer who did not make many mistakes. If, however, he blunders on without attempting to solve his trouble, he will never succeed, and the reason for failure can only be determined by keeping notes for each exposure, until the technical troubles are at an end.

Most beginners make the mistake of giving too short an exposure. Just because the camera will work at a speed of 1-1000 of a second is no reason for using that speed: in fact, it should never be used except for fast moving objects fairly close to the camera. A good rule is to give the longest exposure possible which will stop motion. The best nesting pictures are made with an exposure of from 1-50 to 1-100 of a second. Birds in flight require from 1-250 to 1-500 of a second, while if the birds are very near, the fastest exposure possible is necessary. It must be remembered that the faster the exposure, the wider the diaphragm should be opened, to allow more light, for otherwise, an unprintable negative will result.

The necessity for knowing how the individual camera works was well illustrated to me one summer in Colorado. I had an old 5x7 graflex which had seen its best days. I was unfamiliar with the camera, but as I had used a graflex for several seasons, I was sure of good results. I found a nest of Horned Larks, and the young were just hatching, so the mother was very solicitous and returned time and again, although I was seated within three feet of the nest. I was not in a blind, but the little mother came back without much hesitation. She stood over the nest, sheltering the young with wide spread wings, and she was so close I could make out every feather in the ground glass. There was no doubt that conditions were ideal for, except for a slight movement of the head, the lark was motionless. I made an exposure at 1-25 of a second, with the

diaphragm cut down so I would have as great depth of focus as possible. The mirror of the graflex flew up with a bang and the curtain rolled back. The noise caused the mother to jump from the nest, but she returned within a few minutes. Thinking that she might have moved slightly, I made several other exposures, up to 1-100 of a second, and finally, just to test the speed of the film, I made one at approximately 1-300 of a second with the diaphragm at f.4.5. I returned to the laboratory and developed my films, confident of having some wonderful Horned Lark pictures. I had a beautiful picture of young larks in each case except the last, which was under-exposed, but no adult bird. There had been just enough hang-up between the rising of the mirror and the roll of the shutter across the film that the lark had time to jump clear out of the picture before the exposure was made!

With most machines, the rise of the mirror and the exposure is simultaneous, but the one I was using was too antiquated for photographing such a nervous bird as that Horned Lark.

The amateur bird photographer will have many interesting things brought to his attention. The difference in temperament of individuals of the same species is amazing: some birds absolutely refuse to pose, while others return to their nests time and again. The nesting season is the best time to secure pictures, and if one can be on hand when the eggs are hatching, he will be sure of good results. One time at Cape Prince of Wales, in northwestern Alaska, I found a nest of Aleutian Sandpipers. It was in a hollow on the ground, surrounded with light-colored reindeer moss. I dropped my hat over the young, that I might find the nest quickly, and then I backtracked a few hundred yards where I had cached my camera. Imagine my surprise, ten minutes later, on my return to the nest, to find that the adult sandpiper had crawled under my hat to shelter her newly-hatched babies!

Birds which nest in colonies are, as a rule, very easy to photograph, and they will return to their nests within half an hour after the photographer has concealed himself. Birds preferring to be alone during their nesting period, on the other hand, are apt to be shy. Oftentimes they will not return to their nests for hours, and so it is often a good plan to erect a blind at some distance from the nest, and allow it to remain a day or so, gradually moving it nearer, that the parents may become accustomed to it. I have had my blind within three feet of nesting birds, but the distance is usually about six feet.

The above has been written more with the idea of interesting other students in bird photography, than in giving information. Each individual has to work out his own salvation, but I am sure that anyone who has not attempted to take bird pictures, will find it a very enjoyable experience.

If, this coming season, the members of the W. O. C. will go afield with their cameras, I am sure that the combined results will total hundreds of excellent studies, and I know of no better place to publish them than in the Wilson Bulletin. There is one sure way to secure a *reputation* as a good bird photographer, and it is a formula used by all experienced field men—take many pictures of each subject, throw the poor ones away, and show only your best!

PROCEEDINGS OF THE WILSON ORNITHOLOGICAL CLUB

Fifteenth Annual Meeting

The Fifteenth Annual Meeting of the Wilson Ornithological Club was held at Ann Arbor, Michigan, on November 30 and December 1, 1928. The Inland Bird Banding Association, which held its meeting at the same time, merged its program with that of the W. O. C. The University of Michigan Museum of Zoology, whose invitation had been accepted at the last annual meeting, was host for the metings of the two organizations. The quarters, facilities, and arrangements provided, did much to make the meeting a highly successful one. The new Museum, whose building was completed only a few months before our meeting, is being rapidly organized to exhibit the wealth of material already on hand, and the visitors availed themselves of the opportunity to inspect the various departments. The present meeting was the first one to be held in the new building by a national organization. It was an interesting coincidence that the American Ornithologists' Union was holding its annual meeting at about the same time in the oldest museum in America, at Charleston, South Carolina. The program was carried out as announced, and all sessions were held in the Museum Building.

Friday Morning, November 30, 1928

Address of Welcome by Dr. Alexander G. Ruthven, Director, University of Michigan Museums.

Response in behalf of the Wilson Ornithological Club and the Inland Bird Banding Association by William I. Lyon, Waukegan, Illinois.

1. The Ornithological Activities of the Michigan Department of Conservation. Miles D. Pirnie, Ornithologist, Michigan Department of Conservation. (Lantern Slides).

   A brief sketch showing what the Department is doing to protect her breeding colonies of water birds and toward educating the public to an appreciation of bird life in general.

2. Methods in a Bird Research Laboratory. S. Prentiss Baldwin, Cleveland Ohio. (Lantern Slides).

   A description by Mr. Baldwin of the work he is conducting at his country place near Cleveland, particularly with the aid of bird banding methods. The speaker mentioned finding 160 nests of the House Wren about his grounds during the past year, from which between five and six hundred young were reared. He has not found them to be guilty of nest robbing to any great extent. Considerable work has been done the past year to learn the body temperatures of nestlings, from birth to flight. At intervals, during the first two or three days, nestlings were found to be almost cold-blooded.

Friday Afternoon, November 30, 1928

Trip through the New Museum Building. Guides were provided for members and friends who wished to inspect the plan and exhibits of the new building.

3. Nesting of the Common Tern. Walter E. Hastings, Michigan Department of Conservation. (Motion Pictures).

   Mr. Hastings mentioned particularly the breeding colonies of Common Terns on Lone Tree Island in Saginaw Bay, where some 2,000 pairs of this species nest. Both birds were found to incubate, relieving each other periodically. The eggs vary much in color and markings. Incubation usually starts with the deposition of the first egg, but not always, and eggs hatch on succeeding days. Frequently three days elapse from the time the egg is pipped

until the young bird frees itself from the shell. Nests are usually well made, although sometimes an absence of nest material suggests that the wind may have blown it away.

4. The Family of Alexander Wilson. Mrs. Nettie Purdy Moore, Plymouth, Michigan.

Mrs. Moore read several old letters signed by Andrew Wilson, which were written just prior to the coming of Alexander Wilson to America, and which may give information on the early history of the pioneer ornithologist. The relationship has not yet been clearly established.

5. Variations in Migration. William I. Lyon, Waukegan, Illinois. (Lantern Slides).

In support of the "wave theory" it was shown that no two migrations are alike. It would appear that either migration routes change, due perhaps to weather and food conditions, or that birds change their routes for the sake of variety. Harris's Sparrow and the Brown Creeper were cited as examples of species common some years and nearly absent during several subsequent years. Each banding station has its own peculiarities, and species taken may differ radically from those taken at nearby stations. The speaker stated that 400,000 birds are now wearing bands.

6. A Research Library in Ornithology. Frank C. Pellett, Hamilton, Illinois.

The paper, read in the absence of the author by T. C. Stephens, advocates a movement for the establishment of one or more ornithological libraries by the Wilson Ornithological Club, for which books may be solicited. Such a library is to be left in the custody of some permanent and centrally located institution, and the books are to be subject to withdrawal by bird students under terms to be worked out. Consideration of the suggestions was deferred to the Business Sessions.

7. Some Studies of the Dipper, or Water Ouzel. Dr. C. E. Ehinger, Keokuk, Iowa.

Dr. Ehinger made his observations in the State of Washington, and throughout the winter months. This bird frequently sings in mid-winter and mates very early. The song is wild and ringing, "every note seems born of running water." It was observed swimming on the surface as well as under water, and was occasionally seen eating salmon eggs.

8. In the Haunts of Cairns's Warbler. C. W. Eifrig, Oak Park, Illinois.

A description of the bird life among the mountains of Western Maryland, where the altitude goes to 2400 feet above sea level—a rough, heavily-wooded, well watered region. Among the breeding warblers observed were the Cairns's, Canada, and both the Northern and Louisiana Water-Thrushes. On subsequent visits here the author found the various species to vary considerably in numbers.

Saturday Morning, December 1, 1928

9. Bird Photography on the Pearl Islands, Panama. Walter E. Hastings, Michigan Department of Conservation. (Motion Pictures).

Excellent motion pictures, principally of seabird colonies which had been visited during the breeding season.

10. My Barn Swallows. Lynds Jones, Oberlin College, Ohio.

Dr. Jones described the spring and summer habits and yearly variations in a colony of Barn Swallows which nested near his home.

11. The Future of Wild Birds. Clarence Bretsch, Gary, Indiana.

Mr. Bretsch made a plea for further conservation, and for more popular interest in bird life. Among the many possible ways for accomplishing this result Mr. Bretsch suggested the establishment of a trust fund for the benefit of the Wilson Bulletin. Such an additional income would make possible a larger magazine, more and better illustrations, and a wider distribution. As a result of this plea several life memberships were subscribed at this meeting.

12. Methods of Expressing Relative Abundanee. L. R. Dice, Museum of Zoology, Ann Arbor, Michigan.

Dr. Dice called attention to the general lack of uniformity in the terms now being used for the purpose of denoting the relative abundance of birds in a given geographical area, and to the great possible variance of interpretation of the various terms which are in use. Some authors may objeet to standardizing a few terms because of the possible result of monotony in reading the annotated lists. He suggested consideration of the method in use by plant ecologists of counting numbers on a given series of uniform areas and of Linsdale's method of averaging the results of a number of days' observations. The paper elicited considerable discussion and the suggestion of placing the matter in the hands of a committee for further study was referred to the Business Sessions.

13. Results from Banding Harris's Sparrows. O. A. Stevens, Fargo, N. D.

For the past three years Prof. Stevens has had a good deal of experience in trapping and banding this species. In the fall of 1926 he trapped and banded forty-four of the birds, and a larger number in each succeeding season. Further studies are in progress, and a full report is contemplated within the next year or two. In the absence of Prof. Stevens the paper was read by T. C. Stephens.

14. The Systematic Status of the Gyrfalcons. Walter Koelz, University of Michigan, Ann Arbor, Michigan. (Demonstrations).

The author described the known status of the various subspecies of this little-known falcon, and exhibited numerous skins, explaining the differences between them. These specimens were collected along the coasts of Labrador, Greenland, and about Baffin's Bay. Specimens are difficult to get, and nests more so, being located usually in inaccessible places among the coastal cliffs. Two sets of eggs, which were exhibited, resembled those of the Duck Hawk, but were much larger. The nearly white birds were *Falco candicans*, breeding in northwest Greenland, while the very dark and quite rare *Falco rusticollis obsoletus* is from Labrador.

15. Sea Birds from the South Atlantic. George Finlay Simmons, Cleveland Museum of Natural History, Cleveland, Ohio. (Lantern Slides).

This narrative of the two-year cruise of the *Blossom* through the South Atlantic was sufficiently varied from the author's account at our Chicago meeting to make it fully interesting to those who had heard him before. The lecturer's beautifully colored slides and his interesting experiences held his hearers' attention from beginning to end. Plenty of ornithology is included.

Saturday Afternoon, December 1, 1929

16. Notes on the Mockingbird. Albert F. Ganier, Nashville, Tennessee. (Motion Pictures).

Mr. Ganier gave an account of the life history of this species based upon years of close association. The Mockingbird is one of the most prominent of our native birds, with such outstanding characteristics as its vocal ability, pugnacity, grace, domesticity, and hardiness. It holds its own in numbers and enjoys complete protection from man. It is non-migratory. Its chief enemies are jays and grackles, which puncture the eggs, curious small boys, and cats, which catch the young. The motion pictures showed a Mockingbird putting to rout a cat which had attempted to capture the young.

17. Pet Birds. Ned Dearborn, University of Michigan, Ann Arbor, Michigan. (Lantern Slides).

The speaker gave interesting sketches of birds which he has, at one time or another, made pets of, including the Crow, Blue Jay, Screech Owl, Brown Creeper, Flicker, Ruffed Grouse, Sora Rail, and others. Dr. Dearborn has never caged any of his pets.

18. Bird Banding in Luce County, Michigan. Oscar M. Bryens, McMillan, Michigan. Read by title.

19. The Fortunes of a Pair of Bell's Vireos. Margaret M. Nice, Columbus, Ohio.

This paper dealt with three nests built by a pair during one season in Oklahoma. Young from the first nest were reared, but the next two broods met disaster. No further attempts were made to nest after July 5. These birds sing all summer, and well into September. They are much imposed upon by Cowbirds, the young of which, however, are not often raised.

20. A Veteran European Bird Bander. C. W. Eifrig, Oak Park, Illinois.

Prof. Eifrig here described the efforts of one of the early German bird banders who, encouraged by an ornithological society, banded many gulls, starlings, storks, and other species.

21. Dr. Elliott Coues—A Sketch. Mrs. H. J. Taylor, Sioux City, Iowa.

Mrs. Taylor presented a resume of the life of this vigorous figure in American ornithology, with many sidelights on his personality. The paper included some facts relative to his work as historian of the Lewis and Clark Expedition which have not been presented in his previous ornithological biographies. Because of his interest in the history of this expedition, Dr. Coues was invited, as one of the guests of honor, to be present at the reinterment of the bones of Sergeant Floyd, at Sioux City, in 1895. Dr. Coues attended and spoke, and was also a guest in Mrs. Taylor's home.

22. Bird Banding Operations. Frank W. Robl, Ellinwood, Kansas. Read by title.

23. Migration Routes as Indicated by Specific Returns. F. E. Ludwig, Michigan State College, East Lansing, Michigan. (Lantern Slides).

By operating a number of traps in varied situations a greater variety of birds was secured. By co-operation with other banders nearby a number of interesting facts were ascertained in regard to the direction of flight. Grackles, for instance, were found to follow an east and west direction at times.

24. Comments on the Bird Life of Southeastern Michigan. T. L. Hankinson, State Normal School, Ypsilanti, Michigan. (Lantern Slides).

Prof. Hankinson gave a description of the bird life found in various habitats in this area, such as open marsh, wooded swamp, upland woods, open fields, sand dunes, etc. Excellent slides showing breeding colonies of Black-crowned and Great Blue Herons, Black Terns, and individual nests of many other species were shown.

BUSINESS SESSIONS

Several Business Sessions were held at different times during the meeting. Miss Marjorie Ruth Ross and Mr. P. B. Coffin each acted as Secretary *pro tempore*, in the absence of the Secretary. The minutes of the last annual meeting were read and approved. The Secretary's report for the past year was read and approved. A letter from the Secretary was also read tendering his resignation, owing to the pressure of professional duties. This resignation was accepted with much regret, because of the efficient and faithful services of Secretary Gloyd during the past three years. Treasurer J. W. Stack read his official report, which indicated that the organization is solvent. The Treasurer's report was referred to an Auditing Committee (consisting of Messrs. Ganier and Bretsch and Miss Ross) and was later adopted by motion. The reports of the Secretary and of the Treasurer are printed further on in these proceedings.

The Editor discussed the affairs of the Wilson Bulletin, and mentioned some improvements which might be made when more funds are available. The amount of unpublished material on hand at present will justify an increased number of pages. More income will also make possible more and better illustration.

Mr. Bretsch, for the Endowment Fund Committee, outlined the work which has been accomplished to date, and announced that several Life Memberships

George Miksch Sutton
Newly Elected Vice-President

had been subscribed at one hundred dollars each. The matter of the Endowment Fund will shortly be placed before the membership by the Committee. (The details of the trust fund agreement will be found on page 58 of the BULLETIN for March, 1927).

The suggestion was made that our present Constitution is becoming more or less obsolete in many respects. The President was authorized to appoint a committee to make a study of the Constitution and By-laws, and to recommend such revisions as the Committee may think necessary. Mr. Percival Brooks Coffin was appointed Chairman of this Committee.

The matter of delinquent members was discussed. There seemed to be a general desire to show as much leniency as is consistent with good business procedure. It was brought out, however, that members frequently drop out without the formality of a resignation, and that it is useless to continue to send the BULLETIN to them. It was finally decided that the mailing list should be checked up quite strictly before the March issue is mailed, and that the June issue should not be sent to delinquent members, unless they have made request for extension of time.

The matter of ornithological libraries was briefly discussed and was referred to a committee of which T. C. Stephens was made Chairman.

The matter of abundance terms was referred by motion to a Committee consisting of Dr. Lynds Jones, Mr. A. F. Ganier, and Dr. L. R. Dice, with hope that a report would be made at the next annual meeting.

General approval was expressed for holding the next annual meeting, in 1929, at Des Moines in conjunction with the A. A. A. S. (Since the meeting the Executive Committee has taken definite action fixing this meeting at Des Moines during the last week in December, 1929). No action has yet been taken concerning the place of the

Dr. Jesse M. Shaver
Newly Elected Secretary

meeting in 1930, but the A. A. A. S. meets in Cleveland, while in 1931 it meets in New Orleans.

The President was authorized to appoint a committee to carry on efforts to raise the Endowment Fund, by whatever plan may seem best in their judgment. Mr. A. F. Ganier was made Chairman of this Committee.

A Committee on Resolutions consisting of Mrs. H. J. Taylor, Chairman, Mrs. Margaret M. Nice, and Prof. C. W. G. Eifrig, was appointed. Resolutions were later adopted thanking the hosts for their part in making the meeting so great a success. Appreciation was especially expressed to Dr. Alexander G. Ruthven, Director of the Museum of Zoology, in which the meetings were held; to Dr. J. Van Tyne, who acted as a most efficient and painstaking Local Committee Chairman; and to the Officers of the Michigan Union, for their very great kindness in extending hospitality to our visiting members. Appreciation was expressed to all of the W. O. C. officers for their loyal and sacrificing services during the past year.

The Nominating Committee, which had been appointed early in the meeting, consisted of Mr. P. B. Coffin, Chairman, Prof. T. L. Hankinson, and T. C. Stephens. This committee presented a report recommending the following persons as officers for the ensuing year.

For President—Lynds Jones, Oberlin, Ohio.

For Vice-President—George Miksch Sutton, Harrisburg, Pa.

For Secretary—Jesse M. Shaver, Nashville, Tenn.

For Treasurer—J. W. Stack, East Lansing, Mich.

For Councillors—Thos. H. Whitney, Atlantic, Iowa: Wm. G. Fargo, Jackson, Michigan; Myron H. Swenk, Lincoln, Nebraska; Mrs. Margaret M. Nice, Columbus, Ohio; C. W. G. Eifrig, Oak Park, Illinois.

By motion the report of the Committee was adopted and the persons named as above were declared elected to serve as officers for 1929.

One of the most interesting features of the Ann Arbor meeting was an exhibit of bird paintings, secured and arranged by the Muesum of Zoology. The pictures were displayed in an attractive way, and drew large numbers of interested persons, not only among the visitors, but from the local community. A number of the pictures exhibited were for sale and a number were sold for as much as $100. The amount of effort and responsibility necessary to successfully hold an exhibit of this kind will probably be understood and appreciated only by those who have undertaken the task. While the exhibit was not as large as those held by the A. O. U., it was nevertheless a splendid one and very much appreciated. The Wilson Ornithological Club wishes to thank the Museum of Zoology for this unusual and unexpected contribution to the success of the meeting. Following is given a complete list of the artists and their exhibits:

Brasher, Rex: *Chickadee.*

Brooks, Allan: *Goshawk, Prairie Falcon, Kirtland Warbler.*

Bull, Charles L.: *Eider Ducks, Wood Ducks, White Owl, Courage of Wild Eagle and Kingbird.*

Danaher, Dave: *Mallard.*

Dingle, E. von S.: *Phoebe and Purple Magnolia. Summer Tanager and Magnolia Grandiflora, Purple Gallinule and Nest and Young, Green-winged Teal.*

Horsfall, R. Bruce: *Robin, Violet-green Swallow, China Pheasant, Stellar Jay, Towhee, Whip-poor-will, Nighthawk, Water Ouzel, Killdeer, Cardinal, Tree Sparrows, Cowbirds, Yellowthroat, Black-headed Grosbeak.*

Hunt, Lynn Bogue: *Sharp-shinned Hawk and Woodcock, Ruffed Grouse Flushing from the Mountainside, Jumping Mallards, Old Squaws Out of the Mist.*

Jaques, F. L.: *Grey Geese and Cedars, Tropic Sea.*

Murie, O. J.: *Early Spring on Hudson Bay, Old Squaw, Downy Young Emperor Goose, Downy Young Wandering Tattler, Red-faced Cormorant, Canada Jay, Pacific Eider.*

Plath, Carl: *Wood Duck Family, Florida Pelicans, Impeyan Pheasant, Bermuda Tropic Bird.*

Poole, E. L.: *Long-eared Owl, Duck Hawk, American Oystercatcher.*

Sutton, George Miksch: *White-eared Hummingbirds and Scarlet Delphinium, Screech Owl, Flint-heads, or Wood Ibises, Blue-winged Tanager, Young Pied-billed Grebe, Avocet.*

Taverner, P. A.: *Dendroica Kirtlandi.*

Thorburn, A.: *Black Cock.*

Wing, George S.: *Common Tern, Herring Gull, Black-crowned Night Heron.*

We understand that the Museum is endeavoring to build up a collection of bird paintings for its own archives, in which it is desired to have every bird artist represented. Besides paintings the Museum exhibited a number of rare ornithological books, many of which contained old color plates. A similar collection of rare ornithological books has been under way for some time.

The Annual Dinner was held on Friday evening at the Michigan Union, and was attended by approximately fifty persons. Following the dinner Mr. Walter E. Hastings showed several reels of motion pictures of bird life, and gave many interesting incidents connected with them. The noon luncheon of each day was taken at the Michigan Union, where there was opportunity for informal social intercourse. At noon on Friday a group photograph was made in front of the Museum; the attendance was considerably larger on Saturday. Between sessions and on Saturday evening many members availed themselves of the opportunity to examine the collections of bird skins and eggs in the Museum, and to browse about in the very excellent ornithological library gathered largely through the efforts of Mr. Norman A. Wood, of the Museum Staff.

On Sunday those who remained over were conducted over the campus and through such buildings as they wished to visit. The University of Michigan is now one of the largest and most important among the institutions of higher learning in the world. Unless we are mistaken in our information the annual income of the University is about five million dollars. At the close of the meeting the general feeling prevailed that it had been as successful as any held previously, and there was also a general feeling of regret that more of our members can not participate. We have a standing invitation to return to Ann Arbor at any future time.

GROUP AT THE FIFTEENTH ANNUAL W. O. C. MEETING, AT ANN ARBOR

REPORT OF THE SECRETARY FOR 1928

*November 26, 1928.

To the Officers and Members of the Wilson Ornithological Club:

I wish to submit the following report on the activities of the Secretary's office for the current year to date.

A continuous effort has been made on the part of the Secretary and other officers, especially the Editor, to add to the membership roll throughout the year. As the result of these endeavors 112 new members have been secured. This total classified according to rank is as follows: sustaining 5, active 22, associate 85.

The distribution of new members by states: Alabama 1, Arkansas 1, California 7, Florida 2, Georgia 2, Idaho 1, Illinois 9, Indiana 1, Iowa 6, Kentucky 1, Kansas 4, Massachusetts 6, Maryland 1, Michigan 13, Minnesota 3, Missouri 1, Nebraska 1, New Mexico 1, New Jersey 2, New York 6, North Carolina 2, Ohio 6, Pennsylvania 13, South Dakota 1, Tennessee 7, Texas 1, Washington 1, Wisconsin 4, District of Columbia 2, Canada 6.

The various officers and members responsible for the applications of new members are as follows: H. K. Gloyd 55, T. C. Stephens 18, A. F. Ganier 8, J. W. Stack 4, J. Van Tyne 4, W. I. Lyon 3, Marjorie Ruth Ross 2, and fourteen others one each.

At present the total membership is 702; honorary 4, life members 3, sustaining 64, active 248, associate 383. Of this number 39 are in arrears for the payment of two years' dues and forty are in arrears for the current year. All of these have been sent four notices by the Treasurer and a special letter from the Secretary, a copy of which is attached hereto. Action on these delinquent members will be taken in accordance with the policy adopted at the Ann Arbor meeting.

During the past year 31 members have resigned, 7 are deceased, and 28 have been dropped for long-standing delinquency in payment of dues, making a loss of 66 from the roll of the organization.

Very truly yours,

Howard K. Gloyd, *Secretary*.

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*The statistics in the report are corrected to the end of the calendar year.

KEY TO THE GROUP PHOTOGRAPH. (A long dash after a number indicates that the person could not be named by the local Committee). 1, George Finlay Simmons. 2, Canuto G. Manuel. 3, Russell Lee Walp. 4, Clark H. Gleason, Jr. 5, ——. 6 ,Milton B. Trautman. 7, Lawrence E. Hicks. 8, Prof. T. L. Hankinson. 9, C. E. Holcombe. 10, Dr. Lynds Jones. 11, ——. 12, Percival Brooks Coffin. 13, Prof. T. C. Stephens. 14, Prof. C. W. G. Eifrig. 15, Albert F. Ganier. 16, Charles F. Walker. 17, S. Prentiss Baldwin. 18, George S. Wing. 19, Prof. J. W. Stack. 20, F. E. Ludwig. 21, Clarence Bretsch. 22, William I. Lyon. 23, ——. 24, Dr. Josselyn Van Tyne. 25, Harold F. Wing. 26, Louis W. Campbell. 27, Walter E. Hastings. 28, Leonard W. Wing. 29, ——. 30, Mrs. H. J. Taylor. 31, Mrs. Lucy Baxter Coffin. 32, Mrs. Margaret M. Nice. 33, Mrs. T. C. Stephens. 34, Mrs. Nettie Purdy Moore. 35, ——. 36, Mrs. Clarence Bretsch. 37, Mrs. Lynds Jones. 38, Miss Marjorie Ruth Ross. 39, Mrs. Ada S. Murray. 40, Mrs. Walter E. Hastings. 41, Prof. Norman A. Wood. 42, Mrs. Etta S. Wilson. 43, Dr. Miles D. Pirnie. 44, Oscar P. Allert. (Addresses may be obtained from the register).

Register of Attendance at the Ann Arbor Meeting

From Tennessee: Albert F. Ganier, Nashville. From Indiana: Mr. and Mrs. Clarence Bretsch, Gary. From Wisconsin: Aldo Leopold, Madison. From Iowa: Dr. C. E. Ehinger, Keokuk; Oscar P. Allert, McGregor; Mrs. H. J. Taylor, Mr. and Mrs. T. C. Stephens, Sioux City. From Illinois: Wm. I. Lyon, Waukegan; A. B. Winslow, Clarence E. Holcombe, Zion; Lucy Baxter Coffin, Percival Brooks Coffin, H. D. Davis, Chicago; Prof. G. Eifrig, River Forest. From Ohio: Dr. and Mrs. Lynds Jones, Clark H. Gleason, Oberlin; S. Prentiss Baldwin, George Finlay Simmons, Cleveland; Lawrence E. Hicks, Charles F. Walker, Mrs. Margaret M. Nice, Columbus; Prof. E. L. Moseley, Bowling Green; Russell Lee Walp, Youngstown; Edward Carroll Arnos, J. A. Sweeny, Lew Klewer, Nevin O. Winter, Lewis W. Campbell, Ethel Atkinson, Velma Rottenstein, Toledo. From Pennsylvania: Marjorie Ruth Ross, Helen B. Gere, State College; Warren F. Jacobs, Waynesburg. From Michigan (outside of Ann Arbor): Mrs. Nettie Purdy Moore, Ada S. Murray, Plymouth; Mrs. Edith C. Munger, Hart: Mr. and Mrs. Walter E. Hastings, Howell; Harry Grant, Birmingham; Victor L. Smith, Royal Oak; Dr. W. A. Wellemeyer, Vassar; Harvey Swanebeck, Fenton; Prof. Wm. E. Praeger, Kalamazoo; Prof. Frank Smith, Bertram Barber, Hillsdale; Prof. and Mrs. Thos. L. Hankinson, Janet Hankinson, Wm. C. Prewitt, Helen Dolman, Geneva Smithe, Mr. and Mrs. F. R. Gorton, Ypsilanti; W. B. Purdy, Milton; P. S. Lovejoy, Dr. Miles D. Pirnie, J. W. Stack, F. E. Ludwig, Lansing; Helen McCain, Harold Wing, Geo. S. Wing, Leonard W. Wing, Wm. G. Fargo, Jackson; Mrs. Etta S. Wilson, Dr. A. W. Blain, W. Bryant Tynell, William P. Harris, Jr., Detroit; Mildred Adams, Emily Butterfield, Mrs. C. Wilbur, Katherine Sprague, Mrs. W. D. Irish, Farmington. From Ann Arbor: Dr. J. Van Tyne, Mr. and Mrs. Norman A. Wood, Adolph Murie, Dr. and Mrs. A. G. Ruthven, Dr. Frank N. Blanchard, James Wood, M. Graham Netting, Dr. Lee R. Dice, Victor A. Cahalane, Paul D. Dalhe, Elgin R. Hall, Robert M. Bradley, Canuto G. Manuel, Dr. Carl R. Hubbs, Arthur Svihla, Charles V. Green, Randall McCain, LeRoy C. Stegman, L. C. Stuart, Dr. Walter N. Koelz, Dr. Ned Dearborn, H. M. Wright, Prof. Alvin G. Whitney, A. D. Tinker, W. W. Newcomb, Lawrence H. Walkinshaw, Dr. Peter Okkelberg, Mrs. Calvin Goodrich, W. B. Hinsdale, O. E. Hunt.

Summary of Attendance: Tennessee, 1; Indiana, 2; Wisconsin, 1; Iowa, 5; Illinois, 7; Ohio, 17; Pennsylvania, 3; Michigan (outside of Ann Arbor), 38; Ann Arbor, 31. Total, 106. Total outside of Ann Arbor, 75.

REPORT OF THE TREASURER FOR 1928

East Lansing, Mich., November 23, 1928.

Receipts for 1928

Cash in bank, November 1, 1927	$ 339.33	
Dues from Sustaining Members	300.00	
Dues from Active Members	550.37	
Dues from Associate Members	604.34	
Subscriptions from Organizations	60.00	
Foreign subscriptions	4.00	
Total excess on checks	1.52	
Additional Bulletins to members	19.75	
Reprints	44.25	
Contribution to the March Bulletin	38.00	
Contribution to the June Bulletin	20.00	
Total income		$1,981.56

Disbursements for 1928

Printing four issues, Wilson Bulletin	$1,034.00	
Halftones and zinc plates	96.74	
Addressing envelopes for Bulletin	11.80	
Cost of mailing Bulletins for 1927[1]	29.15	
Authors' reprints[2]	6.25	
Cost of publication		$1,177.94
Secretary's expense, postage, mimeographing, etc.		145.54
Treasurer's expense, postage, printing, etc.		53.15
Printing of general stationery		21.00
Printing of Nashville programs		9.00
Corporation seal		5.75
Refund		2.00
Transferred to Endowment Fund		40.00
Total disbursements		$1,454.38
Cash balance on hand		527.18
		$1,981.56

Endowment Fund, November 23, 1928	$325.00
Endowment Fund, January 1, 1920	534.08

J. W. Stack, *Treasurer.*

[1]The corresponding item in last year's report was for the year 1926, not for 1927 as printed. This item includes cost of mailing the Bulletin at second class rate, foreign postage, postage due on returned copies, postage on each local delivery, parcel postage on manuscripts, photographs, etc.

[2]The author remitted through the Club treasury.

COMMUNICATIONS

Editor, Wilson Bulletin: Owing to the widespread popular interest in the westward advance of the European Starling in America, as shown by the frequent news items in the daily papers, the suggestion has been made that an up-to-date map, prepared from information supplied by members of the Wilson Ornithological Club, should be published in the Bulletin. From time to time this map may be revised and re-published as new information is sent in. Present information indicates that a rapid movement of these birds to the westward and southwestward across the Mississippi River is being exhibited. Reports of the appearance of these birds in new localities should be sent promptly to the Editor.

E. C. Hoffman.

Lakewood, Ohio, February 5, 1929.

[We will be glad to receive such reports, and will count on Mr. Hoffman's draughtsmanship in preparing the map.—Ed.]

Editor, Wilson Bulletin: Referring back to the Wilson Bulletin for September, 1928 (page 207), and to a short note on "Catbirds Remain Mated," by Mr. Perkins, I notice that Mr. Perkins' authority for the expression "remain mated" seems to be based on the fact that the birds were no doubt mated in June and July, 1926, and that both were taken together nesting nearby on June 24, 1927. But why "remain mated"? Really so able a lawyer as Mr. Perkins can hardly claim that as good evidence that they have been mated during the entire year intervening.

Sometimes my House Wrens come back to the same spot, and have the same mate a second season; but does it mean any more than that the male having come back to the same box and territory and taken possession of it, is discovered there by the female upon her return, and both being fit and ready they become *re-mated.*

The same question arises in the note of Dr. Hayes on the previous page (206) in the case of his Towhees taken together again after a period of two years. Why assume that they have been together all of the two years? The fact is very interesting and we need far more actual observation, but must not attribute to the birds an idealism in love, which does not even prevail so very well in the human family.

We know that a considerable proportion of adult birds of these species return to the same place at the same time of year, so the chances are very good that the same two birds will re-mate.

We are not even sure what is good morals for the bird, as good morals means for them what is best for the race; and we are not sure that it is best for their health and self preservation and best for the race that the mates try to keep near each other all the year.

S. Prentiss Baldwin.

Gates Mills, Ohio, January 10, 1929.

Editor, WILSON BULLETIN: The comment of my good friend, Mr. Baldwin, on the Catbird item is at hand. It is the raising of pertinent questions, such as this one, so characteristic of Mr. Baldwin, that opens a continually enlarging field of research.

Of course, birds may not stay in the same balewick during the winter. Each may have a different winter resort, learned of before either was old enough to think of mating. Each would naturally return there for succeeding winters. There would be no demonstrations of love by these or other birds during the winter even if together in the south on migration. There would be diffieulty in produeing proof that they were paired between breeding seasons. Such facts do not militate against their remaining mated for they surely are not taking another mate. We may be able to produce evidence, Mr. Hayes and myself and others interested in this question, that these mated birds start south at the same time in the fall and return together in the spring, or that they even keep in each others' company after the brood is able to look after itself.

As bits of additional evidence come to hand let us write of them so as to fortify the presumption with proof.

SAMUEL E. PERKINS, III.

Indianapolis, Ind., January 14, 1929.

To the Editor: It is only fair that the original Heath Hen Committee should be given a chance to correct some unfortunate and incorrect impressions which are likely to be circulated among ornithologists through your review of Dr. Gross's monograph on the Heath Hen, published in the December, 1928, WILSON BULLETIN.

The State Division of Fisheries and Game long ago realized the great hazards surrounding this bird, and in spite of some adverse pressure has expended a very large sum of money on its welfare over a period of nearly thirty years. After the great fire in 1916, there was a loss of birds followed by a rapid recovery. This, again, was followed by a steady decline, as Dr. Gross's tables will show, which continues, until today we find the species at the vanishing point.

A special warden was placed on the island in the late spring of 1925, largely through the efforts of the Federation of the Bird Clubs of New England, with various other conservation bodies and many individuals contributing. This warden was kept on duty for two years. The State then felt able to place a regular warden, Mr. Karl A. Eckert, on the island, who, with Mr. Allan Keniston, long in charge of the Heath Hen Reservation, made two wardens for this small island. It was the best policed area in Massachusetts, so far as fish and game matters were concerned.

By this time (spring of 1927) the birds, as revealed by our census, were at such a low ebb that we decided to drop the services of our special warden. We felt that we were no longer justified in asking our contributors to give to a cause which was hopeless. Also, we felt that the State had the situation well in hand, and that our special warden could render no further aid to the cause we had so deeply at heart.

At this moment a local committee was formed on the island, which continued to finance our special warden, with the help later of the journal, *National Sports-*

man. The Heath Hen, as has happened before, became an innocent football of local jealousies of the bitterest sort, and some very extravagant articles appeared in the *Martha's Vineyard Gazette* and the *National Sportsman,* and also in Boston newspapers. The special warden was discontinued by the new committee in the summer of 1928.

It is not true that our special warden was hindered in the performance of his duty by lack of permits for the killing of predatory birds and mammals, either while under our orders or afterwards. He was given adequate authority from the State covering all species of hawks and owls which could by any stretch of the imagination be considered a source of danger to the Heath Hen. But long before this warden ended his period of duty with this committee we felt certain that the decline of the Heath Hen had not been caused primarily by predatory birds or mammals. All these were under good control.

We shall never know for certain the exact cause or causes which have brought about the decline of this interesting species. The factors involved are too many and too subtle to yield to our present crude methods of approaching a complex ecological problem. But, no matter how the decline was brought about, we feel that the State, the conservation organizations, and the many individuals who contributed have all done their part in this attempt to save the Heath Hen from extinction.

HEATH HEN COMMITTEE,

Charles B. Floyd.
Francis H. Allen.
John C. Phillips.
William C. Adams.
Robert Walcott.

Boston, Mass., January 31, 1929.

NECROLOGY

Many members of the Wilson Ornithological Club will regret to hear of the death of Rev. W. F. Henninger, for many years a resident of Ohio, an active student of birds, and a loyal member of the W. O. C.

Walther F. Henninger was born at Herman, Mo., on December 2, 1873. He died at Manchester, Mich., on February 2, 1929, being a little over fifty-five years of age. When eleven years old his father died, and his mother took him to Europe, where he was placed in a school for boys maintained by the Moravian Church. It was here that his interest in nature was first developed. After graduation from this school he returned to America and prepared to become a minister in the Evangelical Synod, serving chiefly in Ohio. From 1922-1927 he represented his Church in Brazil, but impaired health compelled him to relinquish this work. After spending nearly a year at the health resorts of Germany he returned to Ohio, and later took up pastoral work in Michigan. Interment was at Tiffin, Ohio. For some years Mr. Henninger was active in the W. O. C., and held the offices of Treasurer and President.

TO OUR CONTRIBUTORS

Our members are urged to submit articles for publication in the BULLETIN Short items are desired for the department of General Notes, as well as longer contributions, especially pertaining to life-history, migration, ecology, behavior, song, economic ornithology, field equipment and methods, etc. Local faunal lists are also desired, but they should be annotated, at least briefly, and should be based upon sufficient study to be reasonably complete. Authors are asked to include the common name, the scientific name (from the A. O. U. check-list), and annotations, and they should be arranged in this order. The annotations should include explicit data concerning unusual species. Omit serial numbering.

THE MANUSCRIPT. The manuscript, or copy, should be prepared with due regard for literary style, correct spelling and punctuation. Use sheets of paper of good quality and of letter size (8½x11 inches); write on one side only, and leave wide margins; if at all possible manuscript should be prepared with a typewriter, using double spacing and a reasonably fresh, black ribbon.

The title should be carefully constructed so as to indicate most clearly the nature of the subject matter of the contribution. Where the paper deals with a single species it is desirable to include in the title both the common and the scientific names, or, to include the scientific name in the introductory paragraph. Contributors are requested to mark at the top of the first page of the manuscript the number of words contained. This will save the editor's time and will be appreciated.

Manuscripts intended for publication in any particular issue should be in the hands of the editor sixty to ninety days prior to the date of publication.

ILLUSTRATIONS. To reproduce well prints should have good contrast with detail. In sending prints the author should attach to each one an adequate description or legend.

BIBLIOGRAPHY. The scientific value of some contributions is enhanced by an accompanying list of works cited. Such citations should be complete, giving author's name, full title of the paper, both the year and volume of the periodical, and pages, first and last.

PROOF. Galley proof will be regularly submitted to authors. Page proofs will be submitted only on request. Proof of notes and short articles will not be submitted unless requested. All proofs must be returned within four days. Expensive changes in copy after the type has been set must be charged to the author.

SEPARATES. The Club is unable, under present financial conditions, to furnish reprints to authors gratis. Arrangements will be made, however, for such reprints to be obtained at practically cost. The cost will vary somewhat with the nature of the composition, but will depend mainly upon the number of pages. A scale of rates is appended which will serve as a guide to the approximate printer's costs.

If a blank page is left in the folding this may be used for a title page, which will be set and printed at the rate indicated. If a complete cover with printed title page is desired it may be obtained at the rate shown in the last column. All orders for separates must accompany the returned galley proof upon blanks provided. Orders cannot be taken after the forms have been taken down.

Copies	2	4	6	8	12	16	20	24	28	32	36	40	Cover
50	$1.25	$2.00	$2.75	$3.50	$4.75	$6.00	$7.75	$8.50	$9.75	$11.00	$12.25	$13.50	$2.50
100	1.50	2.25	3.00	3.75	5.00	6.25	7.50	8.75	10.00	11.25	12.50	13.75	2.75
200	2.00	2.75	3.50	4.25	5.50	6.75	8.00	9.25	10.50	11.75	13.00	14.25	3.00
300	2.75	3.50	4.25	5.00	6.25	7.50	8.75	10.00	11.25	12.50	13.75	15.00	4.00
400	3.25	4.00	4.75	5.50	6.75	8.00	9.25	10.50	11.75	13.00	14.25	15.50	5.00
500	3.75	4.50	5.25	6.00	7.25	8.50	9.75	11.00	12.25	13.50	14.75	16.00	6.00

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Annual Meetings of the Wilson Ornithological Club

	Retiring President
1914—Chicago. February 5. Chicago Academy of Sciences.	
1914—Chicago. December 29-30. New Morrison Hotel	T. C. Stephens
1915—Columbus. December 28-29. With the A. A. A. S.	T. C. Stephens
1916—Chicago. December 27-28. New Morrison Hotel	T. C. Stephens
1917—Pittsburgh. January 1-2, 1918. With the A. A. A. S.	W. F. Henninger
1918—No meeting on account of the exigencies of war	M. H. Swenk
1919—St. Louis. December 29-30. With the A. A. A. S.	M. H. Swenk
1920—Chicago. December 27-28. With the A. A. A. S.	R. M. Strong
1921—Chicago. December 26-27. The Field Museum	R. M. Strong
1922—Chicago. October 26	T. L. Hankinson
1923—Cincinnati. Dec. 31, 1923-Jan. 1, 1924. With the A. A. A. S.	T. L. Hankinson
1924—Nashville. November 28-29-30. Peabody College	A. F. Ganier
1925—Kansas City. December 28-29. With the A. A. A. S.	A. F. Ganier
1926—Chicago. November 26-27. Chicago Academy of Sciences	A. F. Ganier
1927—Nashville. Dec. 30, 1927-Jan. 1, 1928. With the A. A. A. S.	Lynds Jones
1928—Ann Arbor. Nov. 31-Dec. 1, 1928. Museum of Zoology	Lynds Jones

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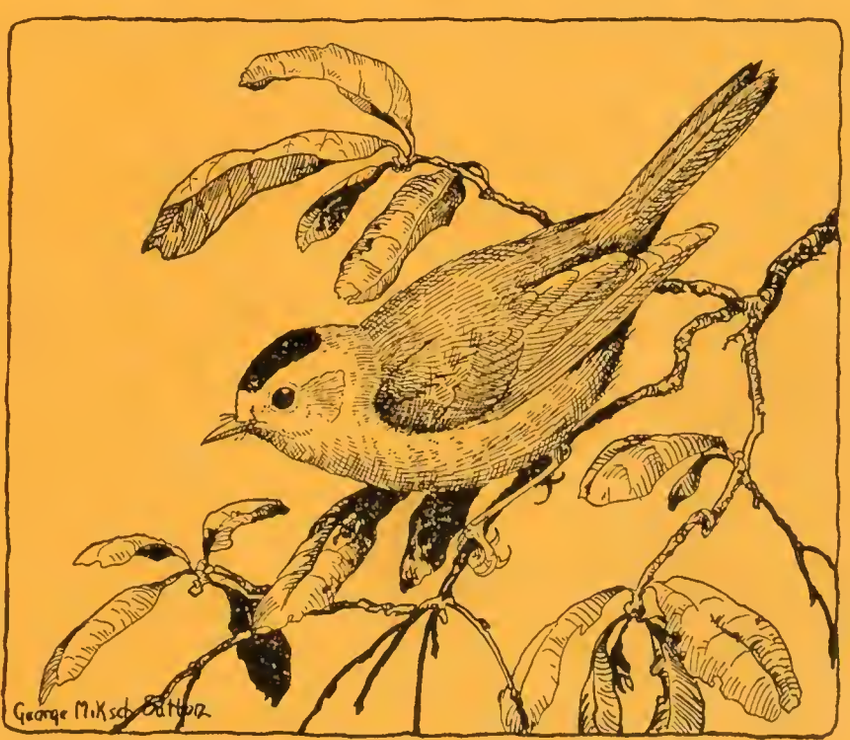
THE WILSON BULLETIN



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THE WILSON BULLETIN

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New subscriptions, changes of address, and applications for membership should be addressed to the Secretary. Personal items, news of events in the scientific world, and other notes suitable for our "Notes Here and There" department may also be addressed to the Secretary.

Claims for lost and undelivered copies of the magazine may be addressed to the Editor.

THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist.

The officers for the current year are:

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The following societies are affiliated organizations:

The Nebraska Ornithologists' Union.
The Iowa Ornithologists' Union.
The Kentucky Ornithological Society.
The Tennessee Ornithological Society.

THE LAST LIVING HEATH HEN ON EARTH?
To the best of human knowledge at present the bird here shown is the last living individual of its kind

THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY
Published by the Wilson Ornithological Club

Vol. XVI JUNE, 1929 No. 2

Vol. XXXVI (New Series) Whole Number 147

THE HEATH HEN CENSUS FOR 1929*

BY ALFRED O. GROSS

With Photographs and Frontispiece by the Author

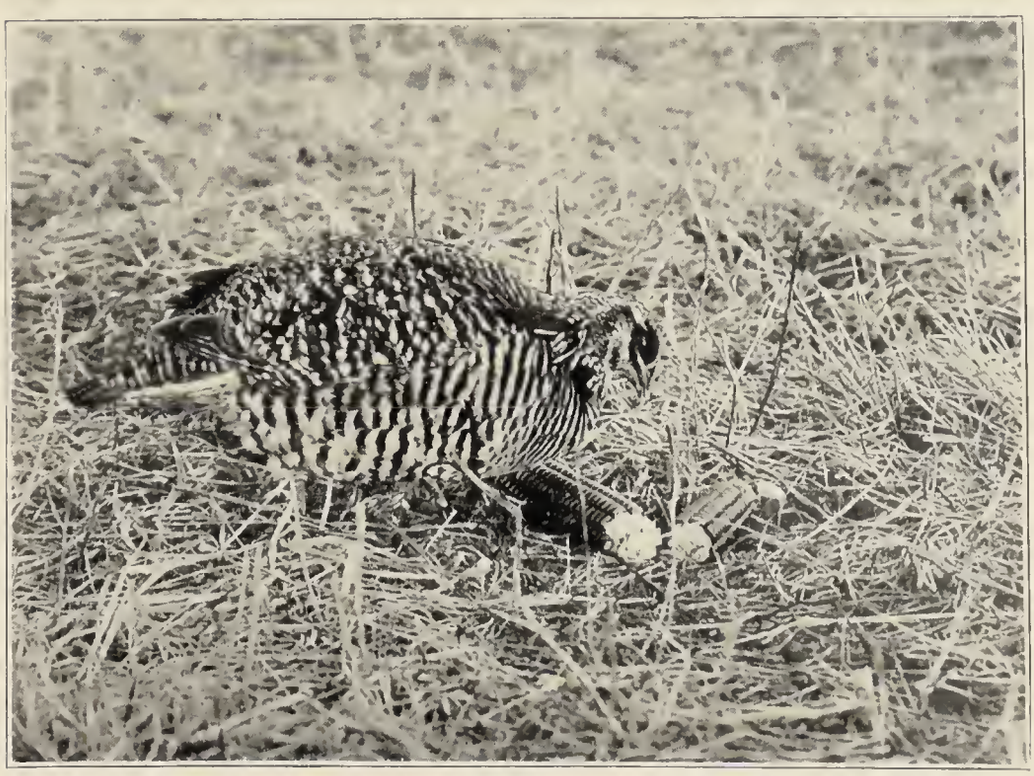
The annual Heath Hen census on Martha's Vineyard Island, Massachusetts, was taken March 30 to April 3, 1929, under the auspices of the Division of Fisheries and Game. The weather conditions were ideal during the entire period of the census. Since the last annual census taken for the Federation of the Bird Clubs of New England, Inc., in April, 1928, all active protection of the Heath Hen has been conducted by the State Department. Mr. Allan Keniston, Superintendent of the Heath Hen Reservation, has continued his trapping operations and vermin control and has thoroughly patrolled the entire region occupied by the Heath Hen. The last birds have been more or less restricted to the vicinity of the farm owned by James Green, located near West Tisbury about four miles from the Heath Hen Reservation.

The recent history of the Heath Hen is well known, but a review of the numbers of birds seen during the past two years will assist us in understanding the present status of the birds. In the 1927 spring census we were able to account for thirteen birds, two of which were females. In the autumn of that year only seven birds made their appearance. This flock appeared regularly on the open meadow at the Green farm, but during the course of the winter it dwindled one by one until only three males remained at the time of the annual census in April, 1928. At the approach of summer the three birds dispersed, as usual, to the scrub oaks where in the course of their wanderings one more bird was lost, as only two Heath Hens returned to the Green farm last fall. Special attention was given to these two birds and an effort was made to locate them each day. According to Mr. Keniston's daily reports they were both at the Green farm until December 8, 1928. Since that date only one bird has been seen.

* The official Report of Dr. Gross to the State Division of Fisheries an Game, Department of Conservation, Massachusetts.

THE HEATH HEN

The two figures shown above are from photographs, taken in the wild, of the last surviving individual of the race. The photographs were made from a blind by Dr. Gross on April 2, 1929. The three pictures shown on this page and in the frontispiece were taken during a period of ten minutes, after which the wary creature left the field and went into the scrub oaks. In one of the pictures the bird was within three feet of the camera.



THE HEATH HEN

The two pictures shown above are from photographs made in the spring of 1924 by Dr. Gross, on Martha's Vineyard Island. The upper picture shows the bird in a characteristic attitude of repose.

The entire region formerly occupied by the Heath Hen has been thoroughly combed again and again in the hope that other individuals would be located. Many interested persons of Martha's Vineyard aided in the search, and every place which could possibly harbor a few birds was visited. To stimulate further efforts to find birds a reward of $100 was offered jointly by Mr. Thornton W. Burgess, Mr. Francis A. Foster, and Mr. John E. Howland, to anyone who would locate three Heath Hen, including a female, in any part of the Island. Later an offer was made by Mr. Burgess to anyone who would locate

Heath Hen Environment

A sample of the scrub oak on Martha's Vineyard Island, in which the Heath Hen has made its last stand, although the one surviving bird known to exist is not on the Reservation.

a single bird other than the one known to be on the Green Farm. These rewards have never been claimed, and therefore it is reasonable to infer that the lone bird at West Tisbury is the very last of his race.

During the census the observers saw the bird each day in the open field near the buildings of the farm. It came out of the scrub oaks bordering the field soon after daylight in the morning, and again late in the afternoon of each day. The bird was wary and seemed constantly alert for any impending danger. It was quick to squat in the grass when a hawk chanced to fly over the field, and at one time the swoop of a Marsh Hawk caused the Heath Hen to fly into its retreat in the scrub oaks. The bird though wary came very near

to our blind at times to feed on the grain and seeds scattered there to attract it. Fortunately, this gave the observers excellent opportunities to make photographs and moving pictures at very close range of the last Heath Hen living a normal life under natural conditions. This last bird is a plump male, and its plumage is in perfect condition: it has every outward appearance of being a perfectly healthy individual.

We did not see the bird "boom" while it was on the field, nor has it been seen or heard to boom by those who have been keeping it under daily observation throughout the spring. One morning, however, we saw it fly to the top of an oak tree, and there it went through a series of characteristic performances. It erected its tail, threw its pinnate feathers forward, spread its primaries firmly against the sides of its body and inflated the orange-colored sacs in the true nuptial dance style. Even from that vantage point there were no fellow Heath Hen to admire or to challenge him. It is unusual to see a Heath Hen perched in a tree, and the "booming" in such a situation is a real departure from the customary performance. But a bird bereft of all of its companions might well be expected to do that which is unusual.

How long this bird will continue to live, whether a day or a year or longer, only time can answer. The death of this bird will also mean the death of its race. It is the intention of the Massachusetts State Division of Fisheries and Game to allow the last Heath Hen to live its remaining days in a normal way among the scrub oaks of its ancestral home on Martha's Vineyard Island. As long as it lives it will be carefully observed and protected by the Superintendent of the Heath Hen Reservation. Never in the history of ornithology has a species been watched in its normal environment down to the very last individual.

Bowdoin College,
Brunswick, Maine.

NESTING OF THE PINE SISKIN IN NORTH DAKOTA

BY RUSSELL REID

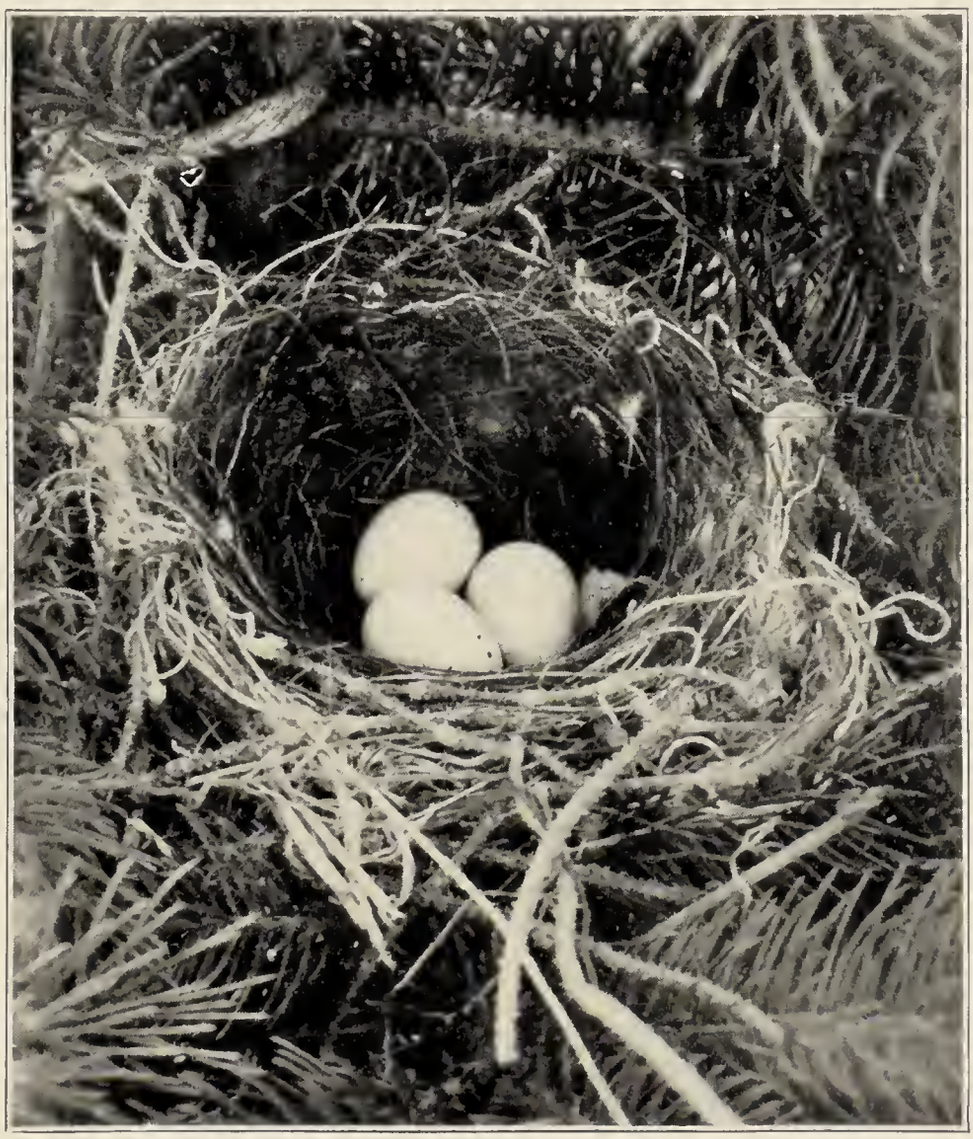
The Pine Siskin (*Spinus pinus*) appears to be a fairly common summer resident in the vicinity of Bismarck, and a few are found during the winter months. Migration records for several years indicate that they arrive in this latitude about the first week in April, in fair numbers. They commence nest building soon after their arrival. After the young have left the nest my records show that none are seen until the latter part of September. I do not know where they go, but pre-

The Pine Siskin on Its Nest
Photographed by Russell Reid at Bismarck, N. D., in 1925

sumably they wander farther north. I have seen siskins every month in the year, except during the hot summer period of July and August. When they again arrive in the fall, the majority of them soon depart for the south. However, they are so erratic that their absence or occurrence can not be depended upon. I have seen them at Bismarck in the latter part of January, during our coldest weather, and again none were seen during the spring of 1927.

Anyone acquainted with the nesting habits of the Pine Siskin can imagine my surprise on finding my first nest at Bismarck. Bismarck

is located on the east bank of the Missouri River, on a semi-arid rolling plain. The elevation is approximately 1650 feet. Trees of any description are rare, except along the course of streams, and there are no native coniferous trees. In Bismarck quite a number of spruce and pine trees have been planted for ornamental purposes.



Nest and Eggs of the Pine Siskin
Photographed by Russell Reid at Bismarck, N. D., in 1925

On April 10, 1925, the first nest was found, well concealed in a small spruce tree about five feet from the fround. It was made of dead spruce twigs, bits of cotton, and rootlets, and lined with horse hair. The nest was rather poorly constructed and loosely placed on the branches. The outside diameter measured three and one-eighth inches and the inside diameter one and one-eighth inches.

The female was not very shy, so I was able to take a photograph of her on the nest. As the owner of the tree was afraid that the tree would be broken down by curious small boys, the nest was removed and given to me. Upon blowing the eggs I found them only slightly incubated.

During April and May of 1925, five other nests were found in Bismarck. The height from the ground ranged from five to twenty-five feet. All were in spruce trees with the exception of one which was in a small boxelder, nearly dead. All of the nests contained three or four eggs or young.

The male is very solicitous as to the welfare of the female, and in all of the nests watched, he was seen feeding her while she sat on the nest. She, in turn, acted like a dependent nestling and greeted his approach with food with a shrill twittering and with fluttering wings. On one occasion he was observed to feed a female on the nest before any eggs were laid. Withal they were extremely interesting birds, and if sufficient time were available an interesting study could be made of them.

I believe the above data comprise the first nesting records for North Dakota.

North Dakota State Historical Society,
Bismarck, N. Dak.

NESTING OF THE PINE SISKIN IN IOWA WITH REMARKS ON REGURGITATIVE FEEDING

BY MRS. MARIE DALES AND WALTER W. BENNETT

This paper records two nestings of the Pine Siskin (*Spinus pinus*) at Sioux City, Iowa. The first nest was found by the senior author while walking through Grandview Park on April 3, 1926. A Pine Siskin was observed to be busily engaged in tearing up an old Goldfinch nest, and carrying the salvaged material to a nearby balsam fir tree, where a new nest was being built on the outer branches about ten feet up. This nest building was continued for several days, but the nest was finally blown down in a heavy storm. A few days later the birds, probably the same pair, came to the senior author's trapping station, about two hundred yards south of the first nest, and gathered cotton. For two days they were seen gathering cotton; then another storm raged and the birds were not seen again.

On May 20, 1928, the senior author was called to see a nest in a small cedar tree on the front lawn of a neighbor, Mrs. Geo. Jepson. Three feet up in an evergreen tree not over four and a half feet high was a Pine Siskin's nest containing four remarkably large eggs for so

Pine Siskin on Its Nest, at Sioux City, Iowa.
Photographed by W. W. Bennett.

small a nest. The female bird was incubating at this time. Two days later one egg hatched, and the following day another egg hatched. The other two eggs disappeared from the nest. As the young birds grew one either fell out, or was crowded out of the nest. On May 30 the nest was empty.

The junior author first visited this nest at 6:30 A. M. on May 23, and found two eggs and two young. One egg was broken. The size of one of the young led to the suspicion that it may have been a Cowbird. The nest was made of weed stems and hair, and was lined with what appeared to be cotton and hair.

The tameness of the adult birds was remarkable. On this occasion the female remained on the nest until the observer came within five feet. Again the female would return to feed or brood the young while the junior author stood within two and a half feet from the nest. She returned to the nest during the placement of the camera twelve feet away, and once when a white card was put up on the edge of the nest for focusing she remained brooding fearlessly behind it. She insisted on brooding the young on this slightly chilly morning.

After a series of motion pictures had been obtained at a distance of twelve feet, the camera was moved to seven feet. While the camera was being focused the male siskin alighted in a nearby elm tree. As he gave the characteristic siskin call there was no muffling of the sound, as might have been expected if the mouth had been full of food. The

male presently flew to the nest, and in order to have some movie pictures of the exchange of places the camera was started. However, the bird on the nest did not leave, and in a moment she had been fed by the male, and by what was undoubtedly a regurgitative method.

The feeding process was a comparatively long one. As the male came near, the female turned her head, both of her mandibles began quivering, just as can be seen when a hen lifts her head after taking a drink. Then the male gave an evident gulp, shown by the movement of the throat feathers, and something whitish and soft appeared at the sides of the beak. The female's bill was opened and the male pushed the regurgitated food into it, the female also doing her part in receiving the food. Then the male's beak was withdrawn, and after another gulp more food appeared, and was fed in the same manner as before. This performance was repeated five times altogether, the female brooding continuously. Toward the end of the feeding as the male withdrew his beak from the female's mouth a string of saliva-like substance stretched between the two bills; this was immediately sucked in by the female. There must have been considerable of it, for there seemed to be a flow of it for nearly fifteen seconds. Then the male flew away.

The junior author believes there is little possibility of his being mistaken in interpreting this as regurgitative feeding. At a distance of a very few feet the male bird's bill was seen open and empty, then followed distinct throat gulps and soft food appeared each time between the mandibles. The female took about all of the food at each feeding that could have been contained within the mouth of the male, and the junior author clearly saw a several-times larger quantity of food pass between the two birds than could have been held in the mouth at one time. It is believed that these facts describe regurgitation.

Our time permitted observation on only this one feeding act on that morning, but we visited the nest again on the morning of May 27, and more motion pictures were made of the birds at the nest. At 6:30 A. M. the nest contained one young bird, which proved to be a Cowbird, and one egg. The female was brooding and did not fly until Mr. Bennett's hand was within a foot of her. We could not determine what had become of the other egg and young bird. The female returned to the nest while the camera was being set up six feet away, then she flew away again.

She did not return again to the nest for twenty-five minutes, and then fed the young Cowbird six or seven times by regurgitation, after

which she carried away the excreta. Thirty minutes later she reappeared and fed the same way again.

On this morning we were impressed by the length of the interval between feedings. Most small birds which bring solid and undigested food to the young make feeding visits every few minutes. With the Pine Siskin the average interval between feeding visits seemed to be twenty-five or thirty minutes.

The young Cowbird is perhaps hereditarily accustomed to more frequent feedings; but when the feedings do come they are voluminous, and the young Cowbird seemed to thrive in spite of the infrequent visits of the foster mother.

Sioux City, Iowa.

THE PINE SISKIN IN NEBRASKA: ITS SEASONAL ABUNDANCE AND NESTING

BY MYRON H. SWENK

Our commonly consulted authorities on bird ranges agree that the Pine Siskin rarely breeds outside of the coniferous forests of the Canadian zone of the North and of the higher mountain ranges. Ridgway in 1901 (Birds of North and Middle America, Part I, p. 98) gave its breeding range as the "northern coniferous forest districts of North America, south to Nova Scotia, New Brunswick, parts of New England, lower Hudson Valley, mountains of Pennsylvania and southward to high mountains of North Carolina, Minnesota, etc., and on the high western ranges quite to the southern boundary of the United States." The American Ornithologists' Union Committee in 1910 (Check-List of North American Birds, third edition, revised, p. 250) stated that the species "breeds mainly in Canadian zone from central Alaska, southern Mackenzie, southern Keewatin, and southern Ungava south through the higher mountains of western United States to San Pedro Martir, Lower California, and southern New Mexico, and to northern Minnesota, northern Michigan, New Brunswick, Nova Scotia, and in mountains to North Carolina, and casually in the lower Hudson Valley and Massachusetts." As a matter of fact, however, the Pine Siskin is a rather common breeder, at least in certain years, in eastern Nebraska and other parts of the upper Missouri Valley, in purely Upper Austral zone territory. There are over twenty well-authenticated records of the nesting of the Pine Siskin in Nebraska.

It is well known that the Pine Siskin is one of our most irregular birds in its migratory movements. Here in southeastern Nebraska,

as elsewhere in its winter range, in some winters this bird is present in abundance, while in other winters very few or none are seen in the same localities. Also it may be plentiful in one locality and scarce or absent in another locality a hundred miles or even less away. In most years the siskins appear in October and November, first in small numbers and later in larger flocks, and remain in suitable localities in greater or less numbers through the winter. They usually increase in numbers, often markedly, and in many seasons nest to a limited extent, during March, April or May. Then sometime between March and late May or early June they disappear, not to return before the following fall. The Pine Siskin is thus unlike our other winter residents in that it is also a breeder, and unlike our other breeders in that it is not a summer resident, thus making its status rather anomalous. It may perhaps best be described as an uncommon to abundant, irregular winter visitor and an irregular but sometimes common breeder over most of Nebraska.

The students of Nebraska birds prior to 1900 noted the presence of the Pine Siskin in the state, but apparently did not suspect that it might be a breeder here. Professor Bruner noted the presence of this bird in the vicinity of West Point during the season of 1881-82, and later on observed it at Omaha. Mr. D. H. Talbot reported its presence in the state in the fall of 1884, when a male was collected by him at Genoa on September 30, and a female at Wood River on November 24. Mr. W. E. Taylor in 1888 recorded two specimens taken in December, 1887, at Peru, Nebraska. Both Mr. L. Skow and Mr. I. S. Trostler reported its occurrence at Omaha prior to 1896, the latter referring to it as "an irregular migrant and winter resident—earliest seen October 10." During February, 1897, there apparently was quite an abundance of the Pine Siskin in the vicinity of Lincoln. Mr. J. S. Hunter first reported the presence of these birds on the 6th of that month, when he collected several specimens. Other specimens were collected on the 13th by Mr. Hunter, but we have no further evidence as to how long the birds remained about that year.

There are no 1897-1898 records of the Pine Siskin from Nebraska, but the birds again appeared in abundance in 1898-1899. They were first reported from Long Pine, in north-central Nebraska, on February 15, 1899, by Mr. William Smith. Mr. Merritt Cary found them at Neligh during the same winter, and wrote of them as "a common but irregular migrant and winter resident" in that locality. At Beatrice during the spring of 1899 the writer found Pine Siskins in abundance. The first ones were seen on April 23—a pair of them—but by early May

they were very abundant in the vicinity, and remained so through most of the month. Mr. J. S. Hunter reports that there were large numbers of Pine Siskins near Lincoln during the winter of 1898. They were common during the spring of 1899 and remained until after the middle of May. Pine Siskins were apparently absent in southeastern Nebraska during the seasons of 1899-1900, 1900-1901, 1901-1902 and 1902-1903.

In the Pine Ridge of northwestern Nebraska Pine Siskins are probably to be found in greater or less numbers the year around, though there are no actual records of their having been either seen or taken there in the winter, either by Bruner and Hunter in 1895-1896 or Zimmer in 1910-1911. Cary and Carriker noted them at intervals among the pines during July, 1901, and thought they might breed there, and the same surmise was made by Bruner, Wolcott and Swenk in 1904 (Preliminary Review of Nebraska Birds, p. 84).

Hardly had the surmise that the Pine Siskin might nest in the Pine Ridge been published in 1904 before the bird was actually found nesting in the state, but, surprisingly enough, in its extreme other end. These birds were quite common in southeastern Nebraska during April and early May of 1904. This first record of the breeding of the Pine Siskin in Nebraska was made by J. E. Wallace of Omaha, on May 7, 1904. On that day he was exploring the lowlands at Child's Point south of Omaha, when between the railroad tracks and the Missouri River, on the west side of Mosquito Lake, he found a nest of this bird in a boxelder tree about twenty to twenty-four feet from the ground. The birds were still building on that date, but they had the nest nearly completed. They were very tame, and as Mr. Wallace examined the nest they came within two or three feet of him and displayed considerable excitement over his presence. This excellent view of the birds made the identification very positive.

Immediately upon his return to Omaha, Mr. Wallace wrote to Prof. L. Bruner concerning his find, and on May 9 Prof. Bruner replied, advising Wallace to secure the nest and eggs with the birds to definitely establish this seemingly extraordinary record. Mr. Wallace waited for a few days, and upon about May 13 he revisited the nest, but did not find the old birds there. The nest contained three eggs of the siskin and one Cowbird's egg. The eggs were not taken at the time, but Mr. Wallace returned the next day and found the nest yet deserted and the eggs cold. Evidently the presence of the Cowbird's egg or some other disturbing factor had caused the birds to desert their nest. On this third trip Mr. Wallace took the nest and eggs and sent them to Dr. R. H. Wolcott, of Lincoln, but unfortunately

the eggs were broken in transit. The nest is in Dr. Wolcott's possession.

The seasons of 1904-1905 and 1905-1906 were not marked by the presence of Pine Siskins in numbers in southeastern Nebraska. Reverend J. M. Bates found these birds at Red Cloud on March 25, 1905, but no evidence of nesting was seen. None at all were reported for 1905-1906. But in the spring of 1907 they reappeared in abundance all over southeastern Nebraska. Mrs. H. C. Johnston reports that in March, 1907, a pair of Pine Siskins built a nest in a cedar tree in her mother's yard at Superior. The tree was close by the walk and was passed every time anyone went to the house. It was only about three feet above the ground. The bird was so tame that she would stay on the nest while being observed. Eggs were laid in this nest, but before they hatched they were destroyed by a bad sleet storm, which broke down the nest. Pine Siskins were abundant all over Superior in the spring of 1907, and probably there were other unobserved cases of their nesting there. These birds were very common during that spring, in April and May, on the State Capitol Square at Lincoln, and elsewhere in town. The writer noted them as especially common from April 20 to May 12. On May 28, 1907, Prof. L. Bruner was walking across Capitol Square when he saw a Pine Siskin, probably a female, carrying a long thread. He watched it and found that a nest platform had been formed, indicating a well-developed start of a nest. The other bird, probably the male, was flying about and on the ground. This nest was watched daily, without in any way disturbing the birds, but on May 31 the partially constructed nest was found lying upside down upon the ground and the birds were nowhere to be seen. No other nests were found, although the locality was carefully watched by the local ornithologists. Several writers have noted that the Pine Siskin was particularly abundant over its wintering range in the winter of 1906-1907 and remained unusually late during the cold spring of 1907.

Pine Siskins were not plentiful in southeastern Nebraska in the season of 1907-1908. They appeared at Lincoln on October 18, 1907, but were not seen during the winter nor during the spring of 1908. They were more plentiful in 1908-1909. In the fall of 1908 they were first noted on October 12 and were present until December 12. They were not seen during the winter, but reappeared in May, 1909, when they were common from May 13 to 23. No nests were found, however, in the spring of 1909. The season of 1909-1910 was one marked by the apparent absence of Pine Siskins over all of southeastern Nebraska. At least no one reported seeing them.

In the fall of 1910 the first Pine Siskin was noted by the writer at Halsey, Thomas County, in the center of the sandhill region of Nebraska, on October 28, when one individual was noted and collected. By November 20 they were present as far east as Lincoln. The following spring they became very numerous in the vicinity of Lincoln. The writer noted them on March 13, 18, 19, 22 and 30, and on the latter date they were distributed in pairs. The same was true on April 11 and May 3, 6 and 7. On May 6, 1911, on the ninth annual field day of the Nebraska Ornithologists' Union, the fourth nest of the Pine Siskin, with a sitting bird upon it, was found in a pine tree about twenty feet up at Capitol Beach, west of Lincoln, by Mr. F. H. Shoemaker. Mr. J. T. Zimmer climbed the tree and found that the nest contained one egg, which, it was finally decided, would be collected, but unfortunately in returning to the ground the egg was crushed. It was perfectly fresh. Mr. Zimmer has the nest in his collection at the present time. Later in the same month, Dr. R. H. Wolcott found three nests of the Pine Siskin within the city limits of Lincoln near 21st and A Streets, one in an elm tree and the other two in pine trees. None of these nests or their eggs were collected. Mr. C. S. Ludlow reports that Pine Siskins were present at Red Cloud from April 20 to May 21, 1911, but there is no evidence that they nested there that spring.

Pine Siskins were present, but not common, during the season of 1911-1912. They appeared at Lincoln on November 4, 1911, and the writer saw them in the spring of 1912 on April 5 and again on May 11. Mr. C. S. Ludlow reports them at Red Cloud on January 4, 1912. There are no records of the presence of these birds in this region during 1912-1913. In the season of 1913-1914 they were fairly plentiful at Lincoln in the fall of 1913, on various dates—October 25, December 13 and 28—and a few of them apparently wintered—February 28, 1914—but early in March of 1914 they appeared in abundance and continued so until well toward the middle of May. Dates on which they were seen at Lincoln are March 5, 6, 22, 25, 29 and 31, April 1, 4, 7, 11, 15, 16, 20, 21, 22, 23, 24, 29 and 30, May 3, 5, 6, 7, 10, 11, 13, 15 and 16. In spite of this abundance all through the spring of 1914 at Lincoln, no one reported finding a nest. Mr. C. S. Ludlow reported Pine Siskins at Red Cloud on April 2, 1914.

Pine Siskins were not seen in southeastern Nebraska in the fall of 1914, according to our records, but they appeared in January at Lincoln—January 10, 1915—and another spring tide of abundance of siskins appeared late in March and continued until the end of May.

The writer noted the first ones on March 28 and the last ones on May 30, 1915. Others noted them on March 30 and 31 and April 3, 10, 13, 15, 16, 22, 25 and 27. On May 16, 1915, the fifth Nebraska nest of the Pine Siskin was found, this time in Wyuka Cemetery at Lincoln, by Mr. R. W. Dawson. At the time of discovery the nest had one young siskin in it and a Cowbird was on the ground under the nest. Both old siskins were about and were observed to feed both the siskin in the nest and the Cowbird on the ground. The nest was later collected. This was the same year that the nest was found at Sioux City, Iowa (Wilson Bulletin, xxvi, pp. 140-146). Mrs. C. S. Ludlow found the Pine Siskin at Red Cloud on February 26, 1915, and Mr. L. M. Gates noted these birds at Haigler, Dundy County, extreme southwestern Nebraska, on May 18 and 20, 1915.

The season of 1915-1916 was a poor one for Pine Siskins. None were seen in the fall of 1915. A few were seen in the winter of 1915-1916—January 2, 1916, at Lincoln—and a few during early May —May 2, 1916, at Lincoln. Mr. C. S. Ludlow noted them at Red Cloud on March 15, 1916.

But the season of 1916-1917 was the banner year for all years so far, for Pine Siskins in southeastern Nebraska and for Pine Siskin nests. At Lincoln the birds appeared about the middle of November —November 14—and remained in fair numbers on through the fall and following winter. They were reported by various observers on November 19, 26, 29, December 2, 3, 30, January 1, 7 and 31. About the middle of March there was a great spring influx of Pine Siskins, and the birds remained until early in June. Dates on which they were reported in the spring of 1917 are March 15, 18, 25, 28 and 31, April 8, 14, 15, 18, 19, 22, 24 and 29, May 4, 5, 6, 7, 8, 13, 15 and 22. The last ones were seen on June 3. During March and April seven nests were found in Wyuka Cemetery at Lincoln. These records may be summarized as follows:

1. March 15. Mr. C. E. Mickel found a nest yet in process of construction, but nearly completed, in an Austrian pine about eighteen feet up. The birds were about the nest on March 18 and 25, but had deserted it on the 28th, and were not subsequently seen.

2. March 18. Messrs. C. E. Mickel and R. W. Dawson found a nest well started, but it was never completed.

3. March 31. Messrs. C. E. Mickel and H. B. Lowry found a fully built nest in a cedar tree with the birds hovering about. Later they were unable to relocate the nest and probably it had been destroyed.

4. April 18. Mr. C. E. Mickel found a nest in a cedar tree ten feet up. The female was on the nest when it was found. It contained four very slightly incubated eggs. The nest was made of pine and cedar twigs, weed stems and cord, and was lined with rootlets and horse hair.

5. April 19. Mr. C. E. Mickel found a partially constructed nest, about two-thirds completed.

6. April 22. Mr. C. E. Mickel found a nest with a sitting bird on it in a spruce tree about twenty feet up. It contained three eggs. The nest was similar in construction to the one found on April 18.

7. April 24. Mr. C. E. Mickel found a nest about half finished. The birds deserted this nest after its discovery.

Pine Siskins, in pairs, continued very common in Wyuka Cemetery through the rest of April and the first half of May, 1917. Without a doubt other nests could have been found if searched for, but the finding of Pine Siskin nests was losing something of its novelty and in the pressure of other things the search for them languished. Paired Pine Siskins were common in other parts of Lincoln aside from Wyuka Cemetery, and no doubt were breeding. Mr. C. S. Ludlow reports that Pine Siskins were present at Red Cloud through the winter of 1916-1917, from December 2 to February 25, even in January.

The seasons of 1917-1918 and 1918-1919 were not Pine Siskin seasons. None of them were seen at Lincoln during these seasons. At Red Cloud Mr. C. S. Ludlow observed them on April 12, 1918. The season of 1919-1920 witnessed a return of the siskins. At Lincoln they were first noted on February 8, 1920, and were last noted on April 7. The species was noted on the eighteenth annual field day of the Nebraska Ornithologists' Union at Ashland on May 15. Mr. C. S. Ludlow found them at Red Cloud on May 13, 1920. In the spring of 1920 they were common around Hastings, where in May of that spring Mr. J. E. Wallace found a nest with two young birds in it, constituting the thirteenth definitely known nesting in the state. This nest is now No. 2676 in the A. M. Brooking collection at Hastings.

The seasons of 1920-1921 and 1921-1922 were seasons of Pine Siskin scarcity. Mrs. H. F. Hole noted this bird at Fairbury on February 23, 1921, and Mr. C. S. Ludlow noted it at Red Cloud on March 11 and April 4, 1922, but there do not seem to be any Lincoln records of it during either of these seasons.

Then the siskins returned again in 1922-1923. They were very numerous around town at Fairbury during the winter of 1922-1923,

Nest of the Pine Siskin found at Lincoln, Nebraska, by Mr. C. E. Mickel, on April 22, 1917, in a spruce tree about twenty feet up. Side view (upper figure) and top view (lower figure).

aeeording to Mrs. H. F. Hole, and remained at least until Mareh 27, 1923. At Superior, Mrs. H. C. Johnston found a pair of Pine Siskins in her father's yard early in April of 1923, and on April 11 they started to build a nest about ten feet up in a Scotch pine tree. They were noted flying to this place in the tree with grass in their beaks, which activity seemed to stir the resentment of the Bronzed Grackles, and the siskins were driven away, thus preventing the realization of another nesting record. However, Pine Siskin nests were found at Lineoln in the spring of 1923 by Mr. Leonard Worley, one late in April and the other early in May of that year, these constituting the fourteenth and fifteenth breeding reeords. Mr. Ludlow found the siskins at Red Cloud on April 12, 1923.

Siskins were again plentiful during the season of 1923-1924. They were again numerous around town in Fairbury during the winter of 1923-1924 according to Mrs. H. F. Hole. They appeared there on January 28, 1924, and during the following spring a flock of them eame nearly every day, and often twice a day, to eat seeds from the pine cones in Mrs. Hole's yard. As spring progressed the flock gradually grew smaller until only one pair was left. For a period of about two weeks in the latter part of April only one bird came to feed in Mrs. Hole's yard, but in May there were again two of them, and they remained through most of the month. Mrs. Hole was not able to find any nest of this pair nor did she see any young that spring at Fairbury. However, on May 10, 1924, while birding in Wyuka Cemetery at Lincoln, Mrs. Hole, accompanied by Mrs. Cropsey and Mrs. McCoy of Fairbury, found a nest of the Pine Siskin about eight feet up in a small pine tree. The female bird was on the nest, while the male bird ehirped and called and tried to frighten the observers away when he realized that the nest had been discovered. This nest was not disturbed, but it constitutes the sixteenth breeding record for the state. Mrs. A. H. Jones reports that Pine Siskins were present in unusual numbers at Hastings during the spring of 1924, and one pair that made her home their headquarters remained until June 2, under conditions that pointed to possible breeding. Mr. Ludlow reports Pine Siskins at Red Cloud on January 13, 1924.

The Pine Siskin remained in small numbers during the winter of 1924-1925 at Lincoln, Hastings, and other localities in southeastern Nebraska, but for its nesting operations in the spring of 1925 chose south-eentral Nebraska along the Republican River, in the vicinity of Superior and Red Cloud. On March 26, 1925, at Red Cloud, Mr. C. S. Ludlow observed a Pine Siskin gathering nesting material, as if pre-

paring to build, but no nests were actually found by him. A little earlier in March, on the 15th, these birds had appeared in the vicinity of Superior, and they remained there through the spring. On April 8 Mrs. King of Superior, found a crippled female Pine Siskin in her yard. She put it in a cage and it laid an egg there. Later on in the same month the siskins were found actually nesting in several places around Superior. The twenty-third annual field day of the Nebraska Ornithologists' Union was held at Superior on May 9, and the birds were still common in that vicinity on that date. A few remained about Omaha until early April but were not observed nesting in that locality in 1925. The same was true at Lincoln.

The fall, winter and spring season of 1925-1926 was marked by a general plentitude of the Pine Siskin in southeastern Nebraska. At Omaha they were first seen on October 4, 1925 (L. O. Horsky). Some remained through the winter, five or six being seen by Dr. C. A. Mitchell on January 14, 1926, and four by Dr. Mitchell and the Misses Mary and Emma Ellsworth on January 17. They were common by middle April, and even as late as May 16, on the occasion of the twenty-fourth N. O. U. field day, they were still present around Omaha. The Fairbury Bird Club reported a large flock of them as appearing in that locality on October 6, 1925, some remaining during the winter, while at least until early in April they were to be found in the Fairbury vicinity. At Hastings they made their first appearance October 15, 1925, and some were observed during the winter, while during the week of February 21, 1926, large numbers of them appeared about town, and they were still numerous on March 23. Mrs. L. R. Button noted them on December 23, 1925, and January 18, 1926, at Fremont. At Red Cloud they were first seen that winter on January 20, 1926—eight of them —then again on February 2—six of them—while by March 10 a flock of forty-eight was present, according to Mr. C. S. Ludlow. The Superior Bird Club reported them as plentiful at that place by March 10, 1926. At Lincoln they began to be noted early in February of 1926, and by about the middle of March had become conspicuously numerous. There is little doubt but that there were some Pine Siskins nesting around Omaha, Lincoln, Fairbury, Superior, Red Cloud and Hastings in the early spring of 1926, but no nests were actually discovered at any of these places that spring. The only case of the nest of the Pine Siskin actually being found was at Wahoo, Saunders County, north of Lincoln.

On or about March 15, 1926, a pair of Pine Siskins appeared in the yard of Miss Mary St. Martin of Wahoo. On March 22 she dis-

covered that they were building a nest in a cedar tree about ten or twelve feet from her porch. When discovered, the nest was all ready to be lined. The nest was finished on March 27. Late on the evening of March 27 a heavy snowfall came, and the nest was not sufficiently protected by the cedar twigs but that it became filled with snow. By March 29 the snow had all thawed out and the female Pine Siskin was back in the nest, repairing the damage that had been done as well as she could. Before 3 o'clock in the afternoon of that same day, March 29, the first egg had been laid. Another egg was laid on March 30 and a third one on March 31. On the morning of April 1 Miss St. Martin heard excited bird calls in her yard, and on investigating found the Pine Siskin nest tipped over and the eggs on the ground. One of the eggs was broken and the other two were frozen and cracked. so that they could not be saved. The nest seemed to have a defect in construction that prevented its being fastened tightly enough to withstand the stormy weather of the period. The siskins stayed around the place most of the day on April 1, but at last they left and did not return. This constitutes the eighteenth nesting record for Nebraska.

The season of 1926-1927 was one of Pine Siskin scarcity, much in contrast with 1925-1926. The species was wholly wanting in the Lincoln and Fairbury vicinities during the entire fall, winter and spring. At Hastings not a single siskin was seen by any of the numerous local observers during the entire fall of 1926 and the following winter, the first observation of the species for the entire season being on March 10, 1927, by Mr. A. M. Brooking. At Omaha, Dr. C. A. Mitchell observed four siskins on March 14, 1927, and that was all. The Superior Bird Club noted the siskin once—on April 6. No one reported it from Red Cloud. Naturally, there were no nesting records for 1927. Near Mitchell, in Scottsbluff County, extreme western Nebraska, however, Mrs. J. W. Hall noted eight of them on March 27, 1927, and by May 22 they were abundant in that locality, feednig on the dandelion seeds along with the Pale Goldfinches.

But in the season of 1927-1928 the siskins returned in force. They were first reported from Hastings, in the fall of 1927, Miss Margaret Diemer noting ten of them on November 20. Mrs. A. H. Jones noted more of them there on November 25, and on November 29 she saw a flock of at least fifty siskins. They were also present along the Blue River south of Hastings, where members of the Brooking Bird Club saw eleven of them on December 23. Pine Siskins were numerous at Hastings, about town, all through the winter of 1927-1928, being seen in the yards and about the bird baths in various parts of the city

every day—a very different condition than had obtained the preceding winter. On April 21, 1928, Mrs. A. H. Jones found a young Pine Siskin, recently out of the nest, in her back yard. The following day it was rescued from the eaves pipe, where it had been imprisoned for a couple of hours, and, after being photographed by Miss Diemer, was restored to its parents. This forms the nineteenth nesting record for Nebraska. Pine Siskins were common and in pairs at Hastings up to May 19, and practically without doubt there were other, and undiscovered, cases of nesting by these birds there during that spring.

At Fremont, Mrs. L. R. Button found Pine Siskins from December 26, 1927, when twenty-five of them were noted, very numerously all through the winter of 1927-1928. At Lincoln Mr. L. H. Watson observed a single Pine Siskin on December 26, 1927, but the species was not again observed during the winter. However, about March 20, 1928, Pine Siskins suddenly appeared in numbers in east Lincoln—at the College of Agriculture campus, in Wyuka Cemetery, and elsewhere—and remained very common until well along in May. They were still common on May 12, on the twenty-sixth annual field day of the N. O. U. A pair of them appeared in my pine trees on March 22, the male in full song, and between then and April 3 Mrs. Swenk secured numerous records of the song of the species. They remained for several weeks, and I have no doubt they nested in the immediate neighborhood but lack of time prevented my exactly locating the nest. Mrs. C. W. McCaskill noted several of them wintering at Beatrice. January 9, 1928.

In the Omaha vicinity Pine Siskins were first noted by Dr. C. A. Mitchell on January 27, 1928. On February 25 the Misses Ellsworth saw a flock of thirty in Forest Lawn Cemetery. They increased in commonness during March and April, and on May 13, Mr. L. O. Horsky had the pleasure of examining a nest of this bird in a cedar tree west of the residence of Mr. Leonard Nicholas, 6218 Spencer Street, Benson. On May 21 three young siskins left this nest, and as they did so they were banded by Mr. Horsky. This constitutes the twentieth definite breeding record for the state.

At Red Cloud Mr. C. S. Ludlow noted his first Pine Siskins of the season on February 7, 1928—a flock of thirty-eight of them—and Mrs. George W. Trine saw a small flock as late as April 14, but no definite nesting records were made. The siskins appeared at Fairbury on February 15, 1928, and were seen from then on. A pair of them

located in the yard of Mrs. H. F. Hole of Fairbury, and were seen every day, the male in full song early in May. Mrs. Hole was sure the birds were nesting in the neighborhood but could not find the nest. However, on May 30 and 31 and June 1 and 2, young birds were seen with the old pair of Pine Siskins, thus definitely demonstrating that the birds had been nesting in the vicinity and constituting the twenty-first record. Thus in the spring of 1928 the Pine Siskin was proved to have nested at Omaha, Fairbury and Hastings, and probably did so also at Lincoln.

Summarizing the above records, it is seen that the Pine Siskin nested in southeastern Nebraska in the springs of 1904, 1907, 1911, 1915, 1917, 1920, 1923, 1924, 1925, 1926 and 1928. In addition, it was common during the springs of 1899, 1909 and 1914. During the seasons of 1900, 1901, 1902, 1903, 1905, 1906, 1908, 1910, 1912, 1913, 1916, 1918, 1919, 1921, 1922 and 1927 these birds were either uncommon or absent in southeastern Nebraska. The question at once arises why should the Pine Siskin be common, linger late and frequently nest in some springs, in southeastern Nebraska, while in other springs it is uncommon or not present. Can this be due to the character of the spring itself?

As a step in answering this inquiry the writer tabulated temperature records for Lincoln for the months of March, April and May of the thirty-year period from 1899 to 1928, inclusive, from the records of the Lincoln Station of the Weather Bureau of the U. S. Department of Agriculture, located at the University of Nebraska, with the following results:

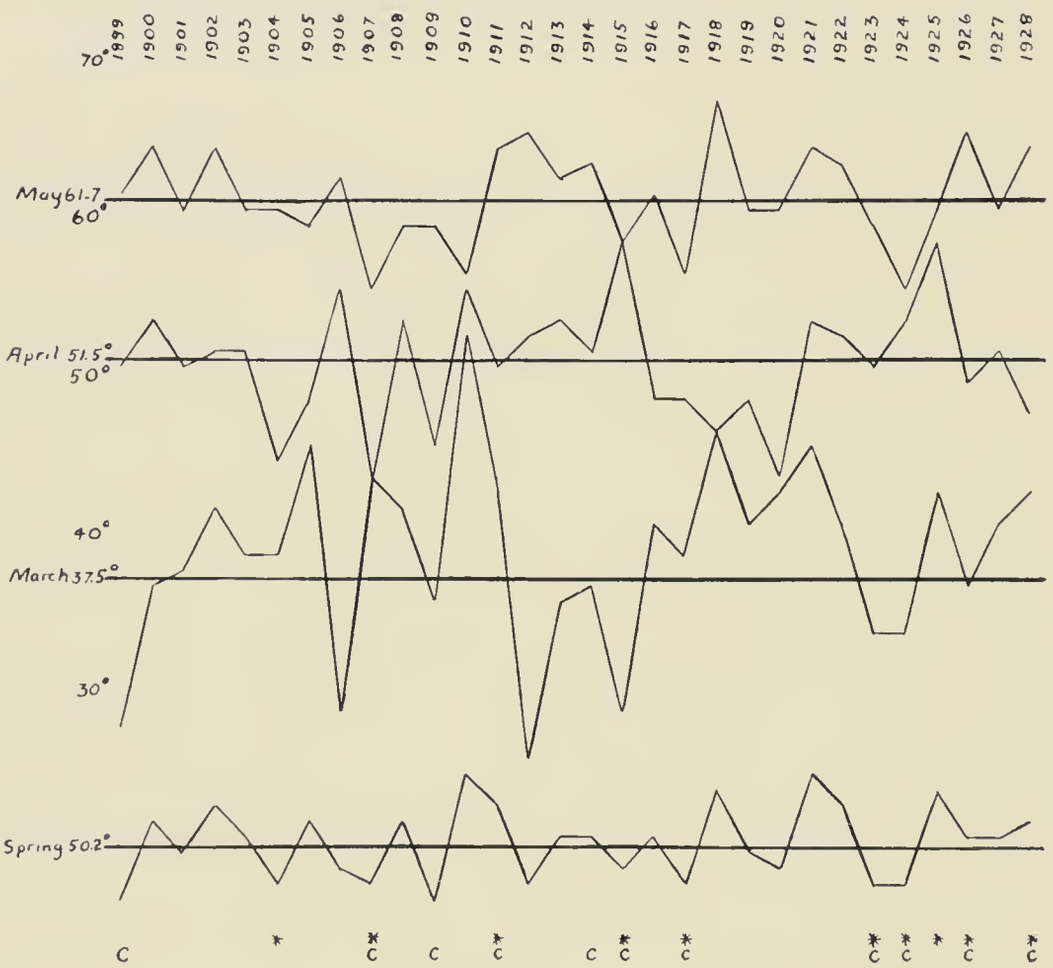
Table 1. Monthly mean temperature for the months of March, April and May, and for these three months combined, for the thirty-year period from 1899 to 1928, inclusive.

	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
March	28	37	38	42	39	39	46	29	44	42
April	51	54	51	52	52	45	49	56	44	54
May	62	65	61	65	61	61	60	63	56	60
Average	47	52	50	53	51	48	52	49	48	52

	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
March	36	53	43	26	36	37	29	41	39	47
April	46	56	51	53	54	52	59	49	49	47
May	60	57	65	66	63	64	59	62	57	68
Average	47	55	53	48	51	51	49	51	48	54

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
March	41	43	46	41	34	34	43	37	41	43
April	49	44	54	53	51	54	59	50	52	48
May	61	61	65	64	60	56	61	66	61	65
Average	50	49	55	53	48	48	54	51	51	52

Graph below shows the monthly mean temperatures for the months of March, April and May, and the average monthly mean temperature for these three months combined, for the fifty-seven-year period from 1881 to 1928, inclusive, as recorded by the Lincoln Station of the Weather Bureau of the U. S. Department of Agriculture, located at the University of Nebraska, in relation to the springs in which the Pine Siskin nested (*) or was common (c), or both, in southeastern Nebraska.



The significance of these records is brought out when they are compared with the fact that the average monthly mean temperature at Lincoln for the forty-seven year period from 1881 to 1928, inclusive, is 37.5 for March, 51.5 for April and 61.7 for May, and 50.2 for these three spring months. It will be seen that during the springs of 1899, 1904, 1906, 1907, 1909, 1912, 1915, 1917, 1920, 1923 and 1924 the mean temperature for the months of March, April and May was distinctly lower than the forty-seven year average, or normal, for these months, and during nine of these eleven springs the Pine Siskin was either common or nesting, or both, at Lincoln, the exceptions being the springs of 1906 and 1912. However, the Pine Siskin nested in southeastern Nebraska in the springs of 1911, 1925, 1926 and 1928,

and was common in the spring of 1914, all of which, as a whole, were springs of higher than normal average temperature. Comparing next the mean temperature at Lincoln for the month of April for the thirty years under consideration, we find that during each of the fourteen springs in which the Pine Siskin nested or was common, or both, in southeastern Nebraska, the mean temperature for the month of April was more or less subnormal except in four Aprils—1914 and 1915 and 1924 and 1925. In April 1904, 1907, 1909, 1917, 1920 and 1928, in all of which springs the Pine Siskin bred in southeastern Nebraska, except in 1909 when they were common but not found nesting, the temperature of the month was considerably subnormal. In two of the exceptional springs—1915 and 1924—although April temperatures were above normal, those for both March and May were decidedly subnormal, especially in March, 1915, and May, 1924, so that the mean temperature for the entire spring was subnormal in both of those years. The spring of 1914 had very slightly subnormal temperature in March but slightly supernormal temperature in April and distinctly supernormal temperature in May, making the temperature for the entire spring slightly above normal, and it is perhaps significant that although the Pine Siskins were common at Lincoln until the middle of May there was no evidence of their nesting there that spring. In March and April of 1925 temperatures at Lincoln were strongly above normal (+5.5 and +7.5, respectively), and only slightly below normal (−.7) in May. However, these birds were not common around Lincoln or elsewhere in eastern Nebraska in the spring of 1925, but were common and breeding along the Republican River in the vicinity of Superior, and probably of Red Cloud, twenty-five miles to the west. At Red Cloud, interestingly enough, unlike at Lincoln, temperatures for March and April of 1925 were only *slightly* above normal (+.57 and +.72, respectively), and were slightly below normal (−.09 in May). Probably this difference in April and May mean temperatures between Lincoln and Red Cloud explains why the Pine Siskins were absent at Lincoln but nested at Superior.

Another point of interest in this study is that the Pine Siskin nested at Superior in March, 1907, at Lincoln in March, 1917, at Superior in March, 1925, and at Wahoo in March, 1926, and that in three of these years—1907, 1917 and 1925—the temperature of the month was distinctly above normal, while in 1926 it was practically at normal.

From these data it seems apparent that when, in any locality in southeastern Nebraska, March temperatures are normal or above and

the birds are common, there may be sporadic nesting, or attempts to nest, by the Pine Siskins. If the mean temperature for the month of April is subnormal the siskins will probably linger and frequently will nest and succesfully rear their young. They may do this also in May if supernormal April temperatures are followed by decidedly subnormal May temperatures, as they did in 1915 and 1924. If March and April have about normal temperatures and in May the temperature rises above the normal, the Pine Siskins may linger but not nest. In years like 1900, 1902, 1906, 1912, 1921, and 1922, when both April and May temperatures are above normal, the Pine Siskins do not linger commonly, nor nest. This may also be true when only April has a mean temperature above normal, as in 1903, 1908, 1910 and 1927, or when May temperatures are above normal, as in 1913, 1916 and especially 1918. In other words, the available evidence seems to the writer to make a quite clear case that the lingering and nesting of the Pine Siskin in southeastern Nebraska during some seasons may be accounted for wholly on the basis of its response to prevailing temperatures during the spring months.

Judging from the fact that in the various falls that they have occurred in Nebraska the Pine Siskins usually have been seen first in the more westerly and northerly parts of the state, and later in the more southeastern localities, and also from the further fact that they may reach western or central Nebraska commonly in seasons when they are uncommon or absent in extreme southeastern Nebraska, it is probable our Pine Siskin winter visitors are birds that summer in the Black Hills and those parts of the Rocky Mountains at a corresponding latitude, or northward.

College of Agriculture, University of Nebraska,
Lincoln, Nebraska.

NOTES ON BIRD MIMICRY WITH SPECIAL REFERENCE TO THE MOCKINGBIRD (*MIMUS POLYGLOTTOS*)

BY FRANK F. GANDER

I have studied the songs of Mockingbirds throughout a large part of their range and everywhere have found them to be exuberant songsters, bubbling over with the joy of life. But what variety of song and what wide range in ability for mimicry I have found! Some individuals have been so limited in their repertoire as to almost weary one with their endless repetition; others have caused me to marvel at the excellence of their imitations of varied sounds, but the song which I remember above all others is the impassioned outburst which kept myself and a number of others enthralled for many minutes one spring morning in 1918, down in Bibb County, Georgia. This mocker was a master artist and I was so thrilled by his wonderful melody that I forgot to listen for imitated calls and if such there were, they were so blended and woven into the beautiful harmony as not to be noted by me.

I first heard the song of a Mockingbird in my early boyhood days in Kansas. They were then just invading that region and were not common, so that I was greatly enthused each time I heard one. Later, in Escambia County, Florida, I found them abundant and enjoyed their singing almost daily throughout the spring and summer months. There is something very romantic about the night song of these southern mockers. They seem to weave it from the witchery of the moonlight, the fragrance of magnolia blossoms, the whispering of the little breeze in the palms and pour it forth in a silvery flood of vibrant notes. Their song seems to be the magic voice of the night itself.

My most interesting experiences with Mockingbirds did not occur where they are abundant. The first of these was in July, 1922, near the head of Matagorda Bay on the Texas coast. I had been motoring with relatives and in mid-afternoon we stopped near an old deserted farmhouse where we expected to camp for the night. As we were making camp, the song of a Mockingbird came faintly to our ears from the direction of another farmhouse which we could see out on the prairie. My first reaction to any bird call is to attempt an imitation in answer, so I promptly called to this distant mocker, putting more effort into the force of my whistling than into its quality. After one or two attempts on my part I listened in vain for an answer and I was rather chagrined, especially as smiles spread over the faces of my fellow campers.

After a few minutes I was suddenly surprised to hear an outburst of Mockingbird music from the roof of the house at which we had stopped. Without doubt this bird had flown in answer to my call, across the quarter mile or so of prairie which had separated us. I whistled my best imitations and call for call he followed me. As we sat down under some trees in front of the house, the mocker flew into the top of the tallest tree and, as we called back and forth, he gradually descended from limb to limb. As he came nearer his voice grew softer and softer and I, too, softened my whistling until, when he finally came to a perch directly over our heads and not five feet from the ground, we were just whispering.

The effect was broken by conversation and the bird returned to the housetop and later, as dusk drew on, winged his way back to his own rancho.

In the summer of 1923 I was staying on a farm north of Wichita, Kansas, and a Mockingbird which lived in that neighborhood was the master mimic of all I have heard. As the Arkansas River ran nearby and great trees lined its course, birds were abundant and I believe this mocker mimicked them all, although I have no actual list of the species which I heard him imitate. What seemed to me his most outstanding accomplishment was his imitation of a mechanical sound. Red-headed Woodpeckers (*Melanerpes erythrocephalus*) were abundant and the house in which I stayed had a tin-covered projection on the roof upon which they would drum a long roll of taps and then yell with delight. The Mockingbird would sit on a nearby telephone pole and mimic the sound of their performance so perfectly that it was only by watching the birds that one could tell the imitation from the original.

One day as I waited for an interurban electric car the mocker was singing nearby and I whistled to him. He answered and we called back and forth and then he, too, like the Texas bird, came nearer and nearer and his calls became softer and softer. Finally he sat on a low perch nearby and looked squarely at me as he followed note for note every bird call which I could whistle. Then I began to improvise calls of a few notes and he followed, in fact, surpassed me as he added little thrills and tremulos which I could not hope to imitate. The arrival of the car for which I waited frightened him away.

Most Mockingbirds around farms can imitate excellently the peeping of little chicks and I have known of a mother hen becoming quite

distracted in searching for a lost chick while a mocker was peeping from a low perch in a fig tree. Eastern birds mimic the loud call of the Bob-white (*Colinus virginianus*) and our California birds give as clearly the three-note call of the Valley Quail (*Lophortyx californicus vallicola*).

The Mockingbird is not the only feathered mimic who can give an excellent rendition of this last call. On April 30, 1927, in a canyon in East San Diego, California, I listened to a Califronia Thrasher (*Toxostoma redivivum*) who started his song by repeating twice this Valley Quail call. After singing a few stanzas this bird would pause and seemingly with much effort, give one clear, bell-like note. A line of cast iron pipes had recently been laid past this place and I wondered if the thrasher had derived his unusual note from that source as it reminded me of nothing more than of the clinking of two pieces together. I have never heard this note given by any other thrasher and never again by this bird.

On the same date and near the same place another thrasher was singing and during a lull in his song a Black-headed Grosbeak (*Zamelodia melanocephala*) sang its sweet song. No sooner had the grosbeak finished than the thrasher repeated the song note for note.

In May, 1927, a Cardinal (*Cardinalis cardinalis*) was observed in Balboa Park, San Diego, and on the nineteenth of that month I was in the taxidermist's room of the Natural History Museum and heard what I thought was this bird calling just outside the window. I looked out but the only bird I could see was a San Diego Song Sparrow (*Melospiza melodia cooperi*) perched in a nearby tree. As I watched, he whistled a very good imitation of the call of the Cardinal. At no other time have I been able to find a resemblance between the call of the Cardinal and the song of the Song Sparrow.

From these experiences I am forced to believe that not only Mockingbirds, but other species as well, do consciously mimic the calls of other birds and even at times mechanical sounds.

O'Rourke Zoological Institute,
San Diego, California.

SOME UNUSUAL WATER BIRD VISITORS TO TENNESSEE

BY ALBERT F. GANIER

Although Tennessee has at one time or another during the year about 275 species of birds, her quota of water birds is comparatively small. This is due to the fact that, save for Reelfoot Lake, there are no large lakes and that being far from the sea coast, few coastal birds visit us even during the migration season. It is therefore of more than passing interest when such birds pay us a visit and in some cases is worthy of permanent record, such as the following notes on eleven of the rarer species.

During the last week in January, 1925, the Tennessee River north of Chattanooga had a most unusual and interesting visitation of Herring Gulls (*Larus argentatus*), some features of which cannot be fully explained. The cause of this visitation was the presence of a vast number of dead fish killed when a break in a dam at Saltville, above Knoxville, released quantities of alkali into the river. Within a few days Herring Gulls began to appear, and as though they had signaled their fellows by wireless, they were quickly followed by others and others until finally hundreds were to be seen meandering down the river in the wake of the floating fish. Mr. H. P. Ijams, of Knoxville, whose home overlooks the river, and who is a close observer, tells me that he does not recall having seen these gulls at all in previous years. I have seen them, however, on several occasions in early spring on this river at Chattanooga, in singles, twos or threes.

The White Pelican (*Pelecanus erythrorhynchos*) breeds in the far northwest and migrates southward through the Rockies and the Great Plains to its winter home on the Gulf. Tennessee is not in the path of its travel and the three records we have are outstanding in interest. Our first is that of a specimen killed on Reelfoot Lake in 1918 and mounted by Mr. Seth Curlin, of Hickman, Kentucky, who placed it in the Hickman Hotel, where he showed it to me a few months later. On October 3, 1926, two White Pelicans were shot at Reelfoot Lake, and one of these has been mounted for the new State Museum of Wild Life at Nashville. These two birds had been on the lake for about a month. The third and last record is based on a news dispatch from Tullahoma, Tennessee, which states that on September 24, 1926, a farmer found one in his barn lot and brought it to that town. This big bird had probably mistaken the grey galvanized iron barn roof for a pond of water and flew into it. The hurricane which wrecked Miami occurred just six days previous to the visit of this Pelican. In this connection, I am reliably informed that at about the same time,

a White Pelican was captured near Atlanta, Georgia. One old record is also available, that of S. N. Rhoads, who, writing in 1895, stated that one he saw mounted in a hotel at Union City, was shot at Reelfoot Lake. Howell, in his "Birds of Arkansas," mentions three records from the interior of that state.

The Whistling Swan (*Olor columbianus*) was, in pioneer days, a regular migrant in Tennessee and was so abundant on Reelfoot Lake at times that they were killed and shipped in carload lots to Nashville, Memphis, and Louisville. With the settling up of their breeding grounds in the Northwest, this splendid game bird gradually decreased, until it is now very rarely seen in the interior of the country. We have four recent records for the State, as follows: I observed several flocks on the Mississippi River above Tiptonville in January, 1911. On November 9, 1926, one was seen on Reelfoot Lake and was shot by a native who was later prosecuted. It was procured for the State Museum by the local warden, who states that this is the only swan he has seen during his fifteen years on the lake. In Middle Tennessee, near Manchester in Coffee County, a flock of twelve settled themselves on a small lake on December 18, 1919. They spent several days unmolested, I am told, until some automobile tourists found them and shot four of the flock, causing the rest to leave. One of the dead birds was sent to Nashville where I identified it. I regret to record that the guilty parties were not apprehended. The last record we have of this species is that of two which were shot near Knoxville on December 8, 1926, on the Little Tennessee River south of that city. Vigorous action was brought against the culprits, and the case is still pending.

The smaller forms of geese have been quite rare in the Mississippi Valley for many years although a considerable number winter on the Louisiana coast and must pass over in migration. I am giving below the only records we have of the Blue Goose (*Chen caerulescens*) and for the Snow Goose (*Chen h. hyperborea*).

Two of the latter species were wounded and captured on Reelfoot Lake in the fall of 1927 and were kept by a local game warden until they could recover. One died later but the other survived and was sent to Nashville, to the Glendale Zoo, where I saw and identified it on February 20, 1928. With it was a Blue Goose which had also been taken in the same manner and about the same time at Reelfoot. On March 3, 1928, both species were recorded on the Mississippi River thirty miles north of Memphis, my informant being Dr. Louis Leroy of that city, who was accompanied by Dr. Jno. C. Phillips of

Massachusetts, and others. Half a dozen flocks of the Blue Geese were noted, their total number being 102. Mixed with them were probably a dozen Snow Geese. One large flock comprising fifty-one birds was approached to within one hundred yards. Dr. Leroy writes further. "During the last twenty years I have been on the Mississippi River in this district a good deal and believe that I have seen not more than a half dozen Snow Geese and perhaps a similar number of Blue Geese as individuals, traveling with flocks of Canada Geese. About November 2, 1927, I killed a Snow Goose at long range out of a flock of about twenty of these birds. It was the first one of this species I had killed and was quite an object of curiosity among many old hunters here who had never seen one before. I know of two more which have been killed this year in this vicinity. Altogether, I have seen about a hundred Blue Geese this year in addition to the 102 which we counted on March 3. I am inclined to believe that last year's flood caused a change in their food conditions and this led them to spread over this territory this year."

Tennessee is visited by about twenty species of the duck family, some of which are common and others but rarely recorded. One of the rarest is the White-winged Scoter (*Oidemia deglandi*), a duck which usually migrates from its Canadian breeding grounds down the two coasts, remaining in sea water through the winter. I am able to record a flock of these on the thirty-five acre Radnor Lake in the hills near Nashville, where from November 10-18, 1917, a flock of six remained and were closely observed by myself and other students of wild life.

The American Egret (*Herodias egretta*), while still a rarity, is apparently showing a steady increase in the South, judging by its occurrence in Tennessee. Each year, in late summer, along the rivers the egrets are recorded in flocks of two to six, for at that season they roam northward from their breeding grounds, which are chiefly in the southern coastal swamps. We are now recording them several times each July and August near Nashville. The most satisfactory evidence of their comeback was furnished on Reelfoot Lake during July, 1926, when flocks of hundreds visited that fine body of water. It is in order here to say that most of the white herons seen in summer on our rivers are the immature of the Little Blue Heron, the young of which are white during their first summer, and "egret" records made by inexperienced observers usually refer to this species.

The Wood Ibis (*Mycteria americana*), locally called "Gourd Head," breeds in rookeries along the gulf coastal swamps and when

nesting season is over, moves northward up the Mississippi Valley, as far sometimes as Cairo. While it is regularly seen along the Mississippi River near Memphis and on Reelfoot Lake, we have but one record for further east in the state, that of an individual seen on Radnor Lake near Nashville, July 25, and on August 1, 1925, by Harry C. Monk. A prolonged drouth had preceded this date, drying up the customary feeding places of this species in Alabama and Mississippi and it had evidently moved northward in search of water. During the five weeks following, Wood Ibises were reported north of Nashville, in Kentucky, (Madisonville) and finally in central Illinois, far beyond their usual range. Reference to this species is particularly timely this year, for as though nature had made especial provision for such emergencies, thousands of them will shortly move up into the flooded Mississippi Valley and, following the receding waters, will consume vast quantities of dead fish, left behind in the drying sloughs and fields. I have many times, in Mississippi and Louisiana, watched these splendid and timely scavengers, gorging themselves on these dead and dying fish, and wondered how they marshalled their forces so quickly and in such numbers.

On September 22, 1926, I was standing on the muddy banks of the Tennessee River at Johnsonville, watching the mussel fisherman reap their harvest of shells, when three large birds leisurely winged their way by and furnished me the first and only record we have of the beautiful Caspian Tern (*Sterna caspia*). These large terns make their summer home from the Great Lakes into Western Canada, and passing south apparently, from the dearth of records, make but few stops. Observed at a distance of a hundred feet the large birds, with their black caps and red bills pointed downward toward the water, were readily identified. Another member of the tern family, however, has furnished us a more remarkable record and one that may never be duplicated for Tennessee. I refer to the Sooty Tern (*Sterna fuscata*), a species which inhabits the islands of the West Indies and is rarely seen north of Maimi, Florida. During the last week in July, 1926, a hurricane moved northward out of the Indies and spent itself on the Carolina coast. On July 30 an exhausted Sooty Tern was picked up at an altitude of 3,300 feet in the Great Smoky Mountains, thirty miles southwest of Knoxville, Tennessee. This bird, apparently unable to breast the gale or perhaps having lost its sense of direction, had actually crossed a mountain range 6,000 feet above sea level and

had strayed nearly a thousand miles from its usual home. Miss Elizabeth Ijams who made the find, sketched and wrote down an accurate description of the bird and furnished it to her father, H. P. Ijams, a competent ornithologist of Knoxville, who in turn furnished it to me. Additional records of this species were made during the week which followed, from Charleston, South Carolina, Raleigh, North Carolina, and as far north as Wheeling, West Virginia.

More than thirty years ago a Philadelphia ornithologist, S. N. Rhoads, visited the vicinity of Reelfoot Lake in West Tennessee and in publishing a list of the birds, he included the name of the Black Skimmer (*Rynchops nigra*), whose usual habitat is along the Gulf and south Atlantic Sea coasts. His notation was as follows: "A specimen was found dead in Obion County, after a severe storm, by Mr. J. A. Craig, who gave me an account of it." Our local bird students regarded the evidence as unfortunately scant and, knowing that this species never voluntarily leaves the sea coast, we were inclined to cast it out as a state record. Some ten years ago, while at Hickman, Kentucky, near Reelfoot Lake, I was invited by an elderly gentleman there (Mr. Seth Curlin) to look over his old collection of bird skins, which invitation I accepted with pleasure. One may imagine my surprise and delight when, on unrolling the yellowed tissue paper from one of the specimens, I looked upon the skin of a Black Skimmer, labeled "Obion County, Tennessee, near Pierce, November, 1890;" this is no doubt the one referred to by Mr. Rhoads in his list, and clinches this species as a valid addition to our State list. I now have this specimen in my collection.

It will be noted that little reference is made to records of water birds on the Mississippi River, although it forms the west boundary of the state. It is for the reason that the writer has been able to spend but little time there in migration seasons nor has he had the co-operation of anyone living in that vicinity. The great river, however, with its succession of sandbars and "old river" lakes, is well known to be a popular thoroughfare for migrating water birds and would doubtless yield many surprising records over a period of years.

Nashville, Tenn.

THE WILSON BULLETIN

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EDITORIAL

The next Annual Meeting of the Wilson Ornithological Club will be held at Des Moines, Iowa, during the last week in December, in conjunction with the meeting of the American Association for the Advancement of Science. The exact dates will be announced in due time. Reduced railroad fare of one and a half for the round trip is available to all who attend this meeting. It is not too soon to plan to attend and present a paper on the program.

We know of two private collections of mounted Iowa birds which have been put on the market within the last few years, because of the owner's decease. Both are rather large private collections, mounted by the old-style methods. They may have some exhibition value, but probably their greatest value will be found in the data which they might furnish for locality records. This statement is not made for the purpose of advertising these collections, but in deprecation of the fact that such collections are usually so soon scattered and lost, and make very little contribution to science. The heirs often have no interest in science, but do have an exaggerated notion of the monetary value of the specimens. No institution cares to pay the price, and the result is deterioration and loss. In too many cases such "scientific" collecting makes no contribution to science. If these private collections could finally land in some institution they might be better justified. Would it be possible in granting permits for scientific collecting to make a provision that the specimens collected under it shall eventually revert legally to a certain institution to be agreed upon and named?

GENERAL NOTES.

Conducted by M. H. Swenk

The Black Tern Nesting in Calhoun County, Michigan.—A nest of the Black Tern (*Hydrochelidon nigra surinamensis*) was discovered on a small inland pond ten miles east of Battle Creek on June 10, 1928. There was only one egg at the time of discovery, and when I returned the following week this and the nest had been destroyed. The nest, built of small twigs and weed stalks neatly piled, was located on a floating bog among the lily pads in the middle of the lake.—Lawrence Walkinshaw, *Battle Creek, Mich.*

Henslow's Sparrow in a City Yard.—On May 17, 1928, I caught and banded a bird of this species, which made my third record for the species in this county. I recognized the bird by the yellow on the bend of the wing and the heavy bill, and then took note of its other characteristics—the graduated pointed tail feathers, olive head, head markings and streaked sides. My trap was under cherry trees and quite surrounded by lower shrubbery—an unusual locality in which to find this dry field bird.—E. A. Doolittle, *Painesville, Ohio.*

A Freak Junco.—A Slate-colored Junco (*Junco hyemalis hyemalis*) observed in shoulder-high bushes alongside an open field, near Harmarville, Pennsylvania, on May 1, 1926, was of interest because of a distinct grayish white ring, about one-eighth of an inch wide, about its neck. The bird, studied at close range with 12x glasses, had the usual plumage except for the neck ring, the pink bill and the characteristic white outer tail feathers showing plainly as it moved about.—Sidney Eastwood, *Pittsburg, Pa.*

Unusual Nesting of the Barn Swallow.—A Phoebe built its nest on an iron girder under a low bridge, over a swamp and only five feet above the water, and reared its young. On June 24, 1928, I was surprised to find that a Barn Swallow had built a low rampart of mud pellets on the rim of the Phoebe's nest, relined it with feathers, and was sitting on four very heavily incubated eggs. And to make it still more interesting, the eggs were unusually long and so heavily blotched that had it not been for the birds I would not have recognized them as belonging to the Barn Swallow.—E. A. Doolittle, *Painesville, Ohio.*

The Snowy Owl in Northwestern Iowa.—In November, 1928, Mr. John Hommes wounded and captured a Snowy Owl (*Nyctea nyctea*) about three and one-half miles southeast of Rock Rapids, Iowa. The bird is a beautiful specimen, being snowy white, with a small amount of brown mottling on the back of the head and neck and some brown on the back and upper side of the wings. The bird was sold to F. J. Vickerman, of Rock Rapids, who will keep it alive for a while before having it mounted.—O. S. Thomas, *Rock Rapids, Iowa.*

Another Snowy Owl Record from Iowa.—On January 3, 1929, Mr. E. W. Sells of Paton, Greene County, in west-central Iowa, sent me a fine specimen of Snowy Owl which had been shot near there a day or two before. It was a female, measuring 25 inches in length and about 56 inches in wing spread and weighing just 4 pounds and 6 ounces. I mailed it to Prof. Kubichek at the Coe College museum, who has mounted it, and it will be preserved in that museum. Prof. Kubichek reported that there was not a particle of food to be found in the stomach. Mr. Sells reported that there had been two of these birds seen there, but only one had been shot. In eleven years' observation of birds in this locality this is my first record of the Snowy Owl, and I was very glad to secure this record

and also very glad to present it to Prof. Kubichek for the Coe College museum.—W. M. Rosen, *Ogden, Iowa.*

On the Scent of Vultures.—After reading the articles of Mr. Lewis and Mr. Taber on the scent of Vultures (Wilson Bulletin, XL, pp. 154-156 and 221-223), I am prompted to relate an incident bearing on this subject and one in which I figured rather ludicrously.

It was on September 17, 1926, that I received from a friend a squirrel which he wanted me to mount for him. The weather was very warm for so late in the summer and the flesh of the squirrel was decidedly tainted. I managed to remove the skin and then threw the carcass over into a stubble field.

On the following afternoon (September 18), the weather still being very warm, I was lying on a log on the edge of a strip of woods adjoining the field, and watching the sky. Presently four Turkey Vultures came sailing along from the east, in a line of flight that would take them directly over the spot where the carcass of the squirrel lay. Upon reaching this place the four birds began to fly around in short circles, peering intently at the ground. Of course the small carcass was hidden by weeds and stubble. My position was about 100 yards away, where I lay very still to observe the action of the birds. One of them, spying me lying on the log, seemed to say to the others, "I see it. There it is," and all four were soon circling over my head. Lower they came with each circle until they were not more than fifty feet above me, and as any moment might bring the gaunt creatures down at close quarters, I jumped up and hurled a stick at them. They then flew away. About five minutes later another vulture flew over the spot where the carcass lay, and it too circled four or five times, but seeing nothing flew away.

I am persuaded that the scent of vultures for decayed flesh is remarkably keen, but for untainted flesh they may rely more upon sight than the sense of smell.—Thomas M. Earl, *Xenia, Ohio.*

The Return of the House Wren.—During the summers of 1925-26-27 the Eastern House Wren (*Troglodytes aedon aedon*) steadily increased in migration numbers in Hillsboro until it was rather common. In 1928, it extended its range to the immediate vicinity of the town. No bird welcomes its return. The hostility between this wren and the Bewick's Wren (*Thryomanes bewicki bewicki*) is most bitter, and begins at nesting time. Twice it has come to open warfare. In 1926, on the first of June, the House Wren came over and began to investigate every available nesting place, spending several days at a Chickadee's old nest. All the time above the nest, in an apple tree, sat a Bewick's Wren, singing. Suddenly and viciously he darted at the House Wren, striking it on the back. He then returned to the tree and continued his singing. The House Wren sneaked away and nested in the neighbor's box. In 1928, the House Wren invaded an old nest of the Downy Woodpecker, carrying out the material a bit at a time. Three Bewick's Wrens sat on a wire fence, watching. Suddenly one darted after him driving him off the place. With one exception (*cf.* Wilson Bulletin, XXXVII, p. 92) the House Wrens have nested in the wren boxes, while the Bewick's Wren nests in a neighbor's coal-house. Our premises will always be a battle-ground. Neither will ever give way for the other to nest here. The two will never occupy the same territory. The House Wren has come to stay. At the present time the Bewick's Wren is rather common and is generally distributed. On a drive through the country, we are never out of the hearing of his song.—Katie M. Roads, *Hillsboro, Ohio.*

The Peculiar Suspiciousness of Nesting Southern Meadowlarks.—The suspiciousness of the Southern Meadowlark (*Sturnella magna argutula*) about the nest is remarkable. On June 21, 1927, I found a nest of this bird that was all ready but the lining. This nest was built on the ground, among short grass which was bent over to conceal it. The bird was seen to alight on the ground, and after waiting a few minutes to give the bird time to reach the nest, I started for the spot where she had alighted. She did not flush there, but was finally flushed directly from her nest about fifty yards away from the place where she had alighted. I did not disturb the nest but returned on June 20, only to find the nest in the same condition as when I first had found it. Believing that she had built another nest I began to search, and was rewarded by finding another nest forty or fifty feet away, fully built, and apparently ready for eggs. This was in a similar situation. I did not come within five feet of this nest, in order to keep her from leaving it, but on returning on July 7, I found this one also was deserted, and no birds were to be seen or heard. Not to be hoodwinked I began another search, and soon found a third nest, not more than sixty feet away, in a very open spot, that could be seen some distance away. This nest was about ready, and was not touched. On July 16, 1927, I came back to see what had happened, and going back of the nest within a few feet had seen nothing of the birds; but moving to the entrance a bird hopped out, arose and flew a few feet, and then sneaked off through the grass, and was not again seen nor heard while I was there. The male was not in evidence. The nest contained four eggs, incubated about five days. In two other cases where I have found their nests with partial sets, I have returned only to find them broken or destroyed by these suspicious birds.—Donald J. Nicholson, *Orlando, Fla.*

The Starling Nesting in Luce County, Michigan.—On April 22, 1928, I was in a woods about two miles south of McMillan, Luce County, Michigan, and saw two Starlings (*Sturnus vulgaris*) pass over towards the east. This is about one-half mile west of the place where I later found the species nesting. On the following dates, within one-fourth of a mile of the nesting site, I saw Starlings as follows: May 9, one; May 21, a flock of five were seen in the top of a beech tree at the edge of the woods at evening, of which, upon departing, two flew north and three flew east; May 22, a flock of three; May 23, one; May 24, two; May 25, one was seen in a roadside maple at 5:40 A. M., which sang a few notes, then flew westward over a barn and was joined by two others on its flight to the woods; May 26, two were seen to go to a tree where some had been noticed a few days before; and May 28, two were seen at the same place on a tree at the edge of the woods. On this latter date, at 5:27 A. M., I saw a Starling in the entrance to an old Flicker nesting cavity, that was deserted, I believe, by the Flickers. The top of this tree had broken off years ago, and while the ten or more feet of the trunk below the place where it had been broken off was dead and decayed, much of its lower part was living. The old Flicker nest was about forty-five feet up in the dead top of the tree.

As I had seen Starlings at that place on previous days, it may be that nesting began before May 28. I first noticed them feeding young on June 15, and on July 1 I noticed the young out of the nest for the first time. The Starling's nesting site is forty rods west of the lane where I have a number of bird houses, and about sixty rods west of my Purple Martin houses. Starlings were noticed only a few times feeding in the field near the houses. They usually took a course

to the northeast from the nest tree until about north of the lane, then to the east; and usually returned by the same course. On two occasions, I saw a Starling alight on the windmill, which when not in use is often used as a resting place by the Purple Martins. No attempt of attack was made by either species. Towards the end of the period that the young were in the nest, one of the Starlings was seen going to the potato patch, where it gathered potato bugs. To go from the nesting site to the potato patch, the Starlings had to pass over some of the Tree Swallow colony, and once I saw a Tree Swallow force a Starling to the ground.

After July 7, I did not see any Starlings until September 28, when two were seen in the dead top of a maple near the nest tree. On October 12, I saw a Starling on its usual course, and it went to one of the "lookout" trees where it remained for four minutes (7:16 A. M. to 7:20 A. M.), then flew back over the old trail to the east, the nesting site not being visited. It appears that this was one of the birds that nested there. My last record is of one seen on October 14, 1928, the bird having been seen one-fourth of a mile east of the nesting place. I shall be on the lookout to see if the Starlings return there to nest again next season.—O. M. Bryens, *McMillan, Mich.*

A City Robin Roost.—During the early part of October, 1928, Robins (*Planesticus migratorius*) were seen flying in a southeast direction late in the afternoon. After observing several of these flights, the writer decided to look for a Robin roost.

On October 16, at 6:15 A. M. we were in an old orchard. It was a dark morning, and having heard only a few Robins we were becoming skeptical of our course. Then suddenly a commotion arose ahead of us and in the dim light we saw the birds rising from a plum thicket. They left in a steady stream, without exception headed northwest. They flew into the wind at an angle of about forty-five degrees and when they had gained an altitude of perhaps 200 feet they would strike out for their destination.

Some of the birds seemed a little uncertain about leaving the roost and would circle it a few times before following their fellows. The Robins continued to leave the thicket in an unbroken line until 6:55 A. M., by which time all but about a dozen birds had left the vicinity.

The return flight of the Robins began at approximately 5:15 P. M. The birds started to arrive at the roost in small flocks of twenty to fifty. By 5:30 P. M., however, the main flight was on, but differed from the morning flight in that the birds returned in flocks of 150 to 200, thus showing that they had scattered during the day. The general direction of the flight was from the north and west. A very few Robins came from the southwest.

The birds came in, flying at a high altitude, and would quickly break company and dive down in zigzag fashion to the roost. Sometimes a flock would fly in and light more gracefully in a nearby tree and then fly over to the roost. At 5:45 P. M. the birds had practically stopped coming, and were for the most part settled in the thicket, where they kept up an incessant calling and chirping.

The birds roosted about five feet from the ground and when they had once perched seemed to have little fear and allowed close approach, while in the morning they were quite wild. The roosting place was a very dense growth of wild plum trees about 150 yards long and 25 yards wide. The roost was located several blocks from any populated district and the birds were probably not

molested by humans to any extent. The place showed that it had been occupied for several weeks, and they remained there until October 20.

It was rather hard to count the number of the Robins, but after several observations we concluded that there were between 4,000 and 5,000 birds spending the nights in this roost.—William Youngworth, *Sioux City, Iowa.*

Bird Casualties on the Highways.—On June 10, 1928, we left Chicago by automobile for the Dakotas on an expedition for the Chicago Academy of Sciences. Our records of the birds and animals found dead in the road, which were probably all killed by automobiles, are as follows:

From Chicago to Iowa City, which is a distance of about 260 miles, we found eighteen birds and eleven mammals of the following species: Nine Red-headed Woodpeckers, two Screech Owls, one Northern Flicker, one Cowbird, one Meadowlark, one Rusty Blackbird, one English Sparrow, two domestic fowls, three thirteen-striped spermophiles, two squirrels, one cottontail rabbit, one mink and four domestic cats.

From Iowa City to Hawarden, Iowa, a distance of about 360 miles, we found dead thirty-five birds, three mammals, two reptiles and an amphibian, which were of the following species: Thirteen Red-headed Woodpeckers, three Mourning Doves, two Kingbirds, two Bronzed Grackles, one Northern Flicker, one Meadowlark, one Cowbird, one Catbird, one Bluebird, one Bob-white, one English Sparrow, one female Ring-necked Pheasant, seven domestic fowls, two thirteen-striped spermophiles, one Franklin's spermophile, two garter snakes and one toad.

From Hawarden, Iowa, to Webster, South Dakota, a distance of about 280 miles, we found very few bird casualities, and only one mammal, a plains muskrat. The few bird and mammal deaths in this instance were probably due to the scarcity of automobiles on the highways we traveled.

From Webster, South Dakota, to Chase Lake, North Dakota, a distance of about 280 miles, very few dead birds were found. Several dead Richardson's spermophiles were seen, which was not unusual, as they are very abundant in the grass along the roadsides in North Dakota.

On the entire trip, which covered about 1180 miles of highway, we saw about sixty birds, twenty mammals, a toad, and two snakes whose deaths were probably caused by automobiles.—E. V. Komarek, *Oak Park,* and E. G. Wright, *Chicago, Ill.*

Bird Casualties.—The accidental death of birds due to flying into wires, poles, and other obstructions, is of common occurrence, especially during the migration season. Weather conditions are often bad, with visibility poor, and it is not strange that a few of the passing thousands should be killed. Hardly a week passes but someone brings a specimen into the Chicago Academy of Sciences, which was picked up dead in this vicinity, and on April 21, 1928, an adult female Woodcock (*Philohela minor*) was found by one of our staff. In spite of it being not unusual for birds to fly into obstructions, it seems strange that a Woodcock, which is an adept at flying in thick cover, and which migrates at night to a great extent, should fly into a large building on a clear night. Another, which had flown into a wire, was found near Lincoln Park on May 1st. Both were breeding females, and had deposited their complement of eggs.

While on the subject of accidents, I saw a Black-footed Albatross (*Diomedia nigripes*) fly into the flag-staff of a tower on Laysan Island, H. T., in March,

1913. The bird's right wing was broken, and we found that it was blind in the right eye. The albatross evidently circled, with the pole on its blind side. On Laysan, I several times saw albatrosses collide with each other, and fall heavily to the ground, but these birds waddled off unhurt.—Alfred M. Bailey, *Chicago Academy of Sciences, Chicago, Ill.*

A Hybrid Canada Goose.—

There is an interesting cross between the Canada Goose and the common, or domestic Toulouse Goose, in Lincoln Park, at Chicago. It is a large sized bird, and is considerably darker than the average Canad Goose. While the cheek patch is well defined, it is rather dusky, and there is a patch of white on the forehead. When first observed, the hybrid goose was sitting with a small bunch of Canada Geese, and did not differ greatly from the others, except for the white feathers of the head, and the darker coloration. When the bird raised to its feet, however, it was very conspicuous, for its legs and feet were yellow.—Alfred M. Bailey. *Chicago Academy of Sciences, Chicago, Ill.*

COMMUNICATIONS

April 17, 1929.

To the Editor: In running through the Wilson Bulletin for March, 1929, I find among the communications on page 63 a letter from the Heath Hen Committee of Boston, Massachusetts, dated January 31, 1929. This communication was very interesting to me, especially the reference to *National Sportsman.*

While it would be farthest from our minds to resent the publication of any reference to our magazine, I want to say at this time that the statement that we have published "extravagant" articles on the Heath Hen situation is not true. The articles in question have been based on fact and no attempt was made to exaggerate the deplorable situation that existed.

Sincerely yours,

W. H. Foster.

Editor National Sportsman Magazine, Hunting & Fishing Magazine.

BIRD PHOTOGRAPHY

Conducted by Alfred M. Bailey

There are two kinds of nature photographers. One secures pictures wherever no special effort is involved, while the other searches out difficult subjects and makes a serious attempt to obtain good results.

Many can not afford the time to picture very timid species or forms nesting in inaccessible places. Birds of prey are difficult, as a rule, for most of them nest in high trees or along precipitous cliffs. The photographer who takes such subjects would be classed as one who goes out of his way to secure the unusual.

There is much to be said for the man who totes a camera on a holiday trip, however, for he will often stumble over a rare chance to film an interesting subject. This was emphasized to me last week when Mr. Fred Lodge of La Grange, Illinois, telephoned me that he had a nest of the Killdeer with young just hatching. We loaded our motion picture camera in the car and worked our way through the Sunday traffic to an estate ten miles south of La Grange. We found the nest of the Killdeer upon a gravel bed at the rear of a garage, where trash had been burned.

Shrill cries of "killdee, killdee" greeted us and the beautiful little parent bird fluttered and flopped, uttering cries of distress as she tried to decoy us away. There were three gray-and-black, downy, long-legged youngsters crouched motionless in the little depression, while the remaining egg rocked slowly back and forth as the last baby tried to free itself. Anyone will recognize this as the chance of a lifetime, for young Killdeers leave the nest as soon as the down is dry, and then it is practically impossible to secure photographs.

We erected the blind within six feet of the nest, and I set up the motion picture machine, while Mr. Lodge and his son retired to a distance to watch operations. Within ten minutes the adult came swiftly across the gravel and crouched over the young. At the same time, I noticed she pressed against the remaining egg—possibly accidentally, and cracked it wide open. At least, she hurried matters materially. I made thirty or forty feet of film as the youngsters crouched under the wings of the adult, and then, desiring to secure additional pictures of her returning to the nest, I attempted to frighten her from the nest. I waved my hands, yelled, flapped the blind, and finally threw my hat in an effort to have her leave. All at no purpose. I finally crawled out of the blind, and even then the Killdeer seemed reluctant to leave. The camera was set up within four feet of the nest, without the use of the blind. The parent came back with little hesitation and hovered over the young while I ground out film in an extravagant manner for a museum man.

But we were not satisfied. The camera was moved to within two feet, and photographs were made which nearly filled the film, and then, while Mr. Lodge turned the crank, I slowly put my hand toward the Killdeer sitting with wings drooping over her babies, ran my fingers under her and lifted her from the nest. She showed little concern, even while I lifted her wings to show the contrast of the beautiful white feathers beneath with the brown of the upper parts.

We came away deeply grateful to the brave little Killdeer for the lesson in parental devotion, well satisfied that we had been favored by fortune. The accompanying photographic reproductions are enlargements from the motion picture film.

The Killdeer
An Interesting Study in Protective Coloration

Killdeer on Its Nest
Both Pictures are enlarged from Motion Picture Films

ORNITHOLOGICAL LITERATURE

THE COWBIRDS. A STUDY IN THE BIOLOGY OF SOCIAL PARASITISM. By Herbert Friedman. Published by Charles C. Thomas, Springfield, Illinois. 1929. Pp. i-xviii+1-421. Pls. I-XXVIII, figs. 1-13. Price, $6.00.

In 1893 Major Charles Bendire published a paper (in Report of U. S. Nat. Mus.) on "The Cowbirds," which summarized the knowledge of the subject in thirty-five pages. Dr. Friedman's monograph now collects and collates the vast amount of material which has been published in all sources during the past third of a century, and contributes a very considerable amount of new field observation. The Preface states that "The present work is a complete report on all the Cowbirds, based on five years of uninterrupted work: three breeding seasons were spent in central New York State, one in Argentina, and one on the Texan-Mexican border."

There has been a good deal of rearrangement in the taxonomy and nomenclature of the Cowbirds since Bendire's time. Friedman recognizes three genera, viz., *Agelaioides*, *Tangavius*, and *Molothrus*. The genus Agelaioides is South American, and contains two species and three races. Tangavius with its two species and four races occupies the coastal plains of Mexico and Central America, barely extending over into southwestern United States. Molothrus with three species and ten races spreads over the greater part of both North and South America.

The author is able to give very complete information on many of the topics concerning the various species, including distribution, migration, courtship, mating, eggs and egg-laying, young, food, plumages and molts, enemies, etc. Consideration of the genus Molothrus occupies about four-fifths of the book, with *Molothrus ater* receiving the lion's share of treatment and *M. bonariensis* and *M. rufo-axillaris* ranking second and third. We need not doubt, however, that all the forms are adequately treated in the light of present knowledge.

In the discussion of the North American Cowbird we find a list of the species which are known to have been victimized, including 195 species and subspecies—undoubtedly the longest list ever compiled. Hereafter, bird students will look to this list for the status of any species as a Cowbird victim.

The egg-laying habits of the Cowbird are very fully discussed, but these problems still remain a splendid field for study: and the amateur ornithologist is just as likely as anyone to make some important discovery at this point.

The last chapter in the book is a speculation on the origin of the parasitic habit of the Cowbirds; it is a complete and critically prepared discussion, but can hardly be said to solve the problem. Briefly told, the author believes that the parasitic habit has arisen in Cowbirds as a result of a "lack of attunement between the territorial instincts of the male and the egg-laying instincts of the female." "This lack of attunement seems to have been caused by the diminution of the protecting territorial instincts of the male and this diminution seems in turn to have been started by the reversal of the territorial and nest-building instincts in the stock from which the Screaming Cowbird evolved," viz., the *Agelaioides* group. Parenthetically we may make note of a misplaced line, line 32 from the top on page 354, which destroys the meaning at a critical point.

An extensive bibliography and an index complete the volume. The illustrations include various maps of distribution, numerous pictures of nests with

Cowbirds' eggs, and a very noteworthy series of photographs of *Molothrus ater* in courtship poses.

This volume covers a most interesting and important subject, and one which for some time has needed just such an exposition. The author has succeeded admirably in his task; we willingly concede it to be a "major contribution to ornithology." The publishers have succeeded no less in their task of mechanical execution. On a back fly-leaf the publishers have made an interesting statement concerning the workmanship, which we believe will be an appreciated innovation. —T. C. S.

Birds of New Mexico. By Florence Merriam Bailey, with contributions by the late Wells Woodbridge Cooke. Published by the New Mexico Department of Game and Fish, Santa Fe, 1928. Pp. i-xxiv+1-807, pls. 1-79 (25 in color), figs. 1-136, maps 1-60. Price, $5, in buckram.

We look upon the present volume with admiration. The text is voluminous and most carefully prepared. The illustrations are abundant, attractive, and instructive. The work has been published through the generosity and patronage of Mr. and Mrs. George Deardorff McCreary, Jr., of Silver City, New Mexico. It is always a pleasure to express our appreciation to the patrons of science. The volume is largely the outcome of the researches carried on by the United States Biological Survey. The work apparently had its inception as far back as 1889, when Mr. Vernon Bailey was sent to New Mexico to make collections for the (then) Division of Ornithology and Mammalogy. Mr. Bailey, accompanied by Mrs. Bailey, later spent several seasons in the State on field work for the Bureau. Before his death Prof. W. W. Cooke undertook to prepare the available data for publication. Under the administration of Dr. Nelson the task of bringing the material up to date and making a complete state book was assigned to Mrs. Bailey, whose experience in the study of western bird life is well known.

A perusal of the acknowledgments convinces the reader of the vast amount of effort which has helped to produce this very complete and authoritative volume. The "Introduction" contains, besides the acknowledgments, a discussion of the zonal distribution of birds in the State, with lists for each of the six zones; an enumeration of the State and Federal wild life refuges, and the State organizations concerned in the conservation of wild life; a list of birds first discovered and described from New Mexico—a surprisingly large number; a list of the bird collections from New Mexico.

A unique feature of this work is a chapter on itineraries and reports of field work in the State (pp. 15-36), and another chapter giving an alphabetical list of localities visited by all reliable observers (pp. 37-68)—both by W. W. Cooke. Every field worker in ornithology from 1540 to the present time is mentioned; his work is briefly described, with citation to his publications on New Mexico birds.

The descriptive catalogue proper, by Mrs. Bailey, is included within pages 73-762. Three hundred and eighty-one forms are credited to the State, while fifteen additional hypothetical forms are listed, the latter being included in the body of the catalogue and indicated by brackets. Typical treatment for each species includes paragraphs on: Description, Range, State Records, Nest, Food, General Habits. Numerous maps help very materially in showing the distribution of species within the State.

Of the many first-class bird books which have appeared in recent years only a few approach the present one in the beauty, originality, and quantity of illustration. The maps, while not especially attractive, are none the less desirable and useful. Many of the halftones are from excellent original photographs by various field photographers; a few others are photographs of habitat groups in the Colorado Museum of Natural History. Most of the black and white plates are reproduced from paintings by Fuertes, though the plate of the Bald Eagle is by Robert Ridgway. One colored map shows the life zones of the State, and was prepared by Vernon Bailey. The colored plates by Allan Brooks form, of course, the outstanding pictorial feature. We are unable to make any comments that will do justice to these beautiful pictures. And as these gaily colored pages embellish the work and fascinate the eye, awakening new aspirations and bringing to us a new world of bird life, so with their mention we bring our review to its climax.

At the close of nearly every specific account several references are given to other important descriptions. Besides this a very full bibliography is given at the end of the book. Unfortunately, this is more than a bibliography of New Mexico ornithology, and seems to be an alphabetical assemblage of the "literature cited" in the body of the book.

The avifauna of the great Southwest is so very different from that of other parts of our country, that this work, treating essentially of the desert life, will supply a desideratum in many an ornithological library: it will be indispensable to those who wish to do field work in the southwest country, and now becomes the most valuable reference work extant for the general area treated. A limited edition bound in leather, and autographed by the author, was made available at $10. Our sincere congratulations are offered to the author and all concerned in the production of this work.—T. C. S.

A Guide to the Winter Birds of the North Carolina Sandhills. By Milton P. Skinner and Dr. John Warren Aehorn. Albany, N. Y., 1928. Sold by the Science Press Distributing Company, Grand Central Terminal, New York. Pp. i-xiv+1-301. Pls. 31 in black and 13 in color. Price, $4.00.

The Science Press Distributing Co. seems to be a new adjunct to the Science Press Printing Co., of Lancaster, Pa., and it has a long list of scientific works. The book here reviewed has been prepared by Mr. Milton P. Skinner, whose recent papers in the Wilson Bulletin will be remembered. Mr. Skinner spent two winters, 1925-26 and 1926-27, in the field in the Sandhills region in order to procure first-hand information for this volume. Ninety-seven species are described, including the English Sparrow, which comprise the winter avifauna of the North Carolina Sandhills. The account of each species is given under the heads of "Field Identification," "Description," "Distribution," and "Habits."

The list of birds described looks almost like a spring migration list to us of the north. Especially full accounts are given of the two vultures, Blue Jay, White-throated Sparrow, and the Mockingbird. The Wild Turkey is still to be found in many parts of this State, and it is stated that, "In the Sandhills there are two or three groups totaling perhaps thirty birds in all." The author thinks that with adequate protection this grand bird would increase again over practically every suitable part of its old range.

Many of our own northern birds are found to have a sort of dual personality when we come to know their behavior in their winter quarters. The Cowbirds,

for example, in the Sandhills do not associate with cattle; they also flock together, and with other species, in a manner hardly characteristic of them in the north.

The thirteen colored plates are by Mr. E. J. Sawyer, and each plate depicts eight or ten birds. Mr. Sawyer is very skilful in producing these small-sized bird portraits. The volume is presented as a memorial to the late Dr. John Warren Achorn, from whose pen the three last chapters of the book were prepared. —T. C. S.

Birds of Western Canada. By P. A. Taverner. Second Edition (Revised). Bulletin No. 41, Biol. Series, No. 10, National Museum of Canada. Published by the Canada Department of Mines, Ottawa, 1928. Pp. 1-379, 84 colored plates, 315 text figures. Price, $2.00 in cloth.

The Wilson Bulletin carried a notice of this volume about two years ago (XXXVIII, 1926, pp. 250-251). It is gratifying to see that a new edition is needed so soon. The book contains no preface to inform the reader what changes may have been made in the revised edition. Upon cursory examination it is difficult to find a great deal of revision, except in the pagination in one or two places. A slight revision is noted in the account of the Sprague's Pipit. The illustrations remain the same. We are disposed to be somewhat critical of the plate of the common Bittern. Taking into account the perspective, the sedges or cattails in the far background seem to project too far skyward, being almost tree-like in height. There is the possibility of similar criticism in the Sora Rail plate. This book deals especially with the Canadian birds to be found west of Ontario, but probably also includes most of the birds of the northern states within the same longitude. It is thus not only a regional manual, but a very useful book of reference for ornithologists in general, being far more than a compilation. —T. C. S.

What Constitutes a Record? By Frederick C. Lincoln. Reprinted from Bull. Audubon Soc. of N. H., Vol. 8, No. 2, December, 1928.

Discussions of this matter of field identification can not be other than helpful in developing greater scientific caution and discrimination on the part of all who do field work. The author is satisfied with nothing less than a preserved skin or a museum record of a skin. Years ago Chapman (*Bird-Lore*, IV, 1902, pp. 166-7) laid down certain rules for safe-guarding the accuracy of field identification. Griscom (*Bird-Lore*, XXIV, 1922, p. 230) defends the possibility of identifying birds by ear. Ganier (Wilson Bulletin, XXXV, 1923, pp. 216-9) believes that birds may be safely identified by means of their mannerisms and habits. Griscom (*Auk*, XXXIX, 1922, pp. 31-41) has also pretty thoroughly considered the value of sight records, with the conclusion, we believe, that field records may be valid under certain restrictions. There is no doubt that certain species may be recognized in the field under certain conditions and by certain observers, sometimes by color, sometimes by song, sometimes by attitude, sometimes by habits; but credibility is probably established more by the personal equation than by any rules of procedure. And, therefore, we can hardly favor going so far as to discard all field records. The same field ornithologist might make a worse mistake in handling the skins; and who will say that the laboratory man is beyond error? Is not the fault with the observer rather than with the method?—T. C. S.

Birds of Illinois. By Orpheus Moyer Schantz. Conservation Publication No. 6 of the Department of Conservation, Springfield, Illinois, 1928. Pp. 1-132, numerous figures, 1 colored pl. Free.

The Illinois Department of Conservation has put out this booklet for the purpose of developing an interest in bird life—knowing that as knowledge is acquired interest develops. In many respects few of the western states have done more in developing a knowledge of bird life than has Illinois: we need only to recall the work of Forbes, Ridgway, Cory, Nelson, Gault, and a host of younger writers.

There seemed to be a need for such an abridged list. The state list by Mr. Gault, published seven years ago by the Illinois Audubon Society, listed 339 birds, with brief critical annotations on each form, but without description or field marks. Mr. Schantz gives a list of 292 birds, with various common names, length, distributional status within the State, and field marks. In a sense the two lists are complementary. We do not attempt to critically appraise the list under considcraion, but assume that the work has been carefully compiled. It might have been more acceptable if the map showing the life zones could have been shown in the conventional colors now generally used for this purpose. The booklet may be obtained free of cost by applying to the Illinois Department of Conservation, at Springfield.—T. C. S.

A Review of the Birds of the Islands of Siberut and Sipora, Mentawi Group (Spolia Mentawiensis). By J. H. Riley. Proc. U. S. Nat. Mus., Vol. 75, Art. 4, pp. 1-45, pl. 1. Washington, D. C. 1929.

This paper is based on a collection of birds from several islands off the west coast of Sumatra. A check-list of 95 forms is given. Descriptive remarks are made on about 81 forms. The birds of these islands appear to be, for the most part, non-migratory: and hence there is a tendency for each island to have its own geographical race of a given species. For example, we find listed on page 23 the following:

Hypothymis azurea consobrina Richmond, Simalur Island
Hypothymis azurea amelis Oberholser, Nias Island
Hypothymis azurea isocara Oberholser, Banjak Islands
Hypothymis azurea ponera Oberholser, Batu Islands
Hypothymis azurea leucophila Oberholser, Mentawi Islands
Hypothymis azurea richmondi Oberholser, Engano Island

Ability to see that non-migratory birds may become more quickly and definitely isolated into races on islands is not limited to taxonomists: and where such races can be clearly recognized by constant variation, some of the objections to trinomial designation will not apply with equal force. The same admission might be made concerning non-migratory forms which inhabit mountain valleys.

But there seems to be uncertainty as to the validity (value?) of even these island races among the experts themselves. Thus, the author (page 21) in speaking of *Calyptomena viridis siberu* Chasen and Kloss, says, "This appears to be a very good race. It is much darker, less yellowish green than *C. v. continentis*: it also appears to be somewhat larger." We may conclude that the author is uncertain whether it is a good race, and whether it is in reality larger. And while in this quotation the author merely comments on the work of others, yet we are disposed to point to this uncertainty and indefiniteness as typical of

much of the modern taxonomic work. This vagueness and indefiniteness is the inevitable result of the subspecific refinement; to put it the other way around, the subspecific concept and trinomialism lead to vagueness and careless work which clutters up the literature, to the confusion of all who follow. On page 13 the author says, "*Loriculus galgulus lamprochlorus* Oberholser from Nias is not different enough to warrant recognition in my opinion." Thus is one expert guess offset by another expert opinion, and where are we? The fact of the matter is that we are losing confidence in the taxonomic work of our time.—T. C. S.

A Contribution to our Knowledge of the Nesting Habits of the Golden Eagle. By Joseph R. Slevin. Proc. Calif. Acad. Sci., 4th Series, Vol. XVIII, No. 3, pp. 45-71, pls. 4-7. 1929.

This is a narrative account of a search for eagles' nests, and the collection of their eggs, through the years 1916 to 1922. Twenty-one sets were collected, affording a very good opportunity for a comparative study which was not undertaken. The eagles were found to replace a set of eggs when removed. They had a peculiar habit of placing leafy branches of the eucalyptus tree in the nest, possibly in an effort to conceal the eggs.—T. C. S.

A New Bird Family (Geospizidae) from the Galapagos Islands. By Harry S. Swarth. Proc. Calif. Acad. Sci., 4th Ser., Vol. XVIII, No. 2, pp. 29-43, 6 figs. 1929.

The California Academy of Science made a very large collection of birds (over 8000 skins) in the Galapagos Islands in 1905-06. Most of the smaller birds had not been studied until Mr. Swarth undertook the task in 1927. The author proposes to unite the "ground finches" (genus *Geospiza*) with the creepers (*Certhidea*) to form a new family to be known as Geospizidae, confined to the Galapagos Archipelago and Cocos Island.—T. C. S.

1. A Preliminary Wild Life and Forest Survey of Southwestern Cattaraugus County, N. Y. By Victor H. Cahalane. Pp. 9-144.

2. A Preliminary Report on the Trout Streams of Southwestern Cattaraugus County, N. Y. By Wilford A. Dence. Pp. 145-210. Both articles in the Roosevelt Wild Life Bull., V, No. 1, March, 1928.

The first paper by Mr. Cahalane presents a very full discussion of the bird life of the area, with special attention to the ecological distribution of birds. The local status of two game birds, Ruffed Grouse and pheasant (*P. torquatus?*), is also considered. The second paper by Mr. Dence deals with fishes, but makes a very brief reference (p. 197) to birds as fish enemies.—T. C. S.

We have before us a few mimeographed pages constituting "The Flicker" (Vol. I, No. 2, April, 1929), the official organ of the Minnesota Bird Club. We learn that this Club was organized on March 15, 1929. The subscription price of "The Flicker" is $1 per year (Mr. Charles Evans, 3250 47th Ave., S., Minneapolis). The present number contains an article by E. D. Swedenborg which endeavors to determine what is the "typical winter bird of Minnesota." We wish prosperity to this young organization. With similar state organizations already active in Nebraska and Iowa, we would be glad to see other neighboring states take a similar step.

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Ayers, Douglas Jr., 111 Canah Street, Fort Plain, New York....1924
Bachmann, Dr. Harrold, 2340 Lincoln Park West, Chicago, Illinois....1928
Bailey, Alfred M., Chicago Academy of Science, Chicago, Illinois....1928
Bailey, Mrs. Florence Merriam, 1834 Kalorama Road, Washington, D. C....1911
Bailey, Mrs. Mary L., 2109 Nebraska Street, Sioux City, Iowa....1918
Baird, Robert L., 279 Oak Street, Oberlin, Ohio....1902
Bartsch, Paul, U. S. National Museum, Washington, D. C....1894
Bellah, L. P., Union Station, Nashville, Tennessee....1926
†Bennett, Walter W., 1629 West Palmer Avenue, Sioux City, Iowa....1925
Bergtold, William Harry, 1159 Race, Denver, Colorado....1916
Black, J. D., Winslow, Arkansas....1925
Bladholm, Geo. L., 381 Desplaines Street, Blue Island, Illinois....1929
Blincoe, Benj. J., Route 13, Dayton, Ohio....1920
Bowman, Paul W., George Washington University, Washington, D. C....1927
Brunn, Chas. A., 1510 Central Avenue, Hot Springs, Arkansas....1921
Bryens, Oscar McKinley, McMillan, Luce County, Michigan....1924
Burdick, Dr. George Merton, Box 176, Milton, Wiseonsin....1921
Burgess, Mrs. E. A., 2826 Nebraska Street, Sioux City, Iowa....1925

Burleigh, Thos. D., Division of Forestry, University of Georgia, Athens, Ga.....1923
Burleigh, Dr. W. J., 53 Aberdeen Place, Hillcrest, St. Louis, Mo.....1927
Burns, Frank L., Berwyn, Pennsylvania.....Founder
Burtch, Verdi, Branchport, New York.....1924
Butler, Amos W., 52 Downey Avenue, Indianapolis, Indiana.....1911
Butler, Rev. L. Ermil, First M. E. Church, Bidwell, Ohio.....1926
Cahn, Dr. Alvin R., 902 W. Nevada Street, Urbana, Illinois.....1917
Calhoun, Geo. R., 1 Memorial Building, Nashville, Tennessee.....1928
Camp, R. D., Box 495, Brownsville, Texas.....1924
Carroll, J. J., Box 356, Houston, Texas.....1926
Cavaness, Sallie E., 600 North Main, Monticello, Arkansas.....1923
Chapman, Dr. Frank M., American Museum Natural History, 77th Street and C. P. W., New York, New York.....1910
Clay, Miss Marcia B., Bristolville, Ohio.....1925
Cobb, Rev. P. L., Big Stone Gap, Virginia.....1924
Coffel, Hal. H., Pennville, Gay County, Indiana.....1929
Coffey, Ben, Tennessee Inspection Bureau, Memphis, Tennessee.....1927
Cole, Dr. Leon J., Agricultural-Chemical Building, Madison, Wisconsin.....1921
Commons, Frank W., 608 Chamber of Commerce, Minneapolis, Minnesota.....1923
Cook, G. M., 39 Tod Lane, Youngstown, Ohio.....1923
Cook, Mrs. Helen N., 210 Longwood Road, Roland Park, Baltomire, Md.....1927
Cookman, Alfred, 517 McKinley Avenue, Pomona, California.....1928
Coryell, Sherman, 1500 Hood Avenue, Chicago, Illinois.....1921
Coursen, C. Blair, 651 East 69 Place, Chicago, Illinois.....1927
Danforth, Stuart T., College of Agriculture, Mayaguez, Porto Rico.....1925
Darling, A. B., 4501 Country Club Boulevard, Sioux City, Iowa.....1925
Dean, Robert Henry, 720 Quintard Avenue, Anniston, Alabama.....1921
Deane, Ruthven, 1222 N. State Street, Chicago, Illinois.....1910
Deane, Walter, 29 Brewster Street, Cambridge, Massachusetts.....1903
DeLury, Ralph E., Dominion Observatory, Ottawa, Ontario Canada.....1921
Dickey, Donald R., California Institute of Technology, Pasadena, California.....1912
Dolman, Helen, 1010 Washtenaw Avenue, Ypsilanti, Michigan.....1929
Donaghho, Walter, Box 532, Parkersburg, West Virginia.....1920
Doolittle, E. A., Box 44, Painesville, Ohio.....1925
Dorsey, George A., 531 S. Washington Street, College Park, Georgia.....1927
Dunkelberger, Harry W., P. O. Box 6, Flourtown, Montgomery County, Pennsylvania.....1922
Dunlap, M. Sigsbee, 1451 Hampshire Street, Quincy, Illinois.....1926
§Dwight, Dr. Jonathan, 43 West 70th Street, New York, New York.....1905
Earl, Thomas M., R. D. No. 2, Xenia, Ohio.....1927
Eddy, Samuel, Vivarium Building, Corner Wright and Healey, Champaign, Illinois.....1925
Ehinger, Dr. C. E., 730 Grand Avenue, Keokuk, Iowa.....1926
Eifrig, C. W. G., 1029 Monroe Avenue, Oak Park, Illinois.....1907
Ekblaw, George E., 233 West Orleans, Paxton, Illinois.....1914
Ekblaw, W. Elmer, Box 431, North Crafton, Massachusetts.....1910
Ericksen, W. J., 2311 Barnard Street, Savannah, Georgia.....1921
Fargo, W. G., 506 Union Street, Jackson, Michigan.....1923
Fetter, Dorothy, Winthrop College, Rock Hill, South Carolina.....1927
Fields, E. A., 211 Douglas Street, Sioux City, Iowa.....1925
Fifield, Lewis E., 14 Beekman Street, Plattsburg, New York.....1923
Fleming, James Henry, 267 Rusholme Road, Toronto 4, Ontario, Canada.....1906
Floyd, Joseph L., 1009-11 Geo. D. Harter Bank Building, Canton, Ohio.....1903
Ford, Edward Russell, 5521 Wayne Avenue, Chicago, Illinois.....1914
Gabrielson, Ira N., 516 Post Office Building, Portland, Oregon.....1913
Gault, Benjamin True, 424 So. Main Street, Glenn Ellyn, DuPage Co., Ill.....1895
Gilliam, R. A., 1123 Cedar Hill Avenue, Station A, Dallas, Texas.....1924
Gleason, Jr., Clark H., 51½ S. Professor Street, Oberlin, Ohio.....1929
Gleason, Louisa R. (Mrs. Clark H.), 700 Madison Avenue, S. E., Grand Rapids, Michigan.....1921

Gloyd, Howard K., Department of Zoology, Kansas State Agricultural College, Manhattan, Kansas 1925
Goddard, Henry N., Western State Normal School, Kalamazoo, Michigan 1926
Gowans, Ethel, 308 So. Lincoln Street, Kent, Ohio 1924
Gregory, Stephen S. Jr., Box N., Winnetka, Illinois 1922
Grinnell, Dr. Joseph, Museum of Vertebrate Zoology, University of California, Berkeley, California 1914
Griscom, Ludlow, Museum of Comparative Zoology, Cambridge, Mass 1926
Guest, Marjorie Lee, State Hospital, Box 476, Jamestown, N. D. 1924
Guthrie, Prof. Joseph E., 319 Lynn Avenue, Ames, Iowa 1922
Haecker, H. H., Logan School, Raymond, South Dakota 1926
Handley, Chas. O., 407 East Jefferson Street, Thomasville, Georgia 1925
Hankinson, T. L., 96 Oakwood Avenue, Ypsilanti, Michigan 1911
Harris, Harry, 5234 Hermosa Avenue, Eagle Rock, California 1924
Hastings, Walter E., 310 Maple Street, Howell, Michigan 1923
Haultain, Chas. Frederick, Port Hope, Ontario, Canada 1924
Hayward, W. J., 2919 Jackson Street, Sioux City, Iowa 1913
Henderson, Archibald Douglas, Belvedere, Alberta, Canada 1922
Henderson, Hon. Junius, 1305 Euclid Avenue, Boulder, Colorado 1903
§Henninger, Rev. W. F., Manchester, Michigan 1902
Herrick, Dr. Francis H., Biological Laboratory, Western Reserve University, Cleveland, Ohio 1916
Himmel, Walter J., Department of Botany, University of Nebraska, Lincoln, Nebraska 1916
Hine, Prof. James S., Ohio State University, Columbus, Ohio 1910
Hinshaw, Thomas D., 1908 Scottwood Avenue, Ann Arbor, Michigan 1926
Hoffman, E. C., 740 W. Superior Avenue, Cleveland, Ohio 1925
Holcombe, C. E., 2917 Ezra Avenue, Zion, Illinois 1927
Holt, Ernest Golsan, Legacion Americana, Caracas, Venezuela 1926
Honywill, Albert William, Jr., 17400 Wildemere Avenue, Detroit, Michigan 1920
Horsky, L. O., Mailing Division, P. O., Burlington Postal Station, Omaha, Nebraska 1924
Howell, Arthur Holmes, 2919 S. Dakota Avenue, Washington, D. C. 1921
Hunt, Chreswell J., 810 S. 18th Avenue, Maywood, Illinois 1904
Hunt, J. Steger, 605 East 5th Street, Tuscumbia, Alabama 1926
Hyde, B. T. B., 558 Camino del Monte Sol, Santa Fe, New Mexico 1928
†Johns, Erwin W., 645 Remington, Ft. Collins, Colorado 1925
Johnson, John C., 402 N. Pine Street, Gunnison, Colorado 1926
Jung, Clarence S., 553 Prospect Avenue, Milwaukee, Wisconsin 1921
Kahmann, Karl W., R. R. No. 2, Hayward, Wisconsin 1914
Kee, Hunter, 36 9th Avenue, Marlinton, West Virginia 1922
Keyes, Prof. Chas. R., Cornell College, Lock Box J, Mount Vernon, Iowa 1925
Kirn, Albert J., Box 157, Somerset, Texas 1918
Kretzmann, Dr. Paul E., 801 DeMun Avenue, St. Louis, Mo. 1924
Lambert, Earl Logan, 237 N. 1st Street, Carthage, Illinois 1922
Lancaster, Esther A., Route 3, Hutchinson, Kansas 1927
Lang, Richard C., 319 West Side Avenue, Webster Groves, Missouri 1925
Larrabee, Austin P., Yankton College, Yankton, South Dakota 1921
Laskey, Mrs. F. C., Route 9, Graybar Lane, Nashville, Tennessee 1928
Law, J. Eugene, Box 247, Altadena, California 1911
Lee, George Frederick, M. D., Ph. D., Florence, South Carolina 1926
Leffingwell, Dana J., W. S. C., Pullman, Washington 1926
Leopold, Aldo, 222 Van Hise Avenue, Madison, Wisconsin 1928
Lewis, John B., 304 Mitchell Street, Ithaca, New York 1924
Lewy, Dr. Alfred, 2051 East 72nd Place, Windsor Park Station, Chicago, Ill. 1916
Lindsey, E. A., Tennessee-Hermitage National Bank, Nashville, Tennessee 1924
Little, Luther, 1400 Wayne Avenue, So. Pasadena, California 1914
Lodbell, Richard Nugent, Department of Zoology, A. & M. College, Miss. 1921
Longstreet, Rubert James, Daytona Beach, Florida 1924
Loring, J. Alden, Owego, Tioga County, New York 1926
Lowe, John N., Northern State Normal School, Marquette, Michigan 1927

Luther, Geo. W., DeTour, Michigan....1926
Lutz, Emelie, 4844 Kenmore Avenue, Chicago, Illinois....1926
Lyon, Mary C., 811 N. Sheridan Road, Waukegan, Illinois....1925
†McAtee, W. L., Biological Survey, U. S. Department of Agriculture, Washington, D. C....1921
McCabe, T. T., Barkerville, British Columbia, Canada....1928
McGowan, Hamilton G. ,397 4th Street, N. E., Atlanta, Georgia....1928
McGregor, Richard C., Bureau of Science, Manila, Philippine Islands....1919
McNeil, Dr. Chas. A., 111 W. Fourth Street, Sedalia, Missouri....1922
Madison, Allan A., Box 182, Flaxton, North Dakota....1927
Magann, J. Wilbur, 156 N. Oak Park Avenue, Oak Park, Illinois....1927
Main, John Smith, 610 State Street, Madison, Wisconsin....1921
†Malcomson, R. O., 1603 Ross Street, Sioux City....1926
Marsh, Mai, 1005 Lexington Avenue, Altoona, Pennsylvania....1927
Mayfield, Dr. George R., Vanderbilt University, Nashville, Tennessee....1917
Metcalf, Dr. Franklin P., Fukien Christian University, Foochow, China....1919
Metcalf, Zeno P., State College, West Raleigh, North Carolina....1909
Middleton, Raymond Jones, Marshall Street and Whitehall Road, Norristown Delivery, Jeffersonville, Pennsylvania....1922
Millard, Mrs. F. A., 1032 N. 4th Street, Burlington, Iowa....1926
Minich, Edward C., 1047 Fairview Avenue, Youngstown, Ohio....1923
Mitchell, Catharine Adams, 144 Fairbank Road, Riverside, Illinois....1915
Moore, Arthur David, 712 Phoenix Street, South Haven, Michigan....1922
Moore, Mrs. Nettie Purdy, 941 Starkweather Avenue, Plymouth Michigan....1925
Morris, C. H., McConnelsville, Ohio....1911
Morse, Harry G., Huron, Ohio....1923
Morse, Margarette E., Viroqua, Wisconsin....1922
Moseley, Edwin Lincoln, State Normal College, Bowling Green, Ohio....1921
Mounts, Mrs. Beryl Taylor (Mrs. Lewis H.), Ballard Normal School, Macon, Georgia....1923
Mueller, Mrs. Hans, Willow Terrace, Apartment 81, Louisville, Kentucky....1923
Neff, Johnson A., Marionville, Missouri....1921
Nice, Mrs. Margaret M., 156 W. Patterson Avenue, Columbus, Ohio....1921
Nicholson, Nevin Good, 215 N. W. 3rd Street, Ft. Lauderdale, Florida....1923
Norris, Joseph P., Jr., 2122 Pine Street, Philadelphia, Pennsylvania....1911
Northup, Elizabeth A., 436 Warren Avenue, Youngstown, Ohio....1920
Oberholser, Dr. Harry Church, 2805 18th Street, N. W., Washington, D. C....1894
Ohern, D. W., 915 W. 14th Street, Oklahoma City, Oklahoma....1921
Ortega, James L., Costa Mesa, California....1924
Palas, A. J., 663 49th Street, Des Moines, Iowa....1923
Palmer, Dr. Theodore Sherman, 1939 Biltmore Street, N. W., Washington, D. C....1914
Parker, Herbert, So. Lancaster, Massachusetts....1928
Pemberton, John Roy, 525 N. Palm Drive, Beverly Hills, California....1922
Pennington, Leigh H., New York State College of Forestry, Syracuse University, Syracuse, New York....1921
Pennock, Charles John, Kennett Square, Chester County, Pennsylvania....1920
Phillips, Dr. John H., 2117 Blair Boulevard, Nashville, Tennessee....1921
Pindar, Dr. L. Otley, Versailles, Kentucky....Founder
Plapp, Doris Anne, 4140 N. Kecler Avenue, Chicago, Illinois....1927
Plath, Karl, 2847 Giddings Street, Ravenswood Station, Chicago, Illinois....1916
Porter, Jas. V., Box 394, Glenwood, Minnesota....1929
Pough, Richard H., 4 Lennox Place, St. Louis, Missouri....1924
Praeger, Wm. E., 2 College Grove, Kalamazoo, Michigan....1916
Prewitt, Wm. C., 409 Cross Street, Ypsilanti, Michigan....1929
Prill, Dr. Albert G., Main Street, Scio, Oregon....1892
Quillian, Prof. Marvin C., Wesleyan College, Macon, Georgia....1927
Randall, Mrs. W. S., 618 East 15th Street, Oklahoma City, Oklahoma....1925
Reed, Mrs. C. I. (Bessie P.), 1615 South Ninth Avenue, Maywood, Illinois....1924
Reid, Mrs. Bruce (Bessie M.), care of Gulf Refinery, Port Arthur, Texas....1921
Reid, Russell, 911 Sixth Streeet, Bismarck, North Dakota....1920

Richardson, W. D., 4215 Prairie Avenue, Chicago, Illinois....1918
Riley, Joseph Harvey, U. S. National Museum, Washington, D. C....1914
Roads, Katie M., 463 Vine Street, Hillsboro, Ohio....1914
Robins, James A., care of The Robins School, McKenzie, Tennessee....1927
Robinson, J. M., Box 264, Alabama Polytechnic Institute, Auburn Alabama....1923
Rodock, Roy E., Lewistown State Normal School, Lewistown, Idaho....1928
Rosen, Walter M., Ogden, Iowa....1923
Ross, Marjorie Ruth, R. R. No. 5, Fairmount, West Virginia....1921
Rust, Henry J., Box 683, Coeur d'Alene, Idaho....1921
Satterthwait, Elizabeth Allen, Webster Groves, Missouri....1925
Schantz, O. M., 3219 Maple Avenue, Berwyn, Illinois....1903
Schorger, A. W., 2021 Kendall Avenue, Madison, Wisconsin....1927
Severance, Mrs. J. J., 1612 Grand Avenue, Davenport, Iowa....1928
Sherwood, Jack W., P. O. Box 264, Salinas, California....1929
Silliman, Oscar Peny, Corner Alisal and Riker Streets, Salinas, Monterey County, California....1914
Simmons, Geo. Finlay, 2727 Euclid Avenue, Cleveland, Ohio....1928
Skinner, M. P., 44 Broadhead Avenue, Jamestown, New York....1926
Smith, Prof. Frank M., 79 Fayette Street, Hillsdale, Michigan....1910
Smith, Prof. Jesse L., 334 Vine Street, Highland Park, Illinois....1925
Smits, Lee J., 246 East Alexandrine Avenue, Detroit, Michigan....1927
Spear, James, Wallingford, Pennsylvania....1828
Spiker, Chas. J., New Hampton, Iowa....1916
Spofford, Walter R., Highland Road, Berlin, Massachusetts....1926
Staek, Prof. Joseph W., Department of Zoology, Michigan State College, East Lansing, Michigan....1925
Stewart, Clare R. (Mrs. L. P.), 3475 Morrison Place, Cincinnati, Ohio....1923
Stickney, Gardner P., 864 Summit Avenue, Milwaukee, Wisconsin....1922
Stoner, Dr. Dayton, U. S. Entomological Laboratory, Sanford, Florida....1917
Streeker, John Kern, Baylor University, Waco, Texas....1929
Strong, R. M., 5840 Stoney Island Avenue, Chicago, Illinois....Founder
Stuart, Anne, 1905 D. Street, Lincoln, Nebraska....1924
Stucker, Gus, 108 Bellaire Avenue, Springfield, Ohio....1923
Sturgis, Mrs. S. D., 2400 16th Street, N. W., Washington, D. C....1928
Swarth, Harry S., 2800 Prince Street, Berkeley, California....1910
Taylor, Warner, 219 Clifford Court, Madison, Wisconsin....1917
Teachenor, Dix, 1020 West 61st Street, Kansas City, Missouri....1923
Thomas, Edward S., 1116 Madison Avenue, Columbus, Ohio....1921
Thomas, H. H., 1124 E. Main Street, Pomeroy, Ohio....1924
Tinker, Almerin David, 519 Oswego, Ann Arbor, Michigan....1909
Todd, W. E. Clyde, Carnegie Museum, Pittsburgh, Pennsylvania....1911
Townsend, Dr. Chas. W., Ipswich, Massachusetts....1916
Travis, Florence G., 1458 Mars Avenue, Lakewood, Ohio....1921
Tyler, Dr. Winsor M., 112 Pinckney Street, Boston, Massachusetts....1914
Urner, Charles A., 596 Westminister Avenue, Elizabeth, New Jersey....1928
Van Tyne, Josselyn, 1942 Cambridge Road, Ann Arbor, Michigan....1922
Vlasnik, Mollie, 814 Nebraska Street, Wayne, Nebraska....1927
Warren, Edward R., 1511 Wood Avenue, Colorado Springs, Colorado....1911
Weber, Alois J., 904 Grand Avenue, Keokuk, Iowa....1928
Wertz, Miss Vara M., 101 8th Avenue, Juniata, Pennsylvania....1928
Wetmore, Dr. Alexander, U. S. National Museum, Washington, D. C....1903
†Wheeler, Rev. H. E., Alabama Museum of Natural History, University, Ala....1924
White, Miss Betty, Teachers College, Greenville, N. C....1928
White, Francis Beach, St. Paul's School, Concord, N. H....1926
Wilson, Mrs. Etta S., 9077 Clarendon Avenue, Detroit, Michigan....1928
Wilson, Frank Norman, 804 Lawrence Street, Ann Arbor, Michigan....1924

Wilson, Gordon, 1434 Chestnut, Bowling Green, Kentucky....1920
Winter, Nevin O., 805 Spitzer Building, Toledo, Ohio....1921
Wolcott, Robert H., University of Nebraska, Lincoln, Nebraska....1924
Wright, Dr. Albert H., 113 E. Upland Road, Ithaca, New York....1921
Wright, Earl G., Chicago Academy of Science, Clark and Center Streets, Chicago, Illinois....1925
Yoder, William H., Jr., 4510 N. Carlisle Street, Philadelphia, Pennsylvania....1926
Youngworth, William, 3119 E. 2nd Street, Sioux City, Iowa....1927

Associate Members

Abbey, G. F., Cottonwood, Minnesota....1924
Adams, Benjamin, Wethersfield, Connecticut....1920
Adkins, T. R., 421 Aztec Building, San Antonio, Texas....1926
Alexander, Frank M., Box 95, Wellington, Kansas....1928
Allen, A. F., 714 34th Street, Sioux City, Iowa....1925
Allert, Oscar P., R. R. 1, McGregor, Iowa....1923
Allison, C. W., Box 968, St. Louis, Missouri....1926
Appleman, Mrs. A. L., 2081 Lamar Boulevard, Memphis, Tennessee....1929
Aspinwall, Mrs. Clarence, 2340 Kalorama Road, Washington, D. C....1923
Baehtel, Dorothy H., Peabody College, Nashville, Tennessee....1928
Baehrach, Mrs. Benjamin, 1555 W. Macon Street, Decatur, Illinois....1926
Baerg, William J., University of Arkansas, Fayetteville, Arkansas....1924
§Bailey, H. B., Box 112, Newport News, Virginia....1914
Baldwin, Mrs. Harry L., 7136 Ridgeland Avenue, Apartment 1, Chicago, Ill....1926
Ball, William Howard, 1233 Irving Street, N. W., Washington, D. C....1924
Barber, Bertram Alpha, 350 West Street, Hillsdale, Michigan....1923
Baroody, Mrs. Nellie J., 3130 Wenonah Avenue, Berwyn, Illinois....1927
Batchelder, C. F., 7 Kirkland Street, Cambridge, Massachusetts....1927
Bates, Rev. John Mallory, Red Cloud, Nebraska....
†Baynard, Oscar E., P. O. Box 104, Plant City, Florida....1924
Beal, Clarence Marvin, 184 Stowe Street, Jamestown, N. Y....1924
Beard, Miss Mary, 406 E. 5th Avenue, Knoxville, Tennessee....1928
Beebe, Ralph, 2920 Hillger Avenue, Detroit, Michigan....1924
Benedict, Prof. Harris M., University of Cincinnati, Cincinnati, Ohio....1925
Benedict, Mrs. Howard Smith, 418 Chester, 12th Building, Cleveland, Ohio....1926
Bergman, Miss Verna, 114 West Hittany Avenue, State College, Pennsylvania....1928
Birge, Miss Willie I., College of Industrial Arts, Denton, Texas....1925
Blanchard, Dr. Frank N., Department of Zoology, University of Michigan, Ann Arbor, Michigan....1928
Blincoe, Mrs. Benjamin J., R. R. 13, Dayton, Ohio....1926
Bolen, Homer R., Victoria, Texas....1928
Bolt, Benj. F., 225 E. 46th Street, Kansas City, Missouri....1916
Bonesteel, V. C., American National Bank, Aurora, Illinois....1925
Borrer, Donald J., 177 W. Park Avenue, Columbus, Ohio....1927
Bossler, John, Berks County, Hamburg, Pennsylvania....1928
Boulton, Wolfrid Rudyard, Jr., Carnegie Museum, Pittsburgh, Pennsylvania....1922
Bowdish, Beecher Scoville, Demarest, New Jersey....1924
Bowman, John G., University of Pittsburgh, Pittsburgh, Pennsylvania....1928
Brady, Dr. John A., St. Augustine College, Lakewood, Ohio....1925
Braly, John Claude, 501 Burnside Street, Portland, Oregon....1927
Brasher, Rex, Chickadee Valley, Kent, Connecticut....1926
Brodkorb, Pierce, 711 Judson Avenue, Evanston, Illinois....1926
Brooks, Maurice, French Creek, West Virginia....1926
Broomhall, W. H., Stockport, Ohio....1926
Brown, F. Martin, Commissioner of the Palisades Interstate Park, Iona Island, New York....1924

Bryant, Lincoln, Jr., 149 Randolph Avenue, Milton, Massachusetts....1928
Buehner, Mrs. E. M., 2453 N. Central Park Avenue, Chicago, Illinois....1914
Burcham, Frank W., 510 N. Church Street, Fayette, Missouri....1929
Burket, Dr. Ivan R., Ashland, Kansas....1926
Burkhard, Fred, Accident, Maryland....1922
Burnett, Prof. W. L., State Agricultural College, Fort Collins, Colorado....1926
Burt, W. H., Museum of Vertebrate Zoology, University of California, Berkeley, California....1928
Burton, Rev. Wm. W., Alliance, Ohio....1913
Campbell, Louis W., 304 Fearing Boulevard, Toledo, Ohio....1926
Carlson, Carl Olof, Department of Biology, Doane College, Crete, Nebraska....1923
Case, Mrs. F. E., 1717 Market Avenue, N., Canton, Ohio....1928
Chamberlain, Chauncey W., Hotel Hemenway, Boston, Massachusetts....1921
Chilcott, Mrs. E. F., Woodward, Oklahoma....1923
Christianson, Anna, 1812 Jackson Street, Sioux City, Iowa....1925
Christy, Bayard H., Box 950, Pittsburgh, Pennsylvania....1922
Clark, Mrs. C. C., 922 N. Third Street, Burlington, Iowa....1925
Coad, Dwight S., 300 Alexander, Rochester, New York....1927
Coates, Louise Bell, Baldwin Cottage, Oberlin, Ohio....1929
Cole, Arthur W., 735 North Main, West LaFayette, Indiana....1926
Coleman, Mrs. Thomas, Maple Bluff, Madison, Wisconsin....1928
Compton, Lawrence Verlyn, University of Kansas, Lawrence, Kansas....1923
Cook, Fannye A., Crystal Springs, Mississippi....1925
Cottam, Clarence, Brigham Young University, Provo, Utah....1929
Coulter, Stanley G., Purdue University, LaFayette, Indianna....1916
Craig, Glenn C., 570 Trade Street, Florence, Alabama....1924
Cramer, Wm. G., Apartment 10, The Nelson, 2501 Kemper Lane, Cincinnati, Ohio....1923
Dales, Mrs. Marie, 14 24th Street, Sioux City, Iowa....1925
Danner, Mrs. Mary S., 1646 Cleveland Avenue, N. W., Canton, Ohio....1921
Davis, Mrs. L. N., 2016 Lexington Avenue, Ashland, Kentucky....1925
Davis, Russell S., Maple Lawn Stock Farm, Clayton, Illinois....1926
Davis, Tony, Marshall, Missouri....1927
Dellinger, Samuel C., 339 Gregg Street, Fayetteville, Arkansas....1926
DeMille, John B., 982 Cote des Neiges Road, Montreal, Quebec, Canada....1924
Dille, Fred M., Niobrara Reserve, Valentine, Nebraska....1912
†Dingle, Edward von Seibold, Huger, South Carolina....1925
Dodson, Joseph H., Kankakee, Illinois....1914
Dondna, Wilbur, Ottawa, Kansas....1926
DuMont, Philip A., Wilton, Connecticutt....1928
Duncan, Mrs. Sanford, 207 Union Street, Nashville, Tennessee....1921
Dunlap, Mrs. Nellie M., 209 W. Main, Waukesha, Wisconsin....1922
Durst, Richard E., R. F. D. No. 2, Willard, Ohio....1927
Duston, Mrs. A. W., 1744 S. Yorktown, Tulsa, Oklahoma....1926
Earle, Samuel L., 1223 Niazuma Avenue, Birmingham, Alabama....1928
Eastman, Mrs. E. P., 719 Columbia Street, Burlington, Iowa....1926
Eastman, Fred, 2628 Dodge Street, Omaha, Nebraska....1925
Eastwood, Sidney K., 301 So. Winebiddle Avenue, Pittsburgh, Pennsylvania....1928
Edson, J. M., 90 Marietta Road, Bellingham, Washington....1928
Ehcim, J. M., 236 S. Adams Street, Hutchinson, Minnesota....1926
Eiffert, Paul, R. F. D. No. 1, St. Cloud, Minnesota....1927
Elrod, Mrs. Walter DeWitt, Box 103, Okmulgee, Oklahoma....1923
Emerson, William Otto, Box 39, R. F. D. No. 1, Palm Cottage, Hayward, California....1922
Emlen, John T., Jr., 36 W. School Lane, Germantown, Philadelphia, Pa....1926
Erwin, Mrs. Marjorie B., Williamsburg, Iowa....1926

Evans, Virgil, 555 Locust Street, Valparaiso, Indiana....1926
Everett, E. A., Waseca, Minnesota....1926
Evins, Samuel N., 38 E. 14th Street, Atlanta, Georgia....1922
Farley, Frank L., Camrose, Alberta, Canada....1928
Fekst, Henry, 1366 3rd Street, Milwaukee, Wisconsin....1928
Feser, Mrs. A. L., 840 W. 66th Street, Chicago, Illinois....1926
Finfrock, C. M., 3186 Oak Road, Cleveland, Ohio....1926
Fischer, Donald, Shakopee, Minnesota....1926
Fisher, G. Clyde, American Museum Natural of History, New York, N. Y....1925
Fitzpatrick, Fred L., Coe College, Cedar Rapids, Iowa....1924
Floyd, Charles B., 454 Wolcott Street, Auburndale, Masachusetts....1924
Foft, Samuel F., Lock Box 186, Waukee, Iowa....1916
Fondi, Charles H., 1726 Dandridge Pike, Knoxville, Tennessee....1928
Force, Edith R., 3021 E. 8th Street, Tulsa, Oklahoma....1926
Ford, Louise P., Barnwell Avenue, Aiken, South Carolina....1921
Frankel, Mrs. Henry, 301 Tonawanda Drive, Des Moines, Iowa....1925
Franzen, A. J., Field Museum, Chicago, Illinois....1929
French, Mrs. Mena, Box 171, Wayland, Mass....1928
Friedrich, George Walter, 3029 Belmont Avenue, Chicago, Illinois....1914
Fryklund, P. O., Roseau, Roseau County, Minnesota....1926
Fuchs, E. H., Alma, Missouri....1922
Funk, Mrs. A. B., 649 Harwood Drive, Des Moines, Iowa....1925
Funkhouser, William D., Department of Zoology, University of Kentucky, Lexington, Kentucky....1918
Gander, Frank F., O'Rourke Zoological Institute, Balboa Park, San Diego, California....1928
Gearhart, Edwin E., Route 7, Bucyrus, Ohio....1928
Geist, Robert Miller, 811 Euclaire Avenue, Columbus, Ohio....1923
Gettys, Mrs. B. M., 621 S. Minnesota Avenue ,Sioux Falls, South Dakota....1925
Gillette, Fredericka B., 1319 Forest Avenue, Ann Arbor, Michigan....1928
Glenn, Donald, Franklin, Pennsylvania....1928
Good, Henry G., Alabama Polytechnic Institute, Auburn, Alabama....1926
Gorham, Dean B., 255 No. Fairview Avenue, Decatur, Illinois....1926
Grafton, James, 819 Third Street, Antioch, California....1928
Grange, Wallace Byron, Ladysmith, Wisconsin....
Grant, C. P., Field Museum, Chicago, Illinois....1928
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Grant, Martin Lee, University of Minnesota, Minneapolis, Minnesota....1926
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"From these barren and musty records, the author of the present work has a thousand times turned with a delight bordering on adoration, to the magnificent repository of the woods and fields—the *Grand Aviary of Nature.* In this divine school he has studied from no vulgar *copy;* but from the works of the GREAT MASTER OF CREATION himself; and has read with rapture the lessons of his wisdom, his goodness and his love, in the conformation, the habitudes, melody and migrations of this beautiful portion of the work of his hands. To communicate as correct ideas of these as his feeble powers were capable of, and thus, from objects, that, in our rural walks, almost everywhere present themselves, to deduce not only amusement and instruction, but the highest incitements to virtue and piety, have been the author's most anxious and ardent wish. On many of his subjects, indeed, it has not been in his power to say much. The recent discovery of some, and the solitary and secluded habits of others, have opposed great obstacles to his endeavours in this respect. But a time is approaching when these obstacles will no longer exist. When the population of this immense western Republic will have diffused itself over every acre of ground fit for the comfortable habitation of man—when farms, villages, towns and glittering cities, thick as the stars in a winter's evening, overspread the face of our beloved country, and every hill, valley and stream has its favourite name, its native flocks and rural inhabitants; then, not a warbler shall flit through our thickets, but its name, its notes and habits will be familiar to all; repeated in their sayings, and celebrated in their village songs. At that happy period, should any vestige or memory of the present publication exist, be it known to our more enlightened posterity, as some apology for the deficiencies of its author, that in the period in which he wrote, three-fourths of our feathered tribes were altogether unknown even to the proprietors of the woods which they frequented—that without patron, fortune or recompense, he brought the greater part of these from the obscurity of ages, gave to each 'a local habitation and a name'—collected from personal observation whatever of their characters and manners seemed deserving of attention; and delineated their forms and features, in their native colours, as faithfully as he could, as records, at least, of their existence."—Alexander Wilson, in the preface of the fifth volume of American Ornithology—these lines being quoted from George Ord's Sketch of the Life of Alexander Wilson, Author of American Ornithology, Philadelphia, 1828.

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New subscriptions, changes of address, and applications for membership should be addressed to the Secretary. Personal items, news of events in the scientific world, and other notes suitable for our "Notes Here and There" department may also be addressed to the Secretary.

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HARRIS SPARROW

Adult in full breeding plumage

Adult shortly after first postnuptial molt

Adult shortly before second prenuptial molt

Immature in first winter plumage

THE WILSON BULLETIN

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Vol. XXXVI (New Series) Whole Number 148

HARRIS'S SPARROW AND THE STUDY OF IT BY TRAPPING

BY MYRON H. SWENK AND O. A. STEVENS*

With Colored Frontispiece by George Miksch Sutton

The Harris's Sparrow (*Zonotrichia querula*) is a favorite with many bird students within its limited range. "A bird of imposing appearance (for a sparrow)", wrote Coues (1903), thereby expressing the situation quite well. Its large size, distinctive markings, vigorous call notes, remarkable song, abundance in certain districts especially during migrations, and the scientific interest in it that has been inspired by its limited distribution and the mystery that so long surrounded the location of its summer home, have combined to attract attention to the species.

The earlier discoveries of this species, by Thomas Nuttall, Prince Maximilian, and J. J. Audubon have been admirably and fully set forth by Harry Harris (1919c), and therefore require no amplified discussion here. Suffice to say that on April 28, 1834, while the party under Captain Nathaniel J. Wyeth, bound for the Columbia

*In the fall of 1921 the senior author decided to attempt "A Brief Biography of the Harris's Sparrow," in which the more important facts known concerning the history, distribution, nesting, migrations, wintering, habitat, general habits, food, voice, plumages and measurements of this interesting sparrow would concisely be presented. Much progress was made on this paper in 1922, including a practically complete review of the literature concerning the species to that year, but in 1923 pressure of other matters forced work on this incomplete paper to be suspended. In the fall of 1927, the large number of Harris's Sparrows taken by the junior author in his traps impressed upon him the unusual opportunity offered by this species for study by the trapping method. Correspondence was begun by him with the hope that some one in the winter range of the bird would take the lead, but without success, so that it seemed desirable to him also to prepare a summary of our knowledge of the species, together with the banding results to date, in order to outline more definitely the lines of study and to interest other students in the problem. This correspondence, however, had the result of making known to the co-authors their two planned papers, and in June, 1928, the present joint paper was projected by agreement between them. The junior author should, however, be given complete credit for the pages devoted to the discussion of trapping and banding. The preliminary manuscript has been examined by members of the Bureau of Biological Survey of the U. S. Department of Agriculture. The generous co-operation of many other people is indicated through the text, and portions of the manuscript have been submitted to several of these for correction or further suggestions.—THE AUTHORS.

River country, of which Thomas Nuttall and J. K. Townsend were members, was a few miles west of Independence, Missouri, and approaching Westport, the probable type specimen of Nuttall's "Mourning Finch (*Fringilla querula*)" was taken, within or close to the present city limits of Kansas City, Missouri. A few days later, on May 5, 1834, Nuttall (1840) again heard this bird's "long, drawling, monotonous and solemn note *te de de de*" near the Red Vermilion River, a tributary of the Kansas River in Pottawatomie County, Kansas.

At almost the same time that Nuttall discovered the species in Missouri and Kansas, Prince Maximilian of Wied, in descending the Missouri River, reached "Belle-Vue" (now Bellevue, the oldest town in Nebraska, located in Sarpy County a few miles north of the mouth of the Platte River) at noon on May 13, 1834, and there his hunters collected this sparrow, which Maximilian (1841) named *Fringilla comata*.

Nine years later, while J. J. Audubon and his party were ascending the Missouri River, when a little above Fort Leavenworth, on May 4, 1843, Edward Harris shot a "new finch" which later in the same year Audubon (1843) named "Harris's Finch (*Fringilla harrisii*)", in honor of his "excellent and constant friend," its discoverer, apparently all ignorant of the prior describing and naming of the bird by both Nuttall and Maximilian. On May 6, 7 and 8, 1843, farther up the river, Harris shot additional specimens of this bird, and on the return trip shot an immature specimen at Fort Croghan (below the present Omaha and a little above Bellevue, Nebraska) on October 5, 1843, which Audubon figured with the adult male in his plate.

Beginning with Gambel (1847) authors in technical nomenclature mainly properly referred to the species as *Zonotrichia querula* (Nuttall), but the vernacular name applied by Audubon has been the one that has persisted to the present time.

General Distribution

The distribution of the Harris's Sparrow in the United States, except as more or less of a rarity, is oddly restricted to a narrow area west of the Mississippi River, lying between the meridians of 94° and 100° north of the 28th parallel. In winter it occupies an area of only about 200 by 900 miles extending from southeastern Nebraska to central Texas. During migrations it is abundant between these same longitudes in the northern States. Eastward it is common through northwestern Missouri and most of Iowa, occurring rather

frequently in southern Wisconsin and northern Illinois, rarely in Michigan, Indiana, Ohio, and Ontario, and accidentally in Massachusetts. Westward the range in which it is common is somewhat more restricted, and it is uncommon in the western parts of Kansas, Nebraska and South Dakota. In Colorado, Wyoming, and Montana it seems to be more or less rare. Through North Dakota and Canada its path tends a little more to the west, and from North Dakota northward it spreads decidedly westward, covering most of Saskatchewan and a considerable part of Alberta. In the southward migration a few of the birds turn westward and reach British Columbia or points farther south, but these are probably to be regarded as straggling individuals separated from the main flocks and traveling with other species.

Summer Range

For many years the summer habitat of the Harris's Sparrow was much of a mystery. Lingering as it did in the Missouri Valley until late in May or even early in June, it was thought for a long time that it must nest at no great distance north of the United States, if it did not actually do so within its boundaries. Maximilian (1841) and Aughey (1878) both thought it nested along the Missouri River in eastern Nebraska. Later writers suggested that it nested in Minnesota, Dakota, Montana, or Manitoba. In fact, Bendire (1889) described the nest and eggs of a bird, supposed probably to be this species, found June 24, 1885, on the Little Horn River near Fort Custer, Montana. But as further explorations in these regions failed to disclose nesting birds, the possibilities moved farther north.

It was not until 1900 that the true summer home of the Harris's Sparrow was finally discovered. In that year Preble (1902) found it rather common near Fort Churchill on the western shore of Hudson Bay (about lat. 57°), July 23 to 30, where he collected not only adult birds of both sexes but young birds just from the nest. None of the nests themselves were found by Preble, but he considered that the birds nested among the scattered patches of dwarfed spruce growing in the small valleys and ravines along the Churchill River, where they were found commonly.

Again in 1903 Preble (1908) noted several Harris's Sparrows near McTavish Bay, the southeastern arm of Great Bear Lake, on August 23, and four days later encountered them in small flocks among the dwarfed spruces along the southern shore of the Lake just west of McTavish Bay. Both adult and young of the species were

present "in a habitat precisely similar to its chosen nesting ground on Hudson Bay. All indications therefore point to the conclusion that its principal breeding grounds are in the strip of stunted timber extending for 800 miles between Hudson Bay and Great Bear Lake, along the northern border of the transcontinental forest."

Seton (1908) in 1907 noted the Harris's Sparrow, first on Kahinouay Island in the eastern part of Great Slave Lake on July 20, where it was evidently nesting, and later from there northwardly up to the edge of the Barren Grounds, finding it abundant and evidently nesting in every large thicket. On August 5, at the limit of tree growth on Artillery Lake, a nest was found on the ground under a dwarf birch. This nest was made of grass, resembled that of the White-throated Sparrow, and contained three young nearly able to fly.

Fleming (1919) has given records of birds taken by Buchanan at the end of July, 1914. These include both adults and young taken on the Cochrane River. Mr. H. H. Mitchell (letter October 30, 1928) writes that there is some doubt as to the locality, but that it probably was twenty-five or thirty miles east of the Saskatchewan-Manitoba boundary at about latitude 58°30′.

When Preble (1908) was working down the Slave River and northwestward as far as Fort Rae in May, 1900, he saw migrating Harris's Sparrows only at Fort Chipewyan. Following the same direction in 1903 he did not find these birds until he was nearly to Great Bear Lake.

Thus through the discoveries of these ornithologists the mystery of the breeding grounds of the Harris's Sparrow largely has been solved. Evidently it is in the strip of dwarfed timber margining the northern edge of the forests of the Hudsonian Life Zone, from the eastern shore of Great Bear Lake to the western shore of Hudson Bay, and up to the very edge of the Arctic Barren Grounds. Here the bird spends the period from June to September, nesting and rearing its single brood of young in a seclusion from man that is almost absolute. Nesting must take place in the latter part of June, July, and early August. Further search may extend the known breeding range a little more by disclosing nesting birds at other points in western Canada.

Distribution During Migrations

In the following pages are given the detailed accounts of the known distribution of the Harris's Sparrow in the various parts of its range outside of the breeding area. These will serve as a frame-

work upon which to build a more nearly complete record. More data are needed upon the comparative abundance of the species in the western part of its migration range, especially in northern Minnesota, Manitoba, Saskatchewan, and Alberta.

Central Canada

Our knowledge of the distribution of the Harris's Sparrow in the northern part of its migration range is limited by the paucity of observations from that region. Cooke (1913) reported it from the Arctic Red River (probably at about long. 133°, lat. 68°) in June. Preble (1908) found it in September, after the nesting season, near McVicar Bay (120°, 65°), thirty miles west of there, near Manito Islands a little farther west, and at Fort Franklin (124°, 65°), and recorded its occurrence, as observed by H. W. Jones, at Willow River, near Fort Providence (118°, 61°30′) late in May, and at Hay River (about 117°, 60°), where a "large flock" was seen from May 26 to June 15. Cooke (1913) also reported it from the latter locality in May.

The province of Manitoba must be well covered by the migration. Preble (1902) found them on the upper Hayes River late in August, and commonly near the Echimamish River, just northeast of Lake Winnipeg. Cooke (1888) recorded its occurrence at the Shell River (long. 101°, lat. 51-52°) and (1913) reported on six years of migration at Pilot Mound (99°, 49°15′) and on sixteen years of migration at Aweme, about fifty miles northwest of Pilot Mound (see also Criddle, 1922). Seton (1886) reported it as an abundant migrant at Red River (97°, 49-50°), Big Plain and Souris (100°, 49°30′). McDougal (1924) trapped thirteen at East Kildonan in 1923. Mr. A. G. Lawrence supplies numerous additional records from southern Manitoba, especially from Winnipeg (97°, 50°). From Saskatchewan, Cooke (1913) reported on three years of migration at Indian Head (104°, 50°30′) and its occurrence at Osler (107°, 52°30′) in mid-May. Mr. L. B. Potter writes (letter December 17, 1928) that at Eastend in southwestern Saskatchewan (109°, 49°30′) these sparrows occur quite regularly but usually in limited numbers. Cooke (1913) reported its ocurrence at Brooks, Alberta (112°, 50°30′) and on four years of migration at Flagstaff (111°30′, 52°30′). Preble (1908) recorded them at Lily Lake (north of Edmonton, at about 113°30′, 53°30′), at Athabasca Landing (113°30′, 54°30′), and at Fort Chipewyan (111°, 59°). Mr. H. M. Laing writes (letter July 30, 1928) that the farthest west that he has taken them is at Belvedere, Alberta (114°20′, 54°). Apparently from central North Dakota the western

edge of the main migration path bends sharply westward, passing through the general region of Regina and Saskatoon, and thence on across northeastern Alberta.

Minnesota

The Minnesota localities reported on for migration dates of the Harris's Sparrow by Roberts (1879) and Cooke (1888 and 1913)—Lanesboro, Fillmore County; Heron Lake, Jackson County; Minneapolis, Hennepin County; Elk River, Sherburne County; Lake Andrew, Kandiyohi County; and Frazee City and White Earth, Becker County—are all in the southern and western parts of the state, south of latitude 46° and west of longitude 95°. The same is true for Pipestone, Pipestone County, where it is recorded by Mr. P. Lewis (Hatch, 1892) and Mr. Alfred Peterson. These birds seem to occur quite regularly in migrations in eastern Minnesota from Minneapolis southward, but are much less common there than in the western part of the state (see trapping records, p. 166). There is only one early winter record, from Fairmont, Martin County (lat. 43°30′) reported by Hagerty (1914). The localities in the northern part of the state cited by Cooke (1888), as well as those received from Dr. T. S. Roberts (letter April 19, 1929), are all west of longitude 95°, except one from St. Louis County (92°). It seems possible that the main body of migrating birds may be deflected westward by the forests. Dr. Roberts writes that the absence of records from the northern part of the State may be due only to lack of observers in that section and that he has recently received a record of the occurrence of Harris's Sparrows at Deer River in Itasca County.

North Dakota

Harris's Sparrows are abundant in migrations through the eastern part of North Dakota as far west as Jamestown (long. 99°), and, probably less so, from there to Bismarck (long. 101°). Most of the published records are from along the Red River and east of longitude 98°—Grafton, Walsh County (Wood, 1923, and Williams, 1926): Grand Forks, Grand Forks County (Cooke, 1913); Fargo and Argusville, Cass County (Cooke, 1888); and Anselm, Ransom County (Wood, 1923). No records are available from the southwestern part of the State. Mr. Russel Reid writes (letter March 16, 1928) from Bismarck: "I see only scattered individuals in the spring, but sometimes large flocks in the fall." Coues (1874) collected a series from the Mouse (or Souris) River (long. 101-102°, lat. 49°) in 1873, and Cooke (1913) reported it from Antler, Battineau County, in the same region. Larson (1928) considered it "tolerably common" in eastern

MeKenize County (long. 103°30′). Mr. J. H. McClelland, loeated at Arnegard, MeKenzie County (farther from the river) writes (letter Mareh 28, 1928) that he sees a few birds at a time, never common.

South Dakota

In South Dakota the Harris's Sparrow is an abundant migrant in the eastern part of the State. Agersborg (1885) lists it as one of the most abundant migrants in southeastern South Dakota. Most of the published reeords are from about longitude 99° or eastward—Fort Sisseton (MeChesney, 1880), Turtle River and Vermilion (Cooke, 1888), Fort Randall (Coues, 1874), Sanborn County (Visher, 1913), Sioux Falls (Larson, 1925), Lennox (Mallory, 1924), ete. The migration range, however, extends west to about longitude 102°. Dr. F. V. Hayden (Baird, 1858) collected one at Medicine Creek, Lyman County, Oetober 8, 1856. Visher (1909) noted that these brids were reported by E. H. Sweet as eommon in 1907 and 1908 in Stanley (now Jaekson) County, between Interior and Kadoka and northward (long. 102°). Tullsen (1911) reeorded that he saw three birds at Lake Creek (now Laereek), Bennett County (also long. 102°), and Visher (1912), on the authority of Tullsen, later reported the speeies as "eommon in migrations" on the old Pine Ridge Indian Reservation (now Washabaugh, Bennett, Shannon, and Washington Counties). Mr. W. H. Over writes (letter Mareh 26, 1928) that he has no reeords for the Black Hills (less than 100 miles west of the last eited loeality). There is one early winter reeord, from Dell Rapids, Minnehaha County (lat. 43°45′), reported by Anderson (1924).

Nebraska

Over that portion of Nebraska lying east of longitude 99° the Harris's Sparrow is, in general, a regular and eommon migrant. Actual reeords of its oeeurrenee are at hand from Riehardson, Nemaha, Otoe, Cass, Sarpy, Douglas, Gage, Laneaster, Saunders, Dodge, Cuming, Dakota, Antelope, Holt, Nanee, Seward, Saline, Jefferson, Nuekolls, Webster, Adams, Hall, Kearney, and Buffalo Counties. These eounties all lie in about the eastern one-third of the State. There are but very few reeords of the oeeurrenee of this bird west of longitude 99° in Nebraska. Rev. J. M. Bates has noted it on a few different oeeasions at Kennedy and elsewhere in Cherry County. Mrs. Lulu K. Hudson reports it as an uneommon migrant at Simeon, northeast of Kennedy, and Mr. F. M. Dille reports having seen but a very few at Valentine, Cherry County, during several years of residenee there. The senior author saw some along the Niobrara River south of Valentine in the

fall of 1910, and found them common at Halsey, Thomas County, the same fall, as reported by Zimmer (1913), who saw the species in the same locality in the spring of 1912. Childs (1908) saw Harris's Sparrows at the forks of the Dismal River in Hooker County. Mr. Wilson Tout identified the species once from North Platte, Lincoln County. Mr. Miles Maryott found the species to be a rare migrant in the vicinity of Oshkosh, Garden County. Zimmer (1911) secured a Harris's Sparrow from a flock of Western Tree Sparrows in the valley of the White River near Crawford, Dawes County. Dawson (1921) saw a single bird in Monroe Canyon, Sioux County, in the extreme northwestern part of the State.

Eastern Nebraska is at the northern limit of the wintering range of the Harris's Sparrow. Cary (1900) reported that a small flock remained at Neligh, Antelope County, along the Elkhorn, throughout the severe winter of 1898-99. At Omaha, Douglas County, along the Missouri, and at Plattsmouth, Cass County and Fremont, Dodge County, along the Platte, in spite of the presence of apparently good winter cover, these birds leave for farther south late in December and do not winter through at those places. They do winter through, however, at least in some winters, at Dunbar (a little west of Nebraska City in Otoe County); Lincoln, Lancaster County; Beatrice, Gage County; Fairbury, Jefferson County; Superior, Nuckolls County; Red Cloud, Webster County; and Hastings, Adams County—or in southeastern Nebraska south of latitude 41° and east of longitude 99°. They are especially common during the winter at Fairbury, along the Little Blue River, where the Misses Callaway have conducted their banding operations for the past five years.

Iowa

This State is north of the regular winter range of the Harris's Sparrow. Mills (1928) reports one seen at Pierson, Woodbury County (lat. 42°30′), December 27, 1927. The birds migrate commonly over the western and middle portion of the State but are comparatively uncommon in its eastern one-third. Tripp (1873) listed it as abundant and described its season and song as observed in Decatur County (long. 94°, lat. 40°30′); Baird, Brewer, and Ridgway (1875) recorded it being twice taken in Jasper County (93°, 41°30′); and Cooke (1884) recorded it from Mitchell, Mitchell County (92°45′, 43°30′) and later (1888) from Iowa City, Johnson County (91°30′, 41°30′) and Des Moines, Polk County (93°30′, 41°30′). Jones (1895) gave it as a regular migrant at Grinnell, Poweshick County (92°45′). Wilson (1906) has recorded it as rare in Scott County (90°30′, 41°30′).

Anderson (1907) cited records of the species from Scott and Johnson and from three additional counties between the Mississippi River and about longitude 92°—Winneshiek, Lee (see also Widmann, 1907) and Van Buren—the reporters of which all agreed that it is rare in that part of Iowa. However, Mr. H. R. Dill (letter March 27, 1928) rates it as "fairly common" in Johnson County in early winter, and Miss Althea R. Sherman (1909) at National, Clayton County (91°15′, 43°), six miles from the Mississippi River, considers it neither rare nor irregular at that point, where she has kept exceptionally complete records for the last twenty years. She writes (letter June 28, 1928) that "some seasons it is seen here forty days or thereabout (in the fall), in others only a few—1907 (5 days), 1912 (11), 1913 (6), 1914 (1), 1917 (5), 1918 (7), 1926 (6). The largest number for any one day is twelve on October 16, 1921. The years 1911, 1916, 1921, and 1924 are the only years when six or more birds were counted on one day." Records cited by Cooke (1913) indicate that the species is a regular migrant in Poweshiek, Warren (93°30′) and Woodbury (96°) Counties. Spurrell (1918) and Mrs. Battell (1924) have reported its occurrence at Ames, Story County (93°30′). Anderson (1907) says that in Winnebago and Hancock Counties (long. 94°) this sparrow is a common migrant, often abundant in the fall. Mr. W. M. Rosen finds it a common migrant at Ogden, Boone County (94°) and Spurrell (1921) reported it as a regular and abundant migrant, both spring and fall, in Sac County (95°). Beck (1924) reported it from Denison, Crawford County (95°30′). From latitude 95° to the western border of Iowa it is an abundant migrant.

Missouri

The Harris's Sparrow is common during migrations through western Missouri, and the eastern limits of the area in which it may be called common are apparently about as in Iowa (from longitude 93° westward). Nuttall (1840) discovered the species near the present Kansas City, as has been described. Hoy (1864) in May, 1854, found it at Chillicothe, Livingston County (93°30′) and Lexington, LaFayette County (94°). Scott (1879) described his observations of the species at Warrensburg, Johnson County, where it was quite common. Wilson (1896) found it common at St. Joseph, Buchanan County, in the fall of 1894. Widmann (1907) records it from southwestern Missouri at Jasper, Jasper County (Savage) and at Freistatt and Pierce City, Lawrence County (Nehrling). He states that it is a rare straggler in eastern Missouri, citing the records from Keokuk, Iowa (Currier); Warsaw, Illinois (Worthen); Quincy, Illinois (Pol-

ing); and Lincoln County, Missouri, as well as the record from Mt. Carmel, Audrain County, April 3, 1884 (Mrs. M. Musick), previously given by Cooke (1884 and 1888). To these he adds (letter March 28, 1928): Jefferson City, Cole County; Arcadia, Iron County; and Bonfils, Clayton and St. Louis, St. Louis County. These localities range from longitude 90°20′ to 92°10′ and are all north of latitude 37°30′. The Christmas censuses published in *Bird-Lore* show that occasional birds winter in the counties along the western edge of the State—Tarkio, Atchison County (Salmon); Maryville, Nodaway County (Cameron); Concordia, Lafayette County (Schreimann); and Marionville, Lawrence County (Neff). Mrs. W. W. Holliway at Rockport, Atchison County, in the extreme northwestern part of the State, writes (letter November 19, 1928) that usually the birds are seen there from the middle of October until the middle of December, but that in the winter of 1927-28, which was very open, some were seen January 10 and one was trapped February 18. From Marionville, in Lawrence County (93°45′, 37°), Mr. J. A. Neff (letter April 1, 1928) writes: "Some seasons they winter in large numbers, sometimes sparsely, and occasionally none stay all winter." From his (1923) paper on the birds of the Ozark Region this seems also to be the status of the bird through that region generally.

Kansas

In Kansas the Harris's Sparrow is abundant during migrations west to about longitude 98°, and especially between longitudes 96° and 98°. The finding of it near the Red Vermillion River, Pottawatomie County (long. 96°) by Nuttall (1840), and also near Fort Leavenworth, Leavenworth County (95°), and above that place on the Missouri River, by Harris and Audubon (1843), have already been mentioned. It was again recorded from Fort Leavenworth by Lieutenant D. N. Couch on October 21, 1854, and Dr. F. V. Hayden on April 21, 1856 (Baird, 1858), and by J. A. Allen (1872) in May, 1871. Scott (1879) found it very abundant at Mound City, Linn County (95°), March 8, 1874, and Coale (1894) secured specimens from a small flock at Fort Riley, Geary County, on March 18, 1890. Iseley (1912) reported it as abundant during migrations at Wichita, Sedgwick County. Cooke (1913) reported it from Onaga, Pottawatomie County (96°) and also (1888) from Emporia, Lyon County (96° 15′) and Manhattan, Riley County (96°30′). The Christmas censuses published in *Bird-Lore* record it in addition from Pittsburg, Crawford County (Compton); Lawrence, Douglas County (also by Johnson, 1919, and Lindsdale and Hall, 1927), and Independence, Montgomery

County (Wetmore); Topeka, Shawnee County (Howard and Hyde); Clay Center, Clay County, and Abilene, Dickinson County (Graves); Woodbine, Dickinson County (Mitsch); Hesston, Harvey County (Hesston Audubon Society) and McPherson, McPherson County (Nininger), these localities all lying between about longitudes 95°15′ and 97°30′. From the Kansas City region Harris (1919b) summarizes thus: "If the winter be exceptionally severe, as in 1916-17 and 1917-18, only a few hardy birds remain to find shelter in the dense cover of the Missouri bottom undergrowth. During open and mild winters a few may be found in the hedges and weed patches of the prairie country." There are but little data on the westward range, but, as in Nebraska, there are evidently very few records of its occurrence west of longitude 99°. Cooke (1884 and 1888) quotes Dr. Watson of Ellis, Ellis County (99°30′) as reporting that they usually occur there in the fall and spring and are sometimes abundant. Cooke and Wooster (1929) report eight of them from Hays, a little to the east in the same county, on December 22, 1928, and Prof. L. D. Wooster (letter July 10, 1928) writes that he saw a few there on February 3, 1928, and thereafter.

Oklahoma

The distribution of the Harris's Sparrow in Oklahoma is much as it is in Kansas; that is, there is an abundance of the birds between longitudes 96° and 98°. Cooke (1884) reported it as present all winter at Caddo, Bryan County (96°), in southeastern Oklahoma, and at Darlington, Canadian County (98°) in central Oklahoma. It is listed by the Nices (1924) as a "common winter resident" in Washington County (96°) (Kirn), as "abundant all winter" in Cleveland County (97°30′), and as "common along all timbered streams" in Comanche County (98°30′) (Lantz). The Christmas censuses published in *Bird-Lore* record it from Muskogee, Muskogee County (Little); Tulsa, Tulsa County (Neville); Okmulgee, Okmulgee County (Force); Sapulpa, Creek County, and Tonkawa, Kay County (Beard); Oklahoma City, Oklahoma County (Saunders), and Norman, Cleveland County (Nice), these localities all lying between longitudes 95°15′ and 97°30′, as in Kansas. Prof. R. O. Whitenton (letter April 16, 1928) reports it from Stillwater, Payne County (97°). The Nices (1924) also report it as a "common migrant" at Gate, Beaver County, in the Panhandle just west of longitude 100°, on the authority of Mr. W. E. Lewis, who writes (letter May 11, 1928) concerning this record: "In 1916 and 1920 they were quite abundant in migration the first week of March. I do not find them recorded in other years."

Arkansas

The few records of the Harris's Sparrow from Arkansas are mostly from the northwestern corner of the State. Smith (1915) saw several in May and October, 1913, near Winslow, Washington County, and Lano (1922-1926) also found small numbers of them at Fayetteville in that county at Christmas time. Howell (1911) had only one specimen from Van Buren, Crawford County (Hanna). Mr. S. H. Weakley of Fort Smith, Sebastian County, writes (letter April 16, 1929) that in February, 1929, he banded three of these sparrows, the first which he had seen in that locality. In eastern Arkansas, Pindar (1924) reported it eommon at Helena, Phillips County, in the fall of 1888, but rare at Marked Tree, Poinsett County, early in 1889. Mr. J. G. Boyce of Texarkana, Miller County, writes (letter April 28, 1928): "My own field observations have been limited to three or four counties in the southwestern part of the State, and I have never seen it."

Texas

Harris's Sparrows winter abundantly in central Texas, between longitudes 97° and 99°, north of latitude 29°. Cooke (1884) reported them abundant all winter at Gainesville (long. 97°, lat. 33°30′), near the Oklahoma line. Mr. G. M. Sutton has kindly loaned manuscript notes from Tarrant County (97°, 32°30′) indicating that in January and February he found them among the commonest birds in the wooded sections. Ogilby (1882) reported them wintering in Navarro County (97°, 32°). Simmons (1925) has discussed them as they occur at Austin, Travis County (97°45′, 30°30′) in some detail. There are reports from the region of San Antonio, Bexar County (98°30′, 29° 20′) by Dresser (1865)—the first record of the species for Texas—and Griscom (1920). Attwater (1892) reported them there as "common winter residents but more abundant during migration." This suggests that some may winter south of latitude 29°. Beckham (1888) found them "one of the most abundant and conspicuous inhabitants of the luxurious fringe of vegetation that bordered the San Antonio River," but only once seen in the mesquite. He saw "only a small party" at Beeville, Bee County (97°40′, 28°20′), which is the farthest south the species has been recorded, and none at Corpus Christi (south of 28°) or Leon Springs. The latter place is only about ten miles southeast of Boerne, Kendall County (98°45′, 29°30′), where Brown (1882) found them abundant in the winter of 1880, and Griscom (1920) found them from December 15, 1917, to January 10, 1918, so their apparent absence there was probably merely an oversight.

At Kerrville, Kerr County (99°, 30°), thirty miles northwest of Boerne, Lacey (1911) reported them as occasional but not common, and Smith (1916) found small flocks during the coldest weather. The farthest west this bird has been reported from Texas is Concho County (100°, 31°30′) where Lloyd (1887) found them rare in the fall migration. The farthest east are the records of one each seen on an island in Galveston Bay (94°45′), May 5, 1923, by Bent (1924) and at Eagle Lake, Colorado County (96°20′, 29°40′), by Wetmore (1918), the latter having been reported in the *Bird-Lore* Christmas census for 1917. Other Christmas census records are from Dallas, Dallas County (Reed); Fort Worth, Tarrant County (Iseley); Taylor, Williamson County (Tullsen); and Austin, Travis County (Taylor); all between longitudes 97° and 98°, and north of latitude 30°.

East of the Mississippi River

Wisconsin, as reviewed by Cahn (1915) has numerous records, chiefly from the southern half of the State and mostly within seventy miles of its southern boundary. The northern half of the State is represented by four locality records (Marathon, Barron, Dunn, and Trempealeau Counties) in the western part, and one each in the northern and eastern parts. The first definite Wisconsin record is that of Dr. Hoy, a specimen from Racine, Racine County, taken in May, 1856 (Nelson, 1876). Coale (1884) reported the capture of three specimens at Trempealeau, Trempealeau County, which according to Cooke (1884) were taken in the fall of 1883, and are no doubt the same three specimens referred to by Ridgway (1889) as taken at LaCrosse (about eighteen miles farther down the Mississippi) by Coale on October 3, 1883. Kumlien and Hollister (1903) report that in Dunn County, J. N. Clark collected a pair of these sparrows on May 12, 1886, and three from a flock of four on October 5, 1890, after which he saw a flock of six or eight near Meridian on October 19, 1892, and a few individuals each fall subsequently. They especially mention a pair found by Mr. Clark on the late date of July 4, 1892, and record a specimen from Iron County and three from Lake Koshkonong, Jefferson County, one in the spring and two in the fall. Cooke (1913) records it from North Freedom, Sauk County, October 3, 1903, and Elkhorn, Walworth County, May 15, 1909. Cahn (1915) records two birds seen May 20, 1912, five seen October 8, 1912, and three seen October 5, 1914, all at Unity, Marathon County, by D. C. Mabbot, and the following thirteen birds seen in May, 1914: One taken by himself at Oconomowoc, Waukesha County (9th); one seen at Madison, Dane County (R. E. Kremers); one seen at Barron, Barron

County (E. W. Meadows and L. S. Cheney); three seen at Neenah, Winnebago County (D. C. Mabbot) (10th); three seen at Madison (A. R. Cahn); one at Milwaukee, Milwaukee County (Mrs. M. L. Simpson, 1914); one at Mineral Point, Iowa County (Emma E. Padon) (12th); one seen at Unity (B. W. and D. C. Mabbot); and one at South Wayne, Lafayette County (Rose B. Eastman) (13th). Since 1914 the Harris's Sparrow has been observed at Madison, May 11, 1916 (Schorger, 1917); October 21, 1917 (Schorger, 1926); May 21, 1921 (Taylor, 1922); September 9, 1922 (Schorger, 1926); October 3, 1923 (Taylor, 1926), and May 16, 1926 (Schorger, 1926).

Illinois has about the same number of records as Wisconsin, and they are, in agreement with the Wisconsin ones, mostly scattered over the northern half of the State. The first Illinois records are those cited by Ridgway (1880), of specimens collected at Bloomington, McLean County, in the spring of 1877, and at Normal, a few miles to the north in the same county, on November 14, 1879, by W. H. Garman. Poling (1890) collected two specimens, a male and a female, in Adams County (near Quincy). According to Widmann (1907) this bird has been collected at Warsaw, Hancock County, by Mr. Chas. K. Worthen. Cooke (1913) recorded it from Canton, Fulton County, March 14, 1894, and from Chicago, Cook County, May 19, 1897. Dunn (1895) records the securing of a specimen at Riverdale, near Chicago, on October 6, 1894. Woodruff (1907) recorded one seen by Mr. Ruthven Deane in Lincoln Park, Chicago, on May 11, 1904, and Daggett (1908) recorded a male collected from a flock of Slate-colored Juncos by Mr. L. E. Wyman at Beach, Lake County, October 13, 1907. Cahn (1915) recorded this species from the Chicago region in Cook County, on the authority of Mr. G. A. Abbott, on April 20, 1912; April 20, 1913; and April 17 and 20, 1914. In the spring of 1914 the same unusual migration of Harris's Sparrows that passed through southern Wisconsin also passed through northern Illinois. At Port Byron, Rock Island County, on the Mississippi River in the northwestern part of the State, Schafer (1914) saw one on March 15, another on April 26, two on May 3, and one each on May 5 and 7, 1914. He (1915) saw one also on May 9, 1915. At Rantoul, Champaign County, Ekblaw (1914) saw twelve on April 26, 1914. Leopold (1921) saw three in a large flock of White-throated Sparrows near Chicago on September 26, 1920. Since 1920, Harris's Sparrows seem to have become more common in migration in the Chicago region. According to Sanborn (1921) Mr. B. T. Gault saw one in Humboldt Park on May 14, 1921, and Mr. G. P. Lewis saw one

near Jackson Park on September 22, 1921, and later the same writer (1922) reported that Mr. W. I. Lyon trapped one at Waukegan, Lake County, north of Chicago, on October 12, 1921, and retook it thirty-two times before it left on October 30. Leopold (1923) recorded that Mr. Lyon trapped and banded two in 1922 at Waukegan; that Mr. C. J. Hunt saw one in Lincoln Park on September 23, 1922; and that Leopold and G. P. Lewis saw two there on September 26, 1922, on which date Mr. C. C. Sanborn collected one at Beach. Sanborn (1923) also reported a specimen taken in the fall of 1922 on the lake shore north of Chicago. Mr. William I. Lyon writes (letter November 13, 1928) that he has banded twenty-six Harris's Sparrows at his station at Waukegan, eleven of them in the fall of 1928.

The first Indiana record was from Sheridan, Hamilton County (long. 86°, lat. 40°), May 4, 1907, recorded by Cooke (1913). The second was an immature female taken at Miller, Lake County, October 3, 1920, by Stoddard (1921). Later Stoddard took additional specimens at Miller, according to Eifrig (1921), Leopold (1923) and Bretsch (1926). Bretsch (1926) trapped and banded a male at Gary, Lake County, Indiana, on May 17, 1926.

In Michigan there seems to be a very sparse but more or less regular migration across the northern peninsula, especially in the fall. Barrows (1912) recorded that Mr. O. B. Warren noted the species at Palmer, Marquette County (long. 87° 30′), in the falls of 1893, 1894 (one collected on September 30) and 1895, tolerably commonly in the two last-mentioned years, in flocks of White-throated and White-crowned Sparrows, but that it was not seen in the spring. Gregory (1920) reported it migrating rather commonly at Huron Mountain, Marquette County, in the fall of 1919, he noting six birds on September 26 (one taken); one on September 27; four on October 2; one on October 3 (taken) and one on October 6. He later (1928) reported the taking of another at the same locality on October 13, 1924. Barrows (1912) also recorded a female specimen collected at Sault Ste. Marie, Chippewa County (long. 84°20′), February 22, 1900, and a male taken at Battle Creek, Calhoun County, October 12, 1894, by Edward Arnold. Magee (1927) reported that he and Dr. Christofferson had seen this species at Sault Ste. Marie on October 13, 1918 (two), May 21 and 24, 1925 (one each day) and September 26, 1926 (one trapped and collected). In Luce County, at McMillan, about fifty miles west of Saulte Ste. Marie, it was observed by Bryens (1925) as common for a week following May 21, 1924. Herman (1924) trapped one in 1923 at Laurium, Houghton County. The Wing

brothers (1927) recorded it from Jackson, Jackson County, on October 19, 1924, when one was taken in their traps at that place; this, with the Battle Creek record, constituting the only ones from the southern peninsula.

Ohio is represented by seven records. Davie (1898) reported that Mr. J. E. Gould collected one of four or five individuals in a flock of White-throated Sparrows at Columbus, Franklin County (long. 83°), April 28, 1889. The supposed record of Cook (1913) for Columbus, Ohio, April 27, 1889, is evidently a slightly misquoted repetition of this same record, which, except for its recent accidental occurrence in Massachusetts, is the easternmost known record for the species in the United States. Thomas (1926) gives five additional records for Columbus, as follows: November 11 and 12, 1921; April 1, 1923, and April 15 (two) and 27, 1925. Blincoe (1925) recorded seeing a Harris's Sparrow near Dayton, Montgomery County, on October 5, and taking it on October 12, 1924, while it was in company with several White-throated and White-crowned Sparrows.

The first record of the Harris's Sparrow for eastern Ontario is that of Miller (1897) who noted its occurrence at Lake Nipigon, Thunder Bay District (long. 88°-89°, lat. 50°), in September, 1896. Twenty-six years later Koelz (1923) took it again at Lake Nipigon, on July 27, 1922. Saunders (1913) recorded a specimen collected by him March 18, 1907, from a mixed flock of Song Sparrows and Juncos, near London, Middlesex District (81°20′, 43°), and suggested that this species was probably a regular migrant in the northwestern part of the Province, but Taverner (1927) commented that it has not been observed at Isle Royal (89°, 48°) where extended ornithological observations have been made.

The extreme eastern record for this species is that of one that appeared at the feeding station of Fred G. Floyd of Hingham, Plymouth County, Massachusetts, on April 11, 1929, and remained there until April 20, when it was collected by John B. May (1929).

Rocky Mountain Region

Montana has six records of the Harris's Sparrow—four from the Yellowstone Valley in the southeastern part of the State and two from the west central part, but all east of the Continental Divide. Bendire (1889) reported it as not uncommon in the fall migration at Fort Custer, Rosebud County, in company with White-crowned Sparrows and Arctic Towhees, and states that he shot one there as late as October 21, 1885. Thorne (1895) reported it as uncommon at Fort Keogh, Custer County, from September 22 to October 13, 1889.

Cameron (1908) reported seeing one in company with White-crowned Sparrows at Knowlton, Custer County, on May 24 and 25, 1907. Saunders (1921) gave another record from southeastern Montana—at Miles City, in Custer County a few miles from Fort Keogh—and the two western records—from Great Falls, Cascade County, and Gallatin Valley, Gallatin County.

Wyoming seems to be represented by only two specimens, from Douglas, Converse County, taken October 7 and 15, 1894, by Dr. Jesurun of that place, and recorded by Knight (1902).

The earliest Colorado record is that of Beckham (1887) who shot one at Pueblo, Pueblo County, on October 29, 1886, while it was in company with Juncos and Tree Sparrows. Cooke (1894) reported one from Colorado Springs, El Paso County, which later proved to be an erroneous record and was corrected by him (1897). Later he (1900) reported as the second State record one observed on May 10, 1898, at Holly, Prowers County, migrating with White-crowned Sparrows. Smith (1908) reported one shot by Mr. W. C. Ferril near Kit Carson, Cheyenne County, on October 9, 1907, while in company with Tree and Vesper Sparrows. This was cited as the third State record by Cooke (1909) who reported as the fourth record one from New Windsor, Weld County, October 22, 1907 (Osterhout). Warren (1910) recorded a female specimen taken December 15, 1908, at Salida, Chaffee County, by Mr. J. W. Frey. Sclater (1912) summarized the above records and added that of one taken at Butte, El Paso County, January 24, 1908, by Mr. C. E. Aiken. It was reported from Boulder, Boulder County, by Betts (1913), who collected one there on November 5, 1912, and by Beard (1923), who saw twelve there on December 25, 1922. Lincoln (1920) reported it as an uncommon winter resident in the Clear Creek district in Jefferson County just west of Denver, in the winter of 1912-13, suggesting that they might be more common than he had supposed, as he had difficulty in flushing them from the dense thickets. Bergtold (1929) reported its occurrence in Cheeseman Park in the city of Denver on October 14, 1928. Bergtold (1926) reported it from Fruita, Mesa County, west of the Continental Divide, November 1, 1925, and writes (letter April 10, 1928) that another was captured at that place in March, 1928.

The only record for New Mexico seems to be that recently published by Mrs. Bailey (1928) who reported that Mr. George Willet saw two or three of these sparrows on the Rio Grande Bird Reserve, Sierra County, on December 1, 1916. Arizona, also, has but a single record, reported by Cooke (1914) and Gilman (1914), of one taken

by the latter at Sacaton, Pinal County, from among a small flock of Gambel's Sparrows on March 16, 1913.

Pacific Coast Region

In a number of known instances the Harris's Sparrow has wandered west into British Columbia during its migration. The first record for this Province seems to be that of Maynard, who collected a specimen near Victoria, Vancouver Island, early in April, 1891, according to Rhoads (1893a; 1893b).* Another record is that of one taken at Comox, Vancouver Island, November 20, 1894, by W. B. Anderson, published by Fannin (1895a; 1895b), who (1895b) recorded also that Mr. Anderson had seen others at the same place about December 1, 1894, when he collected two additional specimens. Brewster (1895) reported that two were taken and a third one seen by Allan Brooks at Chilliwack, New Westminster District, January 9, 1895, which date was corrected by Brooks (1917) to January 8, and a sight record for April, 1895, added. Brooks (1900) reported that he collected two at Sumas, eight miles below Chilliwack on the Fraser River, January 10, 1895. Later, he (1912) reported specimens taken April 30, 1911, and December 1, 1911 (see also Cooke, 1913), by himself and Mr. J. A. Munro, respectively, at Okanagan Landing, Yale District. All of these localities are in the extreme southwestern part of the Province. Mr. J. A. Munro (letters May 26, 1928, and December 16, 1928) has kindly sent the records of four specimens taken at Okanagan Landing and of two birds banded at Barkerville, Cariboo District, about 200 miles farther north, September 24, 1926. This latter record has recently been published by the McCabes (1929).

The place of Harris's Sparrow on the bird list of Washington State is based on two sight records made by Mrs. Lucy M. Ellis at North Yakima, Yakima County, in November, 1912, and May 14, 1913, and recorded by W. L. Dawson (1914b). He (1914a) also records the taking of two specimens at Medford, Jackson County, Oregon, on February 1 and 2, 1912, by Mr. George L. Hamlin. The report of Wyman (1911) of one taken at Nampa, Canyon County, Idaho, January 1, 1911, from among several seen in a flock of Gambel's Sparrows, may be included with these.

There are six records of the Harris's Sparrow from California, four of them from the Berkeley vicinity. Emerson (1900) recorded

*Since the above was written the senior author has seen a mounted specimen of a Harris's Sparrow in immature plumage in the Provincial Museum at Victoria, labeled "Female, October, 1894, Victoria, A. H. Maynard," which is evidently the second record for British Columbia.

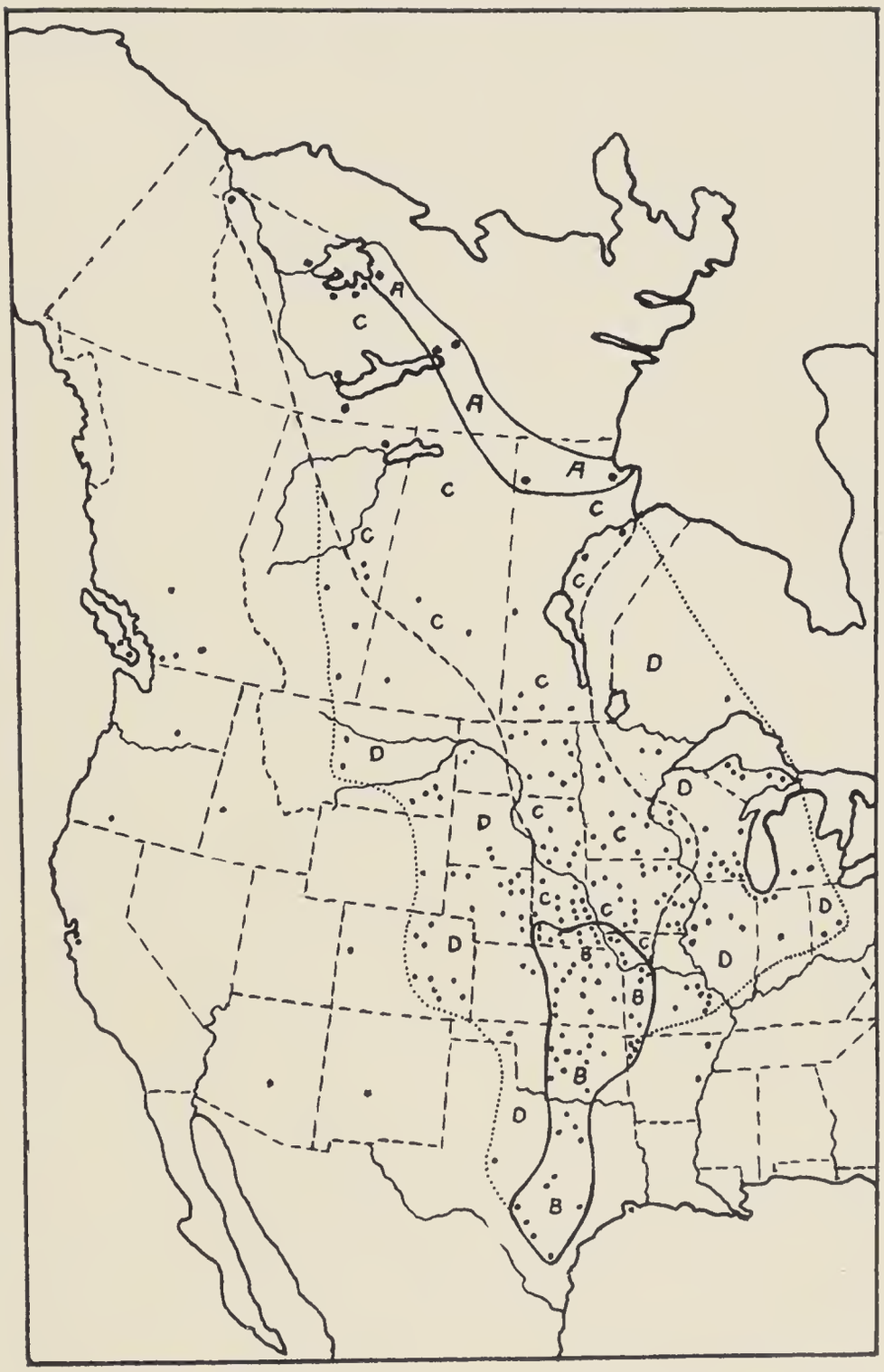


Figure 1. Distribution of the Harris's Sparrow. A=summer range; B=all-winter range; C=area in which it is a common to abundant, more or less regular migrant (enclosed in the dash lines); D=area in which it is an uncommon to rare, irregular migrant (enclosed in the dotted lines). Each dot represents an actual record of its occurrence. Those dots outside the dotted lines represent sporadic or accidental occurrences. The recently made record from Hingham, Massachusetts (Auk 47:392), is not shown on this map.

the taking of one at Haywards, Alameda County, October 28, 1900, while in company with some Golden-crowned Sparrows. Linton (1908) recorded taking one at Smuggler's Cove on the southwest coast of San Clemente Island, October 15, 1907, from a flock of Gambel's and Song Sparrows, and House Finches. Allen (1915) recorded one repeatedly seen in Strawberry Canyon, near Berkeley, Alameda County, during the winter of 1912-13—according to Clabough (1928) from December 25 to February 11—in company with Gambel's and Nuttall's Sparrows. The Fosters (1928) record one that was seen daily for several weeks during the winter of 1924-25 with a mixed flock of Golden-crowned and Gambel's Sparrows and Juncos at their house in Berkeley. Clabaugh (1928) recorded one trapped and banded on November 21, 1927, also in his yard at Berkeley, and associated with Golden-crowned Sparrows. Cozens (1928) recorded trapping one from a flock of Golden-crowned and Gambel's Sparrows at Encinitas, San Diego County, on December 21, 1927.

Fall Migration

The southward movement of the Harris's Sparrow from its breeding grounds probably begins by the last of August, and continues through the greater part of September. Preble (1908) in 1903 observed numbers of them daily from August 27 to September 7 on the southern shore of Great Bear Lake, but after several cold nights early in September they became less common, this probably marking the beginning of their heavier departure southward. They were seen in smaller numbers at various points on the southern shore of Great Bear Lake on September 10, 13, and 14, and the last one was seen at the site of Fort Franklin on September 26. The latest date on which this sparrow was seen at Fort Resolution, according to Cooke (1913), was September 27, 1907. Probably they have deserted the entire region north of latitude 60° by the end of September.

Eastwardly, the vanguard has moved south to latitude 56° by August 30, for on that date in 1900 Preble (1902) found several of them on the upper Hayes River, Manitoba, and they were common near the Echimamish River on September 14, 1900. On that same date, and on September 21, in 1903, A. E. Preble and M. Cary noted individuals at Athabasca Landing, Alberta, according to Preble (1908), while on September 24 three were seen at Lily Lake, all at about latitude 54° to 55°. By the end of September they are common in southern Manitoba and North Dakota. Their arrival at Fargo, North Dakota (lat. 47°), seems fairly uniform and they are common there from about September 25 to October 15.

Minnesota and South Dakota migration records show little difference. Roberts (1879) gives the season for southern Minnesota as September 25 to October 15. Agersborg (1885) gives its season in southeastern South Dakota as about October 1 to November 1. Abundance in southern Nebraska and northern Kansas comes about October 15, but wintering birds do not reach that point until the end of October (see trapping records, p. 167). Harris (1920c and 1922) refers to their presence near Kansas City, Missouri, in numbers on October 10, 19, and 31. He (1919b) writes that they arrive in that region "late in the first week of October and are present in varying abundance until late in November." Miss Edith R. Force (letter July 14, 1928) writes that they were seen at Tulsa, Oklahoma, on October 29 by W. H. Koons. Mrs. Nice (1929) states that they arrived at Norman, Oklahoma, in six years on October 27, 1920; October 29, 1923 and 1925; October 31, 1926; and November 1, 1921 and 1922; a variation of not more than six days. Prof. R. O. Whitenton (letter April 16, 1928) at Stillwater, Oklahoma, gives the earliest as November 4. Their arrival in southern Oklahoma and northern Texas is early in November. Cooke (1884 and 1914b) reported the date of arrival at Caddo, Bryan County, Oklahoma, as November 8, 1883, and also (1913) the average date of arrival at Gainesville, Texas, as November 7. By the close of November they have probably reached the southern limits of their wintering range in Texas.

The migration of the Harris's Sparrow has twice been reviewed by Cooke (1884 and 1913). In the following table we have tried to bring these records pertaining to the fall migration up to date, presenting chiefly selected localities where the most extended records are available:

TABLE 1. The Fall Migration of the Harris's Sparrow.

Place	First Seen No. Yrs. Record	First Seen Average Date	Last Seen No. Yrs. Record	Last Seen Average Date	Authority
Athabasca Landing, Alta.	1	Sept. 14			E. A. Preble (1908)
Winnipeg, Man.	4	Sept. 18	4	Oct. 10	A. G. Lawrence*
Aweme, Man.	22	Sept. 19	22	Oct. 9	N. Criddle (1922)
McKenzie Co., N. D.	4	Sept. 23	4	Oct. 2	A. Larson (1928)
Fargo, N. D.	6	Sept. 23	6	Nov. 5	O. A. Stevens
Minneapolis, Minn.	10	Sept. 24	7	Oct. 23	T. S. Roberts*
Sioux Falls, S. D.	5	Sept. 25	4	Nov. 3	A. Larson (1925)
Lanesboro, Minn.	7	Sept. 27	8	Oct. 14	J. C. Hvoslef
Sioux City, Iowa	19	Oct. 6	17	Nov. 11	T. C. Stephens*
Lincoln, Nebr.	24	Oct. 7	12	Dec. 20	M. H. Swenk*
Ogden, Iowa	5	Oct. 12	5	Oct. 31	W. M. Rosen
Onaga, Kansas	25	Oct. 15		winters	F. F. Crevecoeur
Norman, Okla.	6	Oct. 30		winters	M. M. Nice (1929)
Gainesville, Texas	6	Nov. 7		winters	W.W. Cooke (1913)

*Data collected by

A universal comment is that this sparrow is more common in the fall migration than in the spring. This seems to be connected with the fact that the fall movement is slower—requiring three months to pass from its breeding grounds to the southern extremity of its wintering range—the birds perhaps tarrying in attractive localities or wandering somewhat to one side until urged on by colder weather.

Winter Range

It at first seemed feasible to largely outline the periphery of the winter range of the Harris's Sparrow from the reports given in the Christmas censuses that for the past twenty-nine years have been appearing annually in *Bird-Lore* (volumes 3 to 31; 1901 to 1929, inclusive), usually in the January-February number. However, a more careful study of the movements of this bird have indicated that late December records of its presence in any locality do not necessarily show that it winters through in that locality. In Nebraska, for example, as has already been stated, in spite of the apparently good winter cover for the species along the Missouri and Platte Rivers at Omaha, Plattsmouth, and Fremont, it does not winter through at those localities, but does often linger there until late in December, when it retires farther south for the mid-winter period. The following details from the *Bird-Lore* censuses—each being the only report for the State concerned—help broadly to indicate the extreme northern limits of the *early winter* range of the bird.

Boulder, Colorado (40°)—twelve in 1922 (Beard, 1923).

Dell Rapids, South Dakota (43°45′)—two in 1923 (Anderson, 1924).

Fairmont, Minnesota (43°30′)—two in 1913 (Hagerty, 1914).

Pierson, Iowa (42°30′)—one in 1927 (Mills, 1928).

Springfield, Illinois (40°)—one in 1925 (Knapp, 1926).

These, with other December records published elsewhere, show that in the main path of their migration, that is between longitudes 94° and 100°, a very few Harris's Sparrows may linger well into December north of latitude 40°, and up nearly to latitude 44°, but that the true all-wintering range lies practically entirely south of latitude 41°, and mainly south of 40°. East of longitude 94° and west of longitude 100° even the early winter range of the bird lies at latitude 40° or south of that. In southeastern Nebraska, between latitudes 40° and 41°, and in northwestern Missouri, between latitudes 39° and 40°, is the line of tension of its all-winter range. In Nebraska, at Nebraska City, Lincoln, Superior, Red Cloud, and Hastings, it win-

ters through in some winters only, while at Fairbury it is found in greater or less numbers through every winter. In Missouri, at Kansas City, Harris's Sparrows were reported in eight of seventeen Christmas lists, reaching 4 per cent of the census total in 1909 and 1918. At Concordia they were reported once (1909) in six years, and in that year were present to 1 per cent of the census total. In general, seasons of heavy fall migration in any locality are apt to be correlated with maximum numbers remaining through the winter following, especially if it is a mild one.

Extending southward from southeastern Nebraska and northwestern Missouri the all-winter range of the Harris's Sparrow includes western Missouri and eastern Kansas between longitudes 94° and 97°30′; the northwestern corner of Arkansas; Oklahoma east of 98° 30′, except for its southeastern corner, and central Texas between about longitudes 96° and 99°30′, north of latitude 28°. This area is about 900 miles long, averages about 200 miles in width, and lies closely along longitude 96° as a center, inclining very slightly toward the west from north to south (Fig. 1). A study of the average per cent of individual Harris's Sparrows in relation to the total of all birds seen, as reported from various localities in the *Bird-Lore* Christmas censuses, after eliminating from the total all flocks of 1000 or more Crows, blackbirds, etc., (but including large flocks of Slate-colored Juncos, Song Sparrows, etc.), shows that at Christmas time the center of population of the species is in east-central Kansas and central Oklahoma (Fig. 2). The average per cent in six localities in east-central Kansas varies from 9 to 42, averaging 22, while that in four localities in central Oklahoma varies from 11 to 33, and also averages 22. At the same time in north-central Texas the average per cent in four localities varies from 4 to 15, and averages only 8. The average percentage of Harris's Sparrows to total bird population drops rapidly in eastern Kansas and Oklahoma to from 2 to 5, averaging 3, in six localities. Probably later in the winter the center of population shifts farther south, to central Oklahoma and north-central Texas.

Mrs. Nice (1929) has recently presented data from studies made during the winters of 1925-26 and 1926-27 showing that at Norman, in central Oklahoma, the Harris's Sparrow becomes common by the first or second week in November, and reaches its greatest abundance in December and early January. The abundance at Christmas time varies much from season to season, the extreme variation amounting to 82 per cent in the seven years 1919 to 1926, inclusive, on comparison of the seasons of minimum (1919) and maximum (1923)

abundance. There is a marked decrease during January (about 25 per cent)—probably from birds retiring farther south into Texas—and a still more marked decrease during February (about 35 per cent), when the northward movement starts. Cooke (1884 and 1914b) reported similarly that at Caddo, Oklahoma, in the winter of 1883-84 these sparrows reached their greatest abundance about Christmas time. They were the least numerous from about January 15 to February 23, the return migration making them common again from February 26 to March 15.

Movements within the winter range seem to be subject to considerable variation due to weather conditions and perhaps to food supply or seasonal abundance of the birds. Harris (1919a and 1920a) noted that they were scarce during the fall of 1918 and spring and fall of 1919, yet that the mild and open winter of 1918-19 was the first in memory during which they had remained in the Kansas City region through January and February. However, Johnson (1919) at Lawrence, Kansas, only thirty miles west of Kansas City, found the birds passing through in the usual numbers in the spring of 1919, there being many flocks from March 30 to May 11, with the greatest numbers from April 29 to May 11. Mr. J. A. Neff at Marionville, Missouri, writes (letter April 1, 1928) that these birds "generally begin to arrive here some time after October 20 to 25. Some seasons it is November or even December before they arrive. Some seasons they winter in large numbers, sometimes more sparsely, and occasionally none stay all winter." Smith (1916) noted in Kerr County, Texas, that their presence was coincident with the coldest weather, January 25 to February 5. Griscom (1920) noted in the San Antonio region that they disappeared when the weather became cold (January 10, 1918).

Spring Migration

The northward movement of the Harris's Sparrow begins within its all-winter range about the end of February or the first of March, and during March also spreads more or less into eastern Nebraska and western Iowa. Cooke (1884 and 1888) recorded that at Gainesville, Texas, the northward movement in 1884 began about March 1 and that the bulk had left that place by March 12. He (1884 and 1914b) also reported that at Caddo, Oklahoma, in 1884 an influx of birds from the south from February 23 to 26 brought them from relative fewness to commonness at that place. The bulk of those that had wintered at Caddo moved northward on March 10, but their places were taken on March 13 by another wave of migrants from Texas, which reached

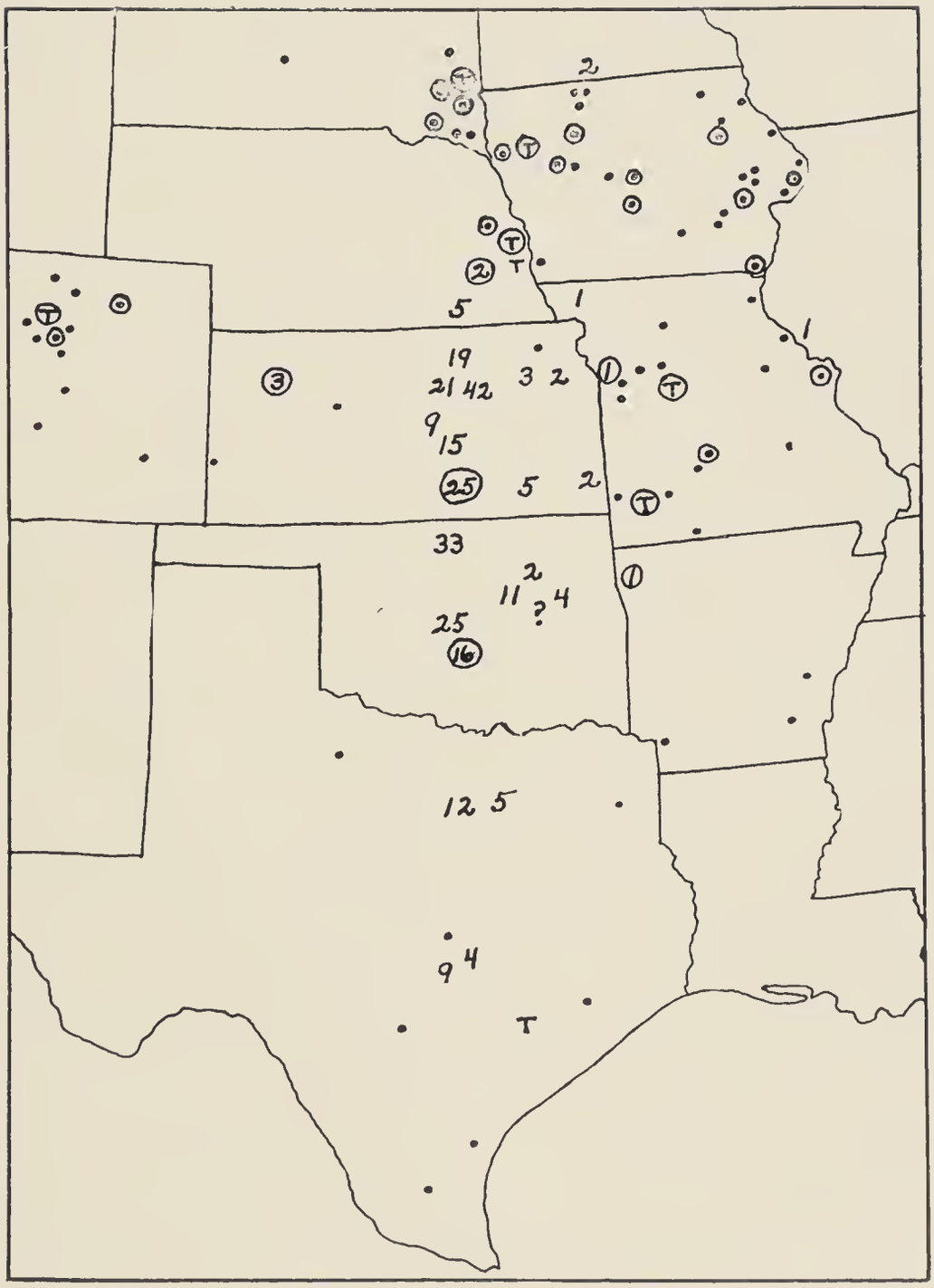


Figure 2. Early winter distribution of the Harris's Sparrow, according to the Christmas Censuses published in Bird-Lore. Numerals represent the average per cent of individuals seen in relation to the total of all birds seen, after eliminating all flocks of Crows or blackbirds of 1000 or more birds. Dots represent reports without Harris's Sparrows. T=less than one per cent. Circles represent localities with records of five or more years.

the crest on March 15 and abruptly ended on March 25. Mrs. Nice (1929) noted that at Norman, Oklahoma, the Harris's Sparrows maintained about a stationary abundance during March—new arrivals apparently about balancing departing birds—at 30 to 40 per cent of the January abundance, but that in April, as the spring migration waxed, there was a loss amounting to 10 to 20 per cent of the January strength, with the last birds departing May 3 to 13. Cooke (1884) says that in this movement the bulk of the birds are only four or five days behind the van, and that in 1884 the bulk reached Pierce City, Missouri, on March 17, and Manhattan, Kansas, on March 18. Harris (1919b) writes of the Kansas City region: "The northward movement begins late in February but is not marked by the characteristic waves, when great numbers are here today and gone tomorrow until three or four weeks later." He mentions (1920b, 1921, 1922b) characteristic waves there on April 3, 11, 12, 22, 23, and 29 and May 11.

In southeastern Nebraska, along the northern edge of the winter range of the species, there is usually a moderate influx of Harris's Sparrows from March 2 to 18, averaging March 14, followed by a stronger arrival from about March 21 to April 5. This movement in many seasons extends up along the Missouri River as far as Omaha (March 13, 1927) or Sioux City (March 14, 1910), and sometimes over western Iowa. The data given by Spurrell (1921) show that the first ones arrived in Sac County, Iowa, about April 1 in 1909, 1911 and 1914 (March 29, April 2, March 29) but not until about May 1 in 1910, 1912, 1913, and 1915 (May 1, May 3, May 1 and May 2). Mr. W. M. Rosen at Ogden, Iowa, sends (letter April 10, 1928) similar data—about May 1 in 1922-1925 and about April 1 in 1926-1928—though the grouping here suggests that closer observations may have been made in the latter years. Mr. J. A. Neff writes (letter April 23, 1928) of northwestern Missouri: "We never see any great numbers until at least March 1, and often not until late March or April." Cooke (1913) has suggested the possibility that the birds seen along the Missouri River in northwestern Iowa soon after the middle of March may have wintered in the bottom lands near by and pushed out into the open country the first warm days of spring, but the continued lack of winter records argues against this. The records indicate rather that these birds are the vanguard of the first spring advance. There is then a long wait, until about the first of May, before the arrival of the birds in southeastern South Dakota (Agersborg, 1885) and southwestern Minnesota indicates the resumption of the northward movement in the final great late wave.

The great late wave of migration passes through southeastern Nebraska between about April 19 and May 14, the latest dates seen being Lincoln, May 21, 1913 and 1916; Peru, May 27, 1889, and Fairbury, June 4, 1928. The first ones of these birds pass on to northeastern Nebraska (Neligh, April 22; Badger, April 23), where there is apparently a halt for about a week. The vanguard arrives with remarkable uniformity during the first week in May or shortly thereafter at points over an area extending from the Dakotas to Minnesota and Manitoba. The passage of the vanguard across Saskatchewan, Alberta and Northwest Territory to the breeding ground of the species is made during the last half of May, though it is probably the middle of June before the migration of all of the birds is completed.

The following table presents migration data on the spring migration, complementary to that given in the preceding table of the fall migration:

Table 2. The Spring Migration of the Harris's Sparrow.

Place	First Seen No.Yrs. Record	First Seen Average Date	Last Seen No.Yrs. Record	Last Seen Average Date	Authority
San Antonio, Texas		winters	2	Mch. 18	W.W. Cooke (1913)
Gainesville, Texas		winters	5	April 7	W.W. Cooke (1913)
Norman, Okla.		winters	5	May 8	M. M. Nice (1929)
Onaga, Kansas		winters	24	May 15	F. F. Crevecoeur
Lincoln, Nebr.	20	Mch. 14	20	May 14	M. H. Swenk*
Sioux City, Iowa (near)	17	Mch. 29	21	May 17	T. C. Stephens*
Lanesboro, Minn.	5	May 10	3	May 18	J. C. Hvoslef
Sioux Falls, S. D.	7	April 30	5	May 19	A. Larson (1925)
Pipestone, Minn.	4	May 3	2	May 30	A. Peterson
Minneapolis, Minn.	11	May 7	5	May 20	T. S. Roberts*
Fargo, N. D.	16	May 8	6	May 26	O. A. Stevens
McKenzie Co., N. D.	8	May 6	3	May 15	A. Larson (1928)
Aweme, Man.	27	May 8	27	May 22	N. Criddle (1922)
Winnipeg, Man.	11	May 8	5	May 21	A. G. Lawrence*
Indian Head, Sask.	3	May 11			W.W. Cooke (1913)
Osler, Sask.	1	May 14	1	June 2	W.W. Cooke (1913)
Eastend, Sask.	5	May 16	3	May 20	L. B. Potter
Flagstaff, Alta	4	May 19			W.W. Cooke (1913)
Hay River (near), Alta.	2	May 19	1	June 15	Preble (1908); Cooke (1913)
Fort Chipewyan, Alta.	1	May 23			E. A. Preble (1908)
Fort Providence (near), N. W. T.	1	May 24			E. A. Preble (1908)
Arctic Red River (near), N. W. T.	1	June 1			W.W. Cooke (1913)

*Data collected by

Casual Occurrences

A tabulation of the dates of those records which have been referred to in the paragraphs on distribution during migrations, shows that they are about evenly divided between spring and fall. The most

notable of the eastern records are the group from northern Illinois and southern Wisconsin in the spring of 1914 as reviewed by Cahn (1915). Western records, especially in the coast region, contain many winter dates.

There is an occasional United States record in the summer. Agersborg (1885) reported taking one in southeastern South Dakota in the middle of June, which he found to be an old male with atrophied testes. Visher (1915) also reported one seen in Clay County, South Dakota, June 18, 1912. Cooke (1888) reported one seen at Turtle River, South Dakota, by Abbott in the latter part of July, 1891. Mickel and Dawson (1920) collected a male bird at Lincoln, Nebraska, on July 20, 1919. They found no evidence that the bird had been detained by injuries.

Some of the casuals and late records are undoubtedly abnormal birds. The numerous records of occasional birds somewhat outside of the regular range appear to be individuals which have become separated from their own flocks and attached to flocks of other species. They are almost invariably found in company with White-crowned, Gambel's, White-throated, Golden-crowned, or Tree Sparrows, or with juncos, which are wintering in or migrating through the locality. The gregariousness of the species is noteworthy. While consorting chiefly with their kind, in flocks, they also associate more or less with several other species of sparrows on their regular wintering grounds.

Habitat

The Harris's Sparrows are closely associated with a certain type of country, and this evidently is one of the dominant factors in their distribution. Observers repeatedly comment that the birds are found in brushy places, thickets, edges of groves, weed patches, etc. Reference to the map of plant distribution in the United States by Shantz and Zon (1924) shows that their range corresponds remarkbaly to the areas mapped as "tall grass" and "oak-hickory forest," and especially the meeting place of these two types, where there is considerable open ground and some small tree growth.

They do not range to any extent into the drier, "short grass" country, nor into the more densely forested parts. Food supplies would be less abundant in either of these. Their range in Texas corresponds in a general way to the invasion of the "tall grass" country. In northwestern Missouri, northern Illinois and southern Wisconsin they follow a notable extension of a similar sort. The Colorado localities are mostly grouped in an area near the upper Arkansas River

along which another arm of this area extends from the east. In their summer range, as already described, they are found in a region of stunted timber interspersed with open areas.

Suggestions that the birds are extending their range in this or that region must be considered very cautiously, as these appearances are likely to be due to increased observation. It seems very probable, however, that the planting of groves and hedges along their western limits must have such an effect. Natural extensions of brush and timber up the water courses due to control of prairie fires and probably the clearing of the land in forested areas would have a similar effect.

In eastern Nebraska, western Iowa, and northwestern Missouri the Harris's Sparrows frequent the same habitat and have the same behavior as Goss (1890) has described for Kansas in the following words: "The birds inhabit the thickets bordering streams and the edges of low woodlands. They are usually met with in small flocks. A favorite resort is in and about the brush heaps, where land is being cleared. They seldom mount high in the trees, but keep near the ground upon which they hunt and scratch among the leaves for seeds and insect life." Mrs. Nice (1929) reported the same habits in Oklahoma, and noted their preference for trees covered with vines, which is also characteristic of them elsewhere in the wintering range. She also notes that "when alarmed they, like Tree Sparrows, fly up, instead of diving into depths of cover like Song Sparrows or Fox Sparrows." Jones (1895) pointed out their fondness for hedgerows during migrations. Poling (1890), Dunn (1895) and others have shown that migrating stragglers in Illinois and elsewhere east of the Mississippi frequent brush and bushy places. In southeastern South Dakota, Agersborg (1885) found them during migrations in the brush along the rivers and even out on the prairies in the plum and willow thickets in the ravines. Roberts (1879) says that in Minnesota they frequent open brushy places.

In the vicinity of the Agricultural College at Fargo, North Dakota, there is no natural woody growth and the trees and shrubs of the gardens form a favorite haunt. The birds may be found on the ground near the trees or bushes, on the ground in the road where it is bordered by hedges and in patches of tall weeds (especially *Iva xanthifolia* and *Ambrosia trifida*). When approached they fly up into the lower branches of trees. At sundown they congregate noisily in the spruces, hedges and thicket bushes for the night.

Food

The food of the Harris's Sparrow, during the season that it is in the United States (October to May, inclusive), has been found by Judd (1901), through the examination of 100 stomachs taken in Saskatchewan, Kansas, and Texas, to consist chiefly of vegetable matter, this constituting 92 per cent of the total food. Forty-eight per cent of the food is weed seeds, the seeds of ragweeds and of *Polygonum* (including smartweed, knotweed and black bindweed) constituting 42 per cent, and those of pigweed, lamb's-quarters, gromwell, and sunflower 6 per cent. Twenty-five per cent of the food is the seeds of wild fruits and of various miscellaneous plants; 10 per cent is grain, chiefly waste corn, but also including wheat and oats; and 9 per cent is grass seed, mainly that of blue-grass, bead-grass, crab-grass, foxtail-grass, and Johnson-grass. The 8 per cent of animal matter consists of insects, spiders, and snails, with a marked preference for leaf-hoppers among the insects, these constituting 2 per cent of the total food. Aughey (1878) found fourteen grasshoppers and five beetles, as well as other insect larvae and seeds, in the stomach of one examined in Nebraska in September, 1874. Cahn (1915) found in the stomach of one shot at Oconomowoc, Wisconsin, May 9, 1914, only a small amount of vegetable matter (less than 5 per cent), but numerous ants (including eight large black carpenter ants and two small red ones), two wireworms, a small soft-bodied larva, remains of moth wings, one nearly entire ground spider and additional spider jaws, and one small snail-shell. Nehrling (1896) found that captive birds ate grasshoppers, moths, beetles, millet, kafir, and canary seed.

Mrs. Nice (1929) reported that in Oklahoma they ate poison ivy berries and elm blossoms, as well as weed seeds. At the feeding shelf they were especially fond of canary and sunflower seeds, both of which they cracked, holding the latter flat in their bills. Mary B. Salmon (1928) reported that they ate millet, small grain and cracked corn at feeding stations in the winter in northwestern Missouri. In trapping, millet and chickfeed (mixture of ground grains) have been taken freely. Several trap operators (Dales, Over, Stevens) have noted that the birds are very fond of hemp seed. They did not take rape however (Stevens). In Nebraska they are very fond of corn, taken from the fallen ears, in the fall.

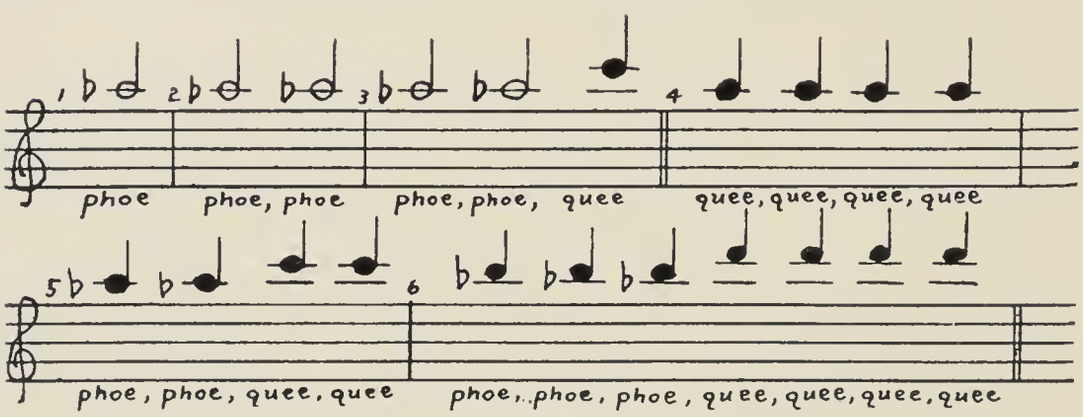
We know almost nothing regarding the food of the nestlings but presumably it would be mostly insects, the seeds and fruits of various wild plants being used later in the summer.

Voice

On its breeding grounds the Harris's Sparrow evidently does not indulge in frequent or voluble song after the nesting duties are well under way. Preble (1902) says that at Fort Churchill in latter July he "heard no song, but they had a loud metallic chip which was audible and easily recognized at a distance of several rods." Seton (1908), after having repeatedly observed the species in the Great Slave Lake region in latter July and August, notes that he "found the species in full song September 3," thus intimating that prior to that time the birds were not singing. Coues (1874), noting the arrival of this species in abundance on the Mouse River in north-central North Dakota, September 18, 1873, wrote: "The birds came from the north, just as the White-throat does, silently and unperceived. . . . They had no song at this season, nor indeed any note excepting a weak chirp." He had noted them also at Fort Randall, Gregory County, South Dakota, in October, 1872, and noted that "they uttered at intervals the usual sparrow-like chirp, but I heard no song." Roberts (1879) says that at Minneapolis, Minnesota, where the bird is a regular and at times a common migrant, he has "never heard any song except on one occasion. That was in the fall when a bird in the plumage of the year uttered a low, continuous warble as it sat on the top of a brush pile. This was repeated many times, and reminded one somewhat of the subdued singing of a Tree Sparrow, often heard in the early spring."

But when the region south of latitude 41° is reached by the southbound Harris's Sparrows, a region where the birds will linger in abundance from late September to late October, and commonly even to November or middle December, or else remain through the winter, their whole vocal behavior changes. The autumn is ordinarily a season when bird songs are conspicuous by their absence, but in the region mentioned the Harris's Sparrow sings as sweetly, if not as fully and volubly, in October as in May. It especially likes to sing in chorus in the evening, shortly before nightfall. At this season the song commonly consists of one or two drawling minor whistled notes (1, 2), sometimes followed by a third note at a different pitch (3), all relatively slow and subdued as compared to the spring song, and very like the abbreviated songs of our other *Zonotrichias* at the same season. On bright days during the entire winter its more or less abbreviated song may be heard. As spring approaches the song becomes complete and more sustained. Goss (1890) wrote "they com-

mence singing early in the spring, and upon warm, sunshiny days their song can be heard almost continually." Iseley (1912), regarding southern Kansas writes: "About March 1 they begin to sing in chorus." Scott (1879) from Mound City, Kansas, writes of early March: "On sunny days they were constantly singing in a strain very like that of the White-throats but a little more prolonged and perhaps louder." The following notations show typical fall songs (1, 2, 3) and spring songs (4, 5, 6) of the Harris's Sparrow, taken down by Mrs. Jane B. Swenk in October, 1925, and May 1929:



The commonest note of the Harris's Sparrow is the one that has been called an alarm note, though it seems to have a more general use. It varies in intensity from weak to strong, according to the circumstances of its emission. It has been variously rendered as "a weak chirp" (Coues, 1874); "a loud, metallic chip" (Preble, 1902); "trying to say *chink* and *peep* at the same time" (Cooke, 1914); "a metallic *zink* of rather coarse timbre" (Harris, 1920) and "a loud, staccato *tchip*" (Nice, 1929). To us it sounds like "spink" or "clink." This note is much like the parallel note given by most sparrows. It is most commonly given when the birds are assembled in groups, especially at night-fall, and may be given singly or repeated several times. Then there are the very characteristic harsh notes—characterized as a "queer chuckle" (Cooke, 1914); a "grating, burring whistle followed by a series of low, gutteral rattling notes impossible to render in words" (Harris, 1920) or "querulous exclamation or 'scold', a curious, grating, chuckling series" of "absurd grumblings" (Nice, 1929). There is also "a gentle *tseep*, not often heard" (Nice, 1929), and a more or less subdued, sociable "*ku-ku-ku*" note.

The primary song of the Harris's Sparrow has the typical *Zonotrichia* general quality, but is quite distinct in structure from that of any of its congeners, and may have interpolated in it discordant notes

that are absent in the songs of the White-crowned, Gambel's, or White-throated Sparrows. It especially lacks the definite form and even rhythm of the White-throated Sparrow's song. It consists of one to five, usually two or three, whistled notes, usually minor tones of a more or less quavering and plaintive character (5, 6) but sometimes clear and full (4), all on the same high pitch (usually in the second octave above middle C)—which may be syllabalized as "*phoe, phoe, phoe*" or *quee, quee, quee*" or "*whee, whee, whee*"—followed after a very slight interval by one to four, commonly two or three, usually natural notes at a different pitch, at an interval of a half-step to a major third higher, but sometimes correspondingly lower, the last one or two being sometimes intermediate in pitch between the two series of notes. In the spring this song is repeated over and over, with variations in the number and pitch of the notes, for minutes at a time. Most singers during the winter and early spring "incongrously intersperse" between many of the series of beautiful whistled notes an occasional "low husky note repeated three or four times" and a number of the characteristic harsh grating notes of the species, but this tendency is diminished or lost during the late spring migration, when the song becomes a thing of maximum sweetness and beauty, and the singer exceedingly voluble. "When several birds are whistling in concert, each individual may take a different pitch, or several may be on the same pitch, but the ensemble gives an impression of querulous minors most unusual among birds and most delightful to hear" (Harris, 1920).

Plumages and Molts

Preble (1902) reported the taking of young Harris's Sparrows, just from the nest, at Fort Churchill, on July 24 and 25, 1900, and described them as follows:

"Upper parts dusky black, the feathers edged with deep buffy and brown, the black predominating on crown, the brown on hind neck, and the black and brown about equally divided on back; outer wing quills edged with deep buffy, inner with brown; tail feathers edged and tipped with whitish; sides of head and lower parts buffy; chest and side streaked with black, which is most conspicuous on sides of chest and forms a prominent malar stripe; upper throat grayish white, with fine dusky markings."

As has been mentioned, Seton (1908) and Preble found a nest of the Harris's Sparrow, containing three young birds nearly ready to fly, in the Last Woods at Artillery Lake, on August 5, 1907. These

nestlings were preserved and are now in the American Museum of Natural History. Mrs. Nice, who examined these specimens, referred to them (letter, June, 1929) as "bobtailed and much striped." Chapman (1913) says that they closely resemble the corresponding (juvenal) plumage of the Song Sparrow, which latter is streaked both above and below. This streaky juvenal plumage is molted, so far as the body feathers and wing coverts are concerned, shortly after the birds have left the nest, the quill-feathers of the wings and tail being retained, according to Chapman, who further states that the postjuvenal molt has been completed, and the first winter plumage assumed, by the first week in September. Mrs. Nice (1929) reports that of ten Harris's Sparrows collected by Seton and Preble near Great Slave Lake in September, 1907, and now in the American Museum, one, taken on September 4, is a fully grown bird in the nestling plumage, the other nine being in the first winter plumage. The postjuvenal molt, obviously, takes place chiefly in August.

There are no important sexual differences in the plumage of the Harris's Sparrow, but the seasonal and age differences are considerable. When the species reaches the United States, in September, the birds of the year are all in the first winter plumage, characterized by the chin and throat being white, and the feathers of the crown being black centrally and more or less broadly margined with grayish or pale buffy, producing a conspicuous squamate or scale-like effect (Frontispiece, lower figure). During the following late fall and winter the pale margins of the crown feathers gradually become worn, exposing more and more the black feather centers and producing a gradual darkening of the crown as a whole. A few black feathers may begin to appear among the white ones on the chin and throat as early as October and November. The assumption of the black hood by these birds is very irregular, resulting in a great diversity in the appearance of individual birds. Specimens at hand from Lincoln, Nebraska, show that the first prenuptial molt of the immature birds begins about March 15 and is well toward completion by April 23. At Warrensburg, Missouri, Scott (1879) found these birds all molting on March 27 and they had assumed the breeding plumage by April 27. This molt is only a partial one, involving chiefly the feathers of the head, neck and breast.

Mrs. Nice (1929) has reported in detail the gradual development of the black throat patch and crown in some banded Harris's Sparrows under observation at Norman, Oklahoma, in March and April of

1924. On January 19 three birds (65948, 65949 and 70465) were plainly immature, with no black on the chin or throat and the chest patch brownish. On March 19, 65949 had the chin and throat still white, 65948 had the chin black and 70465 had the chin largely black, two small black spots at the base of the throat, and the crown darker than the other two. Another individual (65950) had the chin and upper two-thirds of the throat black. By April 7, 65949 had the chin black just below the bill and a black spot at the base of the throat. By April 9, 65949 and 65948 had the crown nearly solid black in front and 70465 had the chin wholly black and a black bar at the base of the throat. By April 16, 65950 had the whole chin and throat black, and the crown all black except for two small buffy spots above the bill, and 65949 had black appearing on the sides of the throat and the crown almost wholly black. By April 24, 70465 had all of the black plumage assumed, but less on the left side than on the right, and the cheeks were partly buffy and partly grayish. By May the birds all had the black hoods, gray cheeks and dark brown or black postauricular spot characteristic of the breeding plumage (Frontispiece, upper figure).

After the end of the first breeding season, and as a result of the postnuptial molt, the black crown feathers become more or less tipped, but not distinctly laterally margined, with grayish or grayish white, especially posteriorly, the black throat often has white feathers intermixed, while the cheeks are buffy and the postauricular spot brown (Frontispiece, right median figure). This is the plumage that Ridgway (1901) correctly thought might be that of younger birds than those with the wholly black crown. As the fall and winter progresses the grayish tips of the crown feathers gradually wear off (Frontispiece, left median figure), so that by February, or at least by the time of the second prenuptial molt, in March, the crown is practically entirely glossy black. The adult after the second prenuptial molt, which is less extensive than the first prenuptial molt, and like it chiefly involves the feathers of the head and neck, assumes a black hood of the maximum extent, intensity and uniformity, and this is largely maintained unchanged through the year for life, except for the changes of the cheek color to buffy and the postauricular spot to brown in August for the fall and winter, and the cheeks to grayish white and the postauricular spot to deep brown or black in April for the spring and summer.

The birds in the second winter having a less extended (second) prenuptial molt than the first winter birds, assume their black hoods earlier in the winter—in March rather than in April. Wilson (1896) saw only one hooded bird in a large flock at St. Joseph, Missouri, November 1, 1895. Cooke (1914b) has described how of two birds seen at Caddo, Oklahoma, November 8, 1883, one had the black hood (an old adult in third or following winter) and the other had no black feathers (an immature bird in the first winter). By December 25, when they were present in the greatest numbers, about one bird in a dozen had the black hood (old adults), while half of the rest showed black feathers on the throat and breast (adults in the second winter). By February 18 all were showing black feathers in the crown, and by March 1 some were in the full plumage. Beckham (1887) wrote that at San Antonio, Texas, "towards the end of February the specimens taken were almost in the adult spring plumage." Mrs. Nice (1929) has estimated that at Norman, Oklahoma, in the fall, from one-tenth to one-twentieth of the birds have the black hoods (third winter birds or older); one-third intermediate birds with some black on the head and throat and darker crowns and chest patches than immature birds (those in the second winter), while the rest are of course immature, first winter birds. On March 1, 1926, she saw a flock of sixteen in which two birds had black hoods while the other fourteen had the crowns "in the speckle stage" of becoming black, "each one different from every other."

The variations in the crown and throat markings of first and second winter birds is very great, and they form a practically intergrading series. Of 412 birds banded at Fargo, North Dakota, in the fall of 1928, 108 were classified as adults (including second winter and older birds) and 306 as immature birds.* Of those classified as adults, many had the crown largely black, one had the crown with whitish corners on the feathers, five had the crown black in front but with unusually heavy white tips on the rear crown feathers, five had the crown heavily gray all over and six had the crown buffy. One adult was unusually black on the upper parts and with black and white sharply contrasted on the under parts. Nineteen "intermediate" (= second winter) birds had only partially dark throats, and the crown was either whitish, intermediate, or buffy. The intergradation was so complete that the notes show that a few individuals were recorded differently at different times, within a period of a few days.

*Evidently in two cases there was duplication in the counting.

Seventeen of the birds recorded as immature, because of their white throats, had (usually heavily) whitish-tipped (not buffy-tipped) crown feathers, much as in the second winter adults.

It might here be added that Mr. J. T. Zimmer collected an albescent Harris's Sparrow (an immature male) at Lincoln, Nebraska, on November 4, 1911 (No. 572, collection of J. T. Zimmer).

Size

There is a small but distinct difference in the size of the sexes of the Harris's Sparrow, the adult males measuring consistently larger than the adult females. Ridgway (1901) gave the following extreme and average measurements, in millimeters, based on seven male and seven female adults:

Table 3. The Principal Measurements of the Harris's Sparrow in Millimeters.

	Wing:	Tail:	Tarsus:	Culmen:
Males:	87.12-91.44 (89.15)	79.76-85.85 (83.57)	23.37-24.13 (23.02)	12.70-13.21 (12.95)
Females:	80.01-85.09 (82.80)	77.22-80.26 (78.99)	23.11-24.13 (23.62)	12.19-12.95 (12.70)

The following table gives the extremes and averages in millimeters of the same measurements, and also the total length, for thirteen adult and ten immature males and for six adult and one immature female from Nebraska, chiefly from the vicinity of Lincoln:

Table 4. Measurements of Adult and Immature Harris's Sparrows in Millimeters.

Males:	Length:	Wing:	Tail:	Tarsus:	Culmen:
Adult	175-196(189)	84.0-89.5(87.0)	81.5-88.0(84.3)	22.5-25.0(24.5)	11.25-13.00(12.09)
Imm.	171-193(181)	78.0-89.5(83.0)	74.0-88.5(81.1)	22.5-24.5(23.5)	11.50-12.50(11.70)
Females:					
Adult	176-188(181)	78.0-86.0(82.7)	76.5-83.0(79.8)	23.0-25.0(23.8)	11.00-13.00(12.21)
Imm.	180	79.0	78.0	23.0	12.00

The above shows that the adult birds are usually larger than the immature ones of the same sex. Adult birds are also usually heavier and stouter than immature birds. A typical adult male was found to weigh 36.45 grams, while a typical immature male weighed but 31.67 grams, both taken on the same day at Lincoln, Nebraska. Of thirty-nine birds trapped at Fargo, North Dakota, thirty that were recorded as "large" included seventeen adults and thirteen immature birds, and nine that were listed as "small" included two adults and seven immature birds.

Results from Trapping and Banding

The following table presents a brief summary of results to June, 1928, from the principal stations at which Harris's Sparrows have been banded. We are especially indebted to these operators for their kindness in supplying data and detailed records upon which further discussion is based.

TABLE 5. Summary of Results of Banding Harris's Sparrows at Seven Stations.

Operator	Locality	No. years data	Total No. banded	Per cent of all sparrows	Per cent which repeated
Misses Agness and Susie Callaway	Fairbury, Nebr.	4	598	53	36
Mrs. Marie Dales	Sioux City, Ia.	4.5	104	39	11
W. B. Mallory	Lennox, S. D.	4.5	143	39?	19
Mr. and Mrs. F. W. Commons	Minneapolis, Min.	5.5	67	1	34
O. A. Stevens	Fargo, N. D.	2	391	27	31
Mrs. A. W. Guest	Jamestown, N. D.	1.5	68	13	16
J. R. Morton	Winnipeg, Man.	3	43	12	7

Intensive trapping will make possible many statistical interpretations of the movements of this species. It would be highly desirable that the trapping be carried on uniformly from season to season. This has been subject to some variations on account of the brief period covered and consequent changes in numbers and location of traps. This has been especially true at the Fargo station. Other factors which interfere are: Non-operation of traps due to bad weather and necessary absence of the operator, variations in surrounding conditions, and weather conditions during the principal season.

We believe that in respect to relative abundance of individuals these factors have been taken care of to a large extent by calculating the per cent of Harris's Sparrows in the total number of sparrow species banded. Fluctuations in the numbers of other species and conditions attending their trapping still might affect the results materially. That more birds are taken in the fall than in the spring is shown by the following figures of the number banded at three stations. As already suggested (page 150) this probably is due to the fact that the fall movement is more deliberate.

TABLE 6. Number of Harris's Sparrows Banded in the Fall and Spring at Three Stations.

Station	Fall '24	Spr.'25	Fall '25	Spr.'26	Fall '26	Spr.'27	Fall '27	Spr.'28
Lennox	20	8	54	3	33	1	24	18
Sioux City	30	0	18	0	23	1	27	5
Minneapolis	6	5	16	0	12	5	5	0

RETURNS

The records of "returns" thus far are almost entirely limited to the station at Fairbury, Nebraska. Their distribution according to the month in which they were banded is shown in the following table:

TABLE 7. Return Records of Harris's Sparrows at Fairbury, Nebraska.

Total No. banded to May, 1927		Return records	Duplications*	Individual birds returned	Per cent banded which returned
Oct.	124	1	0	1	0.8
Nov.	53	5	1	4	7.6
Dec.	20	7	1	6	30.0
Jan.	34	22	10	12	35.3
Feb.	13	10	4	6	46.1
March	100	8	0	8	8.0
April	69	6	1	5	7.2
May	37	0	0	0	0.0

*More than one season's record on an individual bird.

The records of returns in the different months from October to May, inclusive, were 5, 9, 11, 5, 4, 16, 9, and 0, respectively (highest in March). The last column shows that the wintering birds returned to the same place to a remarkable extent. Two birds banded in 1924 and three in 1925 were taken in 1928. One of the former, No. 124778, was recorded each year and killed by a shrike on the last date. All of the three of the 1925 birds were recorded in 1927 as was also one other banded in 1925. The records for the winter of 1928-29 show 1, 5, 6, 7, and 9 birds returning after one to five years respectively.

The one return from October banding, No. 356588, was banded October 27, 1925, repeated December 15, 1925; March 2 and 15, 1926; returned November 14, 1926. The November birds which returned were banded on the 1st, 4th, 9th and 13th. One of these has a December record and another a February one, so that this group appears to be wintering birds. The March returns were banded from the 10th to 23rd. Two of them returned in January and February, the others in March (4) and April (2). These may represent birds which wintered in the vicinity or perhaps a short distance away, moving in early in the spring and remaining for some time (though there are no records to support this). The April returns were banded from the 15th to 30th, returning in October, November, March, and April. They may represent migrating birds, though one of them has a December record also.

In the list of returns only those records have been included which were separated by a migration season. In addition to these there are thirty-seven which might be termed "short time returns," where the dates are separated by more than a month (an arbitrary limit). Three of these, Nos. 42145, 42150 and 176051, have been included in the published list of returns by Lincoln (1927). It is noteworthy that thirty-one of this group were birds banded in January, February, and

March, reappearing in March, April, and May, suggesting again a slight shift in winter and early spring quarters.

A single bird banded at Lennox, S. D., March 30, 1925, was taken at the same place March 28, 1926. Mrs. Dales writes (letter April 24, 1929) that at Sioux City, Iowa, on April 8, 1929, she secured a return on a bird banded October 19, 1928. We believe that the failure to secure returns during migration with this as with other species is largely a matter of mere dispersion. The birds banded are a very small fraction of the total population and the chances that one of them will reappear at the same place are very small. They might pass within a few miles or less. The migration pauses of individuals very likely occur at different localities in different seasons, and these stop-overs are probably few, especially in the northern latitudes.

Leopold (1923) suggested that as the birds seemed to be becoming more common in the Chicago region, that individuals might appear from accidental causes and finding conditions favorable, return in migration. Such an explanation seems doubtful. Migration ranges have been established by ages of time during which these accidental causes have been operating constantly. More or less permanent changes are not likely to occur except through material alteration of the biologic conditions.

It seems almost unquestionable that birds find their way back to the same places in the same way that people find daily their own streets and houses. The summer resident bird recognizes his own valley, grove and tree, or town, block and tree, by memory impressions received from continual association. On return from a winter's absence they may wander for some time before finding the place, or they may fail to find it. During migration these associations are too brief and the bird is not in a receptive condition. On the border line, the edge of the winter range, intermediate conditions and short time assocations may occur. This probably accounts in part for the "short time returns" of the Harris's Sparrow.

Repeats

The repeat records should show quite definitely how long individual birds remain in a certain locality. We cannot say positively whether a bird was present before the first record or after the last, but a series of such records together with other observations will yield strong evidence.

At Fargo, in the fall of 1926, the records of 16 birds averaged 3 days; in the fall of 1927, 63 birds again averaged 8 days. At Fair-

bury, from October 1 to 29, 1925, 36 birds averaged 8.5 days. These are the largest series available and show a remarkable agreement. From Minneapolis, 17 birds in fall migrations averaged 7 days. At Lennox, 22 birds in fall migrations averaged 6 days. The shorter time for the last two localities may be due to the smaller numbers of birds present or to less favorable conditions near the trapping station. The latter circumstance would tend to reduce not only the number of birds repeating but also the chances of long periods.

The data so far available are not sufficient to permit any conclusion as to the most common period. In the one group of 63 birds from Fargo, about two-thirds of them were quite evenly distributed from 2 to 8 days. The longest period was 27 days at Fargo in each fall and the longest considered at Fairbury was 17 days. One bird at Minneapolis, No. 154489, had a record of 72 visits in 21 out of 25 days (September 27 to October 21, 1925). One at Fargo, No. 519682, came 99 times in 23 out of 27 days, being present nearly every time the trap was visited. Another, No. 519684, came 42 times in 11 out of 26 days. Whether or not such cases should be included with the rest, remains to be decided from a larger series of records. From the fall of 1928 at Fargo a still larger series of records is available where 214 out of 412 birds repeated. The average time registered by these was 7.6 days. Grouping them into five day periods, 85 per cent of the birds banded in the first period repeated and registered an average of 10.8 days. The proportion repeating decreased to about 40 per cent at the close of the season and the days present to about 4. Periods of 20 to 23 days were registered by 14 birds.

Repeats in the spring migration have been much fewer and of short duration. From the Minneapolis series, 5 birds were recorded over periods of 2 to 5 days. At Fargo in 1928, 34 birds repeated over periods of from 1 to 5 days (average 1.5). In 1919, 45 birds averaged 3 days. The other stations north of the winter range have shown only an occasional spring repeat. The records from Fairbury are more difficult to interpret on account of the fact that unless fairly continuous records are available (which is rare), it is impossible to tell whether the bird has remained without visiting the trap or whether it may have moved away some distance on a more or less definite migration. Most of the strictly fall records already have been discussed, and others as "short time returns," using an arbitrary 30 day limit. The rest may be tabulated as follows:

Table 8. Repeats Records of Harris's Sparrows at Fairbury, Nebraska.

Time (first record)	No. of birds	Av. time (days)
Winter—November 15 to March 10*	36	13
Spring—March 10 to 31	26	12
Spring—April 1 to 15	18	12
Spring—April 16 to May 10	25	8

*Several records fall on March 13 to 15.

These spring records are quite in contrast to those cited from more northern points but this is not surprising when we recall that there is no considerable migration beyond the winter range until about May 1. The following records of birds which were recorded frequently over a considerable period, are of interest:

No. 42150. February 14, March 3, 8, 21, April 13, 15.
No. 176136. March 22, April 17, 19, 24, May 8.
No. 493745. March 26, April 18, 23, 29, 30.
No. 137618. March 28, April 12, 15, 18.
No. 511181. April 2, 7, 11, 14, 17.
No. 511190. April 10, 27, 30, May 4.
No. 665718. April 23, May 5, 7, 9.

Trapping as a General Index of Migration

Methodical trapping offers a mathematical expression of the migration apart from the study of individuals. Figure 3 shows the period of movement at Fargo and Fairbury. The fall of 1925 is used for the latter place because that was the only year when a large number was banded there and the winter records are omitted also because the numbers are small and scattered. Comparisons of the results from the same season at different latitudes is not necessarily more satisfactory than from different seasons, since different dates are represented and weather conditions at the time may be different.

A further study of the fall movement at Fargo is given in Figure 4 where the number of birds banded and repeating each day in 1928 is shown. The weather was somewhat warmer than normal and there seemed to be no very marked periods of arrival and departure. The curve is more even than that for the same period for 1927, perhaps due chiefly to the larger numbers represented. The 1927 records showed a greater preponderance of repeating birds over new banded ones at the close and a complete absence of birds on October 9, the largest numbers being taken about September 25 to 27, October 6 and 17. The bulk of the birds seem to leave about October 10 and this is about the date when the last are seen in southern Canada. It

Figure 3. Graph showing the period of migration of the Harris's Sparrow at Fargo, North Dakota, and Fairbury, Nebraska. a=reeord at Fargo in the fall of 1927; b=reeord at Fairbury in the fall of 1925; b′=record at Fairbury in the spring of 1927; c=reeord at Fargo in the spring of 1927; d=same for the spring of 1928.

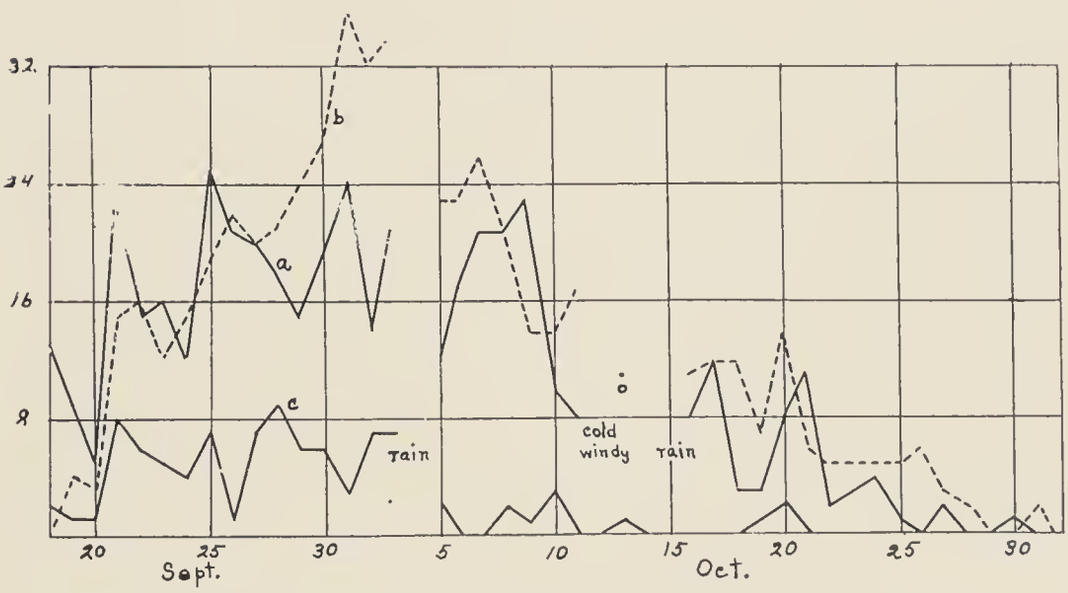


Figure 4. Graph showing the number of Harris's Sparrows banded and repeating each day at Fargo, North Dakota, in the fall of 1928. a=number banded; b=number repeating; c=number repeating for the last time. Dot and circle show number banded and repeating on October 13.

has been observed with other species as well as with this one that the traps are visited most persistently, especially by the banded birds, on the day before a departing flight. Thus the total number trapped would not exactly represent the number of birds present, the figures being relatively exaggerated on the eve of departure and probably minimized on arrival because we cannot say how long it would take the arrivals to find and enter the traps. The results should be studied in connection with general observations on arrival and departure as well as weather conditions.

The results at Fargo indicate that the adults move southward more promptly than the immatures. About 90 per cent of the adults arrived by October 5, but only 50 to 60 per cent of the immatures (94 and 60 per cent in 1927, 88 and 48 per cent in 1928). From the 1928 data, 38 adults show an average stay of 2.4 days, 4 birds showing 10 to 14 days. The rest of the records averaged 8.7 days for the immatures. About 41 per cent of the adults repeated, compared with 57 per cent of the immatures. This difference may be due to the shorter stay rather than greater hesitancy to enter traps.

It has occurred to one of us (Stevens) that it would be of interest to make field counts on the number of banded birds. In the vicinity of the traps this should give an index to the proportion banded, and if taken at nearby places might give some suggestion on the local range of individuals. One such attempt was made on May 16, 1928, when 18 birds were counted, none of which were banded. Five others of which none were banded, were in the traps so that a new group of birds evidently was present. The fall season would be more favorable for this study and the count would best be made a few days after the arrival of a large group. Further attempts in the fall of 1928 were not very successful due to shyness of the birds or lack of time on suitable occasions. One count on September 30 within 40 rods of the traps gave 6 banded and 7 unbanded. Casual observations also suggested that perhaps as many as half of the birds about the traps were banded.

Behavior

The handling of trapped birds and observations upon them in the vicinity gives a good opportunity for notes on their behavior. The Harris's Sparrows are very pleasing birds to handle. They are comparatively quiet in the traps and do not struggle in the hand. Hardly ever will they offer to seize one's hand and usually they will lie quietly when released. Birds which have repeated frequently are much more quiet in the traps and in some cases will cease fluttering

in the gathering cage, allowing themselves to be picked up. They are watchful for an opportunity for release, however, and usually will not lie in the open hand. It has been noted also (Stevens) that such birds often are very reluctant to enter the gathering cage. Usually a banded bird can be recognized on approaching the trap by the more quiet behavior, but in occasional individuals the indications are reversed.

In the open, the birds seem rather domineering over smaller species. Paucity of juncos taken in the fall has been thought (Stevens) to be due to their being kept away by the Harris's Sparrow. In one instance a Harris's Sparrow was hesitating to enter a trap with a drop front. A Tree Sparrow alighted at the rear, and the Harris's Sparrow promptly dove into the trap at the newcomer. A few observations from a blind on the behavior of birds at the sparrow type traps suggest that individual characters of trapped birds may determine the number taken at one time. After entering and feeding for a short time, they usually became restless, and a particularly restless bird might prevent others from entering. Again, one bird would feed in the funnel opening for some time, thus monoplizing the entrance. A second bird, growing impatient, would tweak his tail only to be chased away.

The repeats secured at Fargo in the fall of 1928 have been analyzed with respect to the time elapsing between date of banding and first repeat. This shows 31, 61, 37, 27, 15, 11, 10, 5, 4 and 4 birds reappearing after 0 to 9 days, respectively. Nine more came after intervals of 10 to 23 days, and this group at least may represent birds which had been absent from the immediate vicinity in the interim. There seems to be little relation between the length of this period and the total number of repeats registered. Aside from a few birds which form the trap habit we believe that captures are largely a matter of chance, a random sampling of the birds as they move about from hour to hour and day to day. Although they do hesitate to enter a trap there seems to be no general fear of traps. This is indicated by the data just cited, by the fact that they enter freely into traps suitably located within the first hour or so after the traps are placed, and that disturbance of traps by animals has caused only a very temporary interruption of results.

More than one-fourth of the birds repeating in the fall of 1928 appeared at the two traps farthest apart (75 rods) and half of the others appeared at one or the other pair of traps about half as far apart. Only eight birds came only to one trap for four or more times

Food habits have already been noted. The best location for traps at Fargo has been close against plantings of bushes which furnish dense cover close to the ground (*Ribes, Cornus, Spiraea, Viburnum*, etc.). Weed patches also provide good cover. A trap on a post has given good results when well surrounded by undergrowth, but on the ground is probably the best. Mrs. Dales has contributed an interesting suggestion. Her yard is rather open though there are a good many trees near by. She writes that she cuts branches to stick in the ground to offer temporary cover and this seems attractive to these birds. Probably they are less cautious about entering traps when good cover is close at hand.

Suggestions for Further Study

In common with other species, scarcely any returns have been secured during migration. The winter range and main path of migration are so limited, however, that the establishment of a number of stations along the route would have unusual advantages with this species. Locations in the winter range have exceptional opportunities to study plumage changes, local movements, etc. Several stations in one locality should be able to learn much regarding the local range of individuals.

Systematic trapping is necessary to secure quantitative data which can be used in statistical studies. It is very desirable for the operator to have an assistant so that work will not need to be suspended on account of absence, illness, etc. The recording of repeating birds from day to day is very important in determining whether they remain in the locality. The number of visits registered each day by an individual is of interest in the study of individual habits but perhaps of little importance in generalizations. The operation of the same traps from year to year would be necessary for careful comparison of different seasons. The surroundings, however, may be subject to uncontrollable changes which would affect the results.

There are some problems which seem difficult of approach. We know that many of the birds repeat and that they seem to have little fear of the traps. We do not know whether some of the banded birds fail to re-enter on account of fear. Observations from a blind near the trap and the use of special markings might help to answer this question. It seems hardly possible to determine whether the feeding has any effect in retaining birds in a locality longer than they would remain otherwise. The general results would seem to indicate that this is not a large factor, but that it may operate in the case of those birds which form the trap habit.

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College of Agriculture, University of Nebraska,
Lincoln, Nebraska.
North Dakota Agricultural College,
Fargo, North Dakota.

BIRD LIFE OF A TRANSIENT LAKE IN KENTUCKY

BY GORDON WILSON

Bowling Green, Kentucky, though on Barren River, has few water and wading birds regularly. A depression in southern Warren County, some ten miles from Bowling Green, filled with water during the long-continued rainy season from August, 1926, to July, 1927, and formed a lake 300 acres in extent, which lasted until the middle of July, 1927. To this wet-weather lake came hosts of water and wading birds, Mallards, Canvas-backs, Coots, Lesser Yellowlegs, and Solitary Sandpipers being most numerous. During many years of bird study in this region I have found only twenty-seven species of these families; while during the months from February to July, 1927, I found thirty-two species on this lake alone. The following species were recorded for the first time in my territory: Caspian Tern, Semipalmated Plover, Green-winged Teal, Black Duck, Pintail, and Black Tern.

Species that remained until the lake dried up and probably or certainly nested and not otherwise reported from this section of the state were, Black Tern, Mallard, Blue-winged Teal, King Rail, Coot,

Least Sandpiper, Lesser Yellow-legs, and, among birds that frequent marshes, the Pipit. Many common land birds occurred in large numbers around the lake in the migration season and even in the summer.

Though I live within a mile of Barren River and four miles of Drake's Creek and spend most of my spare time on or along these two streams, I have had few opportunities to study water and wading birds. These streams flow through limestone and pebbly country and have almost no muddy areas or marshes. During twelve years of bird study here I recorded only twenty-eight species of water and wading birds. Along the streams there are a few nesting Wood Ducks (*Aix sponsa*), a good number of Green Herons (*Butorides virescens*), a few Spotted Sandpipers (*Actitis macularia*), and very rarely a pair of Pied-billed Grebes (*Podilymbus podiceps*). The Killdeer (*Oxyechus vociferus*) is plentiful in summer and is to be found in small numbers even in the hardest winters. The Great Blue Heron (*Ardea herodias*) was formerly a fairly common summer resident, but only on two occasions have I found immature birds here in the summer. I have never found the nest of this species and can list it as a summer resident only because I have found young that were still too immature to fly well.

With this as a background, it will be readily understood why the changes in bird life due to this temporary natural lake are of interest. Practically all my bird study for the first seven months of 1927 has been devoted to the McElroy Farm, particularly to the large wet-weather lake there. This farm lies on both sides of the Trinity Pike, ten miles south of Bowling Green, and just beyond the village of Rich Pond. All the surrounding country is underlaid with cavernous limestone, there being no surface drainage ordinarily. When the grandfather of Mr. C. U. McElroy, attorney of Bowling Green and present owner, acquired this 600-acre farm in 1811, nearly all of it was prairie, or a "barren," as it was known locally. In the flat area behind the barns there was then a small permanent pond of an acre or so. Around this pond was a grove, some of which is still standing, the roosting place for decades of Passenger Pigeons (*Ectopistes migratorius*) and the haunt of Wild Turkeys (*Meleagris gallopavo silvestris*). Where the road now runs there was a sort of pontoon bridge, which rose and fell with the wet season.

In a field on the south side of the pike, on property belonging to Mr. B. M. Wilson, there are numerous holes in the ground from which water flows in wet weather but which are ordinarily dry. In

periods of great rain, the underground streams seem to get stopped up. The water comes out at these holes, flows under the bridge and into the broad, flat field behind the house and barns. A ditch, dug in recent years, takes care of the water in ordinary rains, but long-continued seasons of rains cause the water to spread over the field. At the lower end of the depression are numerous sinkholes, the natural outlets of this pond. From the source, in Mr. Wilson's field, to the farthest outlet sinks is a little more than a mile; the area of the lake at its highest is approximately 300 acres. In ordinary years this flat area is dry enough to be cultivated in corn and is the most fertile field in this county. For seventy-five years it has produced a corn crop, with no sign of diminishing fertility.

Nearly every year since the farm was settled there has been an overflow, though usually it has come at such a time as not to interfere with crops. The greatest previous overflow was in 1884, when it covered the road east and north of the house. These overflows have also come at times when most birds were gone south in the fall or before any great migration in the spring. Besides, the water is perfectly clear and in ordinary years offers no food, as the corn and other grain have been harvested. Occasionally enough water is left in the spring to form a sort of stopping place for flocks of migrating ducks, but they must find very "poor picking." On two occasions I have found thousands of ducks on the water for a short time, e. g., April 8, 1912, and April 11, 1922. Very soon afterwards the water was gone, in plenty of time for putting in the regular corn crops.

Beginning in August, 1926, there was almost continuous rain until the early days of July, 1927. Some of the earliest rains drowned out some of the corn of this area. Only once did the water disappear in the fall and that for only a few days. It was impossible for the managers of the farm, Messrs. J. W. and Cecil Travelstead, to gather some thousand bushels of the corn in the lowest area. There was also a small acreage of sorghum which was lost after it had been cut and shocked. As the rains continued, the water became deeper and deeper, rising above the tassels of the corn in much of the area and becoming as much as fifteen feet deep in the ravines and lowest places.

I regret to say that I did not realize the significance of the lake this year until after Christmas, 1926. It was then I learned that much of the corn could not be gathered. From then on until the lake disappeared, in mid-July, I visited the place as frequently as my work and the bad weather would allow. My early trips to the lake

were not rewarded with anything unusual, for I always came at the wrong time to see the seventy-five Canada Geese (*Branta canadensis*) that wintered on the lake. During the day they fed in the extensive fields of barley and wheat, returning to the lake to roost. My real experiences began March 12, after which every trip brought surprises at every turn of the eye.

The diagram* of the farm was made by Miss Ruth L. Cox, director of art in the public schools of Madisonville, Kentucky, who took an unusual interest in my studies during her teaching in the 1927 summer school of the Western Kentucky Teachers' College, Bowling Green.

Pied-billed Grebe. *Podilymbus podiceps.* The "Die-dapper," as it is called locally, breeds here in very small numbers and is slightly more numerous in migrations. On the lake from early April until the end of June there were literally dozens of grebes. At any time in the day could be heard a few "kowing"; at sunset the sound of these birds and others was almost deafening. On June 22 I found five nests, with eggs as follows: 9, 6, 2, 0, and 7. The nests had been built of cornstalks and weeds when the lake was temporarily low in the middle of April. Heavy rains had raised the water again and had caused the birds to desert the nests. Every nest seemed to have been covered with six or eight inches of water. The eggs had been incubated only two or three days, it seemed. On July 9 I found two more nests of this species, both of which had been robbed of their eggs.

Herring Gull. *Larus argentatus.* On May 8 I saw three flying low over the central part of the lake. In ordinary seasons I see one or two during each migration season.

Caspian Tern. *Sterna caspia.* On April 30 four flew over the lake and the adjoining fields for a whole afternoon, uttering their harsh cries. Several times I studied them with glasses in the brilliant sunlight only a few yards away.

Black Tern. *Chlidonias nigra surinamensis.* On June 19 I saw seven at close range and six on June 22. On the latter date Professor L. Y. Lancaster, who accompanied me, found on the bank of the ravine an egg of this species. There was no nest near. I could not detect any difference in the color of the birds seen, but some of them gave the whining sound that I have noticed is characteristic of the

*The Editor is compelled to omit the diagram because of lack of space.

young of the Common Tern (*Sterna hirundo*) on Reelfoot Lake, in western Tennessee. I have never recorded this species here before, though I have often seen it, in company with the Common Tern, on the Ohio and Mississippi Rivers in this state.

Double-crested Cormorant. *Phalacrocorax auritus.* I saw three the whole afternoon of May 2, the first record I have for this species here, though I have seen hundreds on Reelfoot Lake, where they are known by the fishermen and hunters by the rather picturesque name of "Nigger Geese."

Merganser. *Mergus americanus.* They were seen in large numbers on the lake from March 20 to May 8. I find a few in my territory every year but never in such numbers as frequented the lake this year.

Mallard. *Anas platyrhynchos.* On the lake they constituted the first great hordes, up until the end of April. On July 9 I flushed in low grass in the area near the source of the lake a female Mallard and ten young. The female made frantic efforts to decoy me. Two days later some workmen on the farm flushed the same female, apparently, and secured four of the young. Ordinarily I count myself fortunate if I see a dozen Mallards in a single day, even in migrations. On a single day at the lake I could have easily seen 500.

Black Duck. *Anas rubripes.* Plentiful at the same time that the Mallards were so numerous, especially in March. I found more Black Ducks on the similar lake on the Chaney Farm, about a mile and a half away and apparently a part of the same underground river system.

Green-winged Teal. *Nettion carolinense.* It was seen rarely in April. I had much better views of this species on Davis's Marsh, a small permanent pond of similar formation, some five miles nearer Bowling Green.

Blue-winged Teal. *Querquedula discors.* Very plentiful in March and April. On June 22 I flushed a female from a nest containing six eggs. She made no attempt to fly but could swim perfectly. She circled around me within easy reach of her nest for the half hour that I watched her. The female duck that I found on July 9 and that could not fly might have been this same one. At that time the duck concealed herself in weeds too soon for me to identify her for sure.

American Pintail. *Dafila acuta tzitzihoa.* Many that were supposed to be of this species were seen on several occasions, but I identified them positively only on May 8.

Wood Duck. *Aix sponsa.* For some reason I failed to see this species while the water was high but found a few, both males and females, on June 22 and July 9.

Canvas-back. *Marila valisineria.* After the hordes of Mallards left, the Canvas-backs took their places. Because of their brightness of color these birds were the most conspicuous on the lake. Throughout the month of April and the first half of May I saw thousands. The last two or three weeks of this time the Canvas-backs were mated. I explored the woods at the edge of the water for nests but in vain.

Ruddy Duck. *Erismatura jamaicensis.* I failed to identify positively this species on the lake proper but found a few on a neighboring small pond. I have never seen this species in large flocks.

Canada Goose. *Branta canadensis.* The seventy-five that wintered on the lake left early for the north, but a single one stayed on until the water was getting low, when it flew to a large lot adjoining the barnyard proper and joined some others of its kind that have been in captivity for several years. For weeks it would rise and fly daily and attempt to induce the flock to follow. They could not fly because of cropped wings and were soon joined again by their more fortunate relative. Several farmers around Bowling Green have captured Canada Geese and keep them by cropping their wings, but only rarely have they been successful in getting them mated. Mr. H. C. Morris, of near Woodburn, three miles beyond the McElroy Farm, has reared a few Canada Geese in captivity, but none have ever been reared on the McElroy Farm itself.

Bittern. *Botaurus lentiginosus.* Heard booming in the woods beyond the lake every trip to the lake in April and May, sometimes in large numbers. I was never able to see the birds themselves, though I have seen them in my territory and elsewhere in the state.

Little Blue Heron. *Florida caerulea.* Not seen on the lake while it was large but seen at that time on Davis's Marsh. I saw two Little Blue Herons on the small remnant of the lake July 9. Every fall I find a few on the river in their fall plumage of white; on September 13, 1924, I saw ten at one time on Barren River.

Great Blue Heron. *Ardea herodias.* This species probably nests in small numbers along our rivers, for I see occasionally an immature bird that is hardly old enough to fly. On the lake I saw one occasionally in April. On June 22 I saw six adults feeding in the shallow water between the woods and the ravine.

Green Heron. *Butorides virescens.* A fairly common summer resident here. Very abundant on the lake after April 27. A great many of those I saw in June and July were immature. At one time on July 9 I counted twelve on the wing over the small remaining lake.

King Rail. *Rallus elegans.* It was seen during the spring migrations of 1926 and 1927 on Davis's Marsh but not found at the lake until July 9, when I found a pair in the part of the lake on Mr. Wilson's farm. A local hunter and bird student found the nest of this species some years ago on Davis's Marsh.

Sora. *Porzana carolina.* This species has increased greatly in my territory within the last three years. I saw from two to ten during each trip to the lake in April but did not see any after May 2. At sunset I often heard this little rail calling in its strange, weird way, a sound that has always reminded me of the shriek of a frightened woman.

Coot. *Fulica americana.* The Coot is ordinarily a rare bird here, though I record a few each spring. All my records for twenty years might be multiplied by a hundred without touching the number I have seen this season. From April 4 until May 8 the lake was fairly black with them, at the same time that so many Canvas-backs were there in other areas. On June 22 I found four nests of almost fresh eggs, all of which had been plundered by Crows. The most impressive thing I remember about the Coots is their "taking off" in flight, propelling themselves with both wings and feet until above the reach of the water. I have seen fully five hundred in flight, making a noise like the rushing sound of a storm.

Wilson's Snipe. *Gallinago delicata.* For some reason the Snipe was never very common, though I saw as high as ten, two or three times. I recorded the species for every trip during April but not before or after. I have several times seen more Snipe in other parts of my territory.

Pectoral Sandpiper. *Pisobia maculata.* Fairly common some years in my territory but not seen sometimes for three or four years at a time. From April 16 to May 1 saw a great many of this species. On April 30, at sunset, I saw twenty or thirty flocks of fifty to a hundred each coming to the main lake from the extension on the Wilson farm. On numerous occasions I studied this species with binoculars.

Least Sandpiper. *Pisobia minutilla.* Fairly common in April and May; almost abundant on May 2. I was greatly surprised to find

two adults at the lake June 22. They seemed to be perfectly normal, for they flew as usual, walked as usual, and uttered their pleasing little note.

Semipalmated Sandpiper. *Ereunetes pusillus.* I saw this species definitely on only one occasion, May 8, when I studied at close range a flock of this species, the Least, the Pectoral, the Solitary, the Lesser Yellow-legs, and the Semipalmated Plover, none of this strange flock being over a hundred feet away and very fearless.

Greater Yellowlegs. *Totanus melanoleucus.* From April 4 to May 2 they were almost abundant, nearly always found in company with the Lesser and related species.

Lesser Yellowlegs. *Totanus flavipes.* Very abundant, especially throughout April and May. I saw one on June 18 and three on June 22, all perfectly normal in appearance.

Solitary Sandpiper. *Helodromas solitarius.* The Solitary is always common here in the spring and in the fall, but during April and May I saw more at the lake than I commonly see in my whole territory in five years.

Spotted Sandpiper. *Actitis macularia.* This species regularly nests along our creeks and rivers. I saw it several times on the lake but never in large numbers such as those of the Solitary and the Lesser Yellowlegs.

Killdeer. *Oxyechus vociferus.* Though a very common resident here, the Killdeer outdid itself on the lake this year. There were times when there were so many Killdeer in the air over the adjoining fields that their complaining notes were almost deafening. Evidently they bred in large numbers around the lake, for the numbers were quite as large in midsummer as during the spring migration.

Semipalmated Plover. *Aegialitis semipalmata.* Five or six of these little waders were seen at very close range on April 30, an equal number on May 2, and a host on May 8. I had a fine opportunity to compare and contrast them with the Killdeer and several other members of the family.

Osprey. *Pandion haliaetus carolinensis.* On April 16 I studied this species at close range for an hour or more. On April 24 and 27 I saw two billing and expected to find a nest but was never able to see more than one bird after that. May 2 was the last record of this species, which has never been recorded here before by me.

Red-winged Blackbird. *Agelaius phoeniceus.* The woods at the south end of the lake served as a roosting place for thousands of red-wings during the migration season. Though this species is common here in summer, I was unable to find any nests in this very favorable place.

Bronzed Grackle. *Quiscalus quiscula aeneus.* If posible, the Bronzed Grackles outnumbered the red-wings during the migration season and remained plentiful on through the summer. This species is one of our commonest summer residents.

Savannah Sparrow. *Passerculus sandwichensis savanna.* This migrant, usually rare, was quite common at the edges of the lake in late April and early May.

Henslow's Sparrow. *Passerherbulus henslowi.* I found a few of these migrants around the lake, but no more than I usually find in the spring migration.

Pipit. *Anthus rubescens.* This bird, quite common as a migrant, is recorded nearly every season in several parts of my territory, but I have always thought of it as a migrant. In June and July I found small flocks of Pipits in the fields where the water had gone down; I suppose that they had nested here.

Many other species of land birds were seen around the lake, but their numbers were in every way normal. In July, even, I saw fully a thousand Mourning Doves (*Zenaidura macroura carolinensis*) in the sorghum fields. Barn Swallows (*Hirundo erythrogastra*) nested in great numbers in the largest barn and were always to be seen over the lake and the fields. Down by the little bridge I could nearly always hear the lively song of the Louisiana Water-Thrush (*Seiurus motacilla*), a fairly common summer resident here. Every trip to the lake brought a good record of species. May 8 was the best of all, for I recorded fifty-seven species in a single afternoon.

I take this means of thanking Mr. McElroy, the owner, and the Messrs. Travelstead, the managers, of the farm for their kindness to me in my study. They put at my disposal their boats when the water was high; they gave me minute directions as to how to find certain things and places; and they told me all the general facts about the lake before my acquaintance with it.

State Teachers College,
Bowling Green, Kentucky.

THE WILSON BULLETIN

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The present editorial organization is as follows: T. C. Stephens, Editor-in-Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

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EDITORIAL

President Jones has just announced that the dates for the annual meeting at Des Moines, Iowa, will be Friday and Saturday, December 27 and 28. This will be the beginning of a week of scientific meetings in this city. About thirty societies, representing all of the sciences, will hold sessions from the 27th to January 2. Many public lectures will be given. Our W. O. C. meeting is a very small affair in this big scientific gathering; but we draw our own crowd, and our meeting is as large, or larger, than when held independently. We hope for a full attendance of bird students from Iowa, Minnesota, the Dakotas, Nebraska, Kansas, and Missouri, and states still farther west. Plan to attend and present something on the program, even if only five minutes long. Remember that the trip back home from this meeting will cost only one-half the regular fare if you secure the certificate from the agent at time of buying the one-way ticket to Des Moines. Further details will be given in the Secretary's letter.

The Colored Plate of the Harris's Sparrow in this issue is presented to the Wilson Bulletin by the Nebraska Ornithologists' Union, in part from its treasury and in part through special contributions by its members for this purpose. It may be interesting to note that this one page of color costs almost as much as the other sixty-four pages of a regular issue. Our readers may also be interested to know that this same plate is to be used as one of the illustrations in the volume on the "Fringillidae of Nebraska," which is to be issued as a part of the "Birds of Nebraska." The latter work is to be issued in parts, and the first part on the Fringillidae will contain approximately 350 pages, will have an edition of 500 copies, and is expected to be ready for publication in 1931. The Union has accumulated money with which to finance the first part, and will use the proceeds from its sale to finance the second part, and so on. And finally, both organizations are deeply indebted to Mr. George Miksch Sutton, who is rapidly taking a place in the front row of American bird artists. The Wilson Bulletin is his admirer and debtor. Mr. Sutton is, probably, by this time settled on South Hampton Island, at the north end of Hudson Bay, where he expects to remain until the summer of 1930.

During the past year or so a number of members have allowed their memberships to lapse, and they may have failed to receive certain numbers of the

Wilson Bulletin. Where such members have re-instated themselves they may receive any lacking numbers by making request to the Editor. The latter has no means of knowing at the time of re-instatement how many Bulletins may have been missed.

We would like to take a little space at this time to congratulate our colleague, the Editor of the *Oologist*, on passing the twentieth year of service. We are glad he told us about it in the August issue. Science is impersonal, but scientists need not be wholly so. When a man remains twenty years on a job for the good of the cause, he naturally would appreciate a little recognition—and possibly, thanks. This little 24-page monthly magazine, the *Oologist*, has undoubtedly served a constituency that could not possibly have been satisfied by any other current publication. The fact that it has survived is proof that it was needed and appreciated. It has published to the world plenty of good ornithological matter, and we trust that it may long continue to do so. We congratulate Editor Barnes on his loyalty and his record.

The *Condor* for July, 1929, contains an interesting general article by Professor Wm. E. Ritter, of the University of California, entitled "An Untilled Field for a Revised Kind of Research in Zoology." Dr. Ritter's plea, as we understand it, is for more work on animal behavior, with special reference to birds. He admits that some work along this line has been, and is being, done. He says, "The truth is, a great deal of excellent research is being done of the general sort I am longing to see more of. But here is the queer thing about it: What is being done is done largely by amateurs—by persons, that is, who have little or no standing among the scientifically elect."

We regret that Dr. Ritter did not define more definitely the term "scientifically elect." We hope that the venerable professor has not inadvertently fallen into the aristocratic belief that all scientific discoveries must be made by the elect. We prefer to think of science as democratic; and that the discovery of a new fact, if proved, will be willingly accepted no matter whether the discoverer belongs to this or that research society. Perhaps, after all, Dr. Ritter merely wishes to say that he would like to see a greater number of scientifically trained men engaged in field work on the problems of animal behavior. To which we can say, "Yes, indeed, Doctor."

There is now under way a very powerful movement to plant Ring-necked Pheasants, and possibly Hungarian Partridges, in suitable areas throughout the country. This effort is being fostered by the manufacturers of arms and ammunition. They are working openly and above-board. They frankly wish to increase the game in order to develop hunting for profit.

A survey has already been conducted or projected in a few mid-western states (Ohio, Michigan, Minnesota, Iowa, and Mississippi) to determine 1) the status of game birds, 2) the land practice affecting game environment, 3) public sentiment and organization, 4) game administration, 5) game research. This Game Survey program also includes some proposed study of the Bob-white problem. The important question for bird lovers to consider at the outset of this

program of game farming activity is whether it is desirable to supplant our native birds with foreign ones.

Before any concerted effort in behalf of bird protection can be again undertaken, new declarations and alignments will have to be made and appraised. The last great piece of federal legislation in behalf of bird life, which was passed by Congress early in 1929, was sponsored chiefly by Dr. Hornaday and a section of sportsmen headed by *Forest and Stream* and *Outdoor Life*. It is our understanding and belief that the National Association of Audubon Societies had the misfortune to be aligned with the opponents of this greatest piece of bird protection legislation ever enacted, with the possible exception of the Migratory Bird Law. So we believe that a new alignment in bird protection leadership must develop in the next few years.

During July of this year a small pamphlet entitled "A Crisis in Conservation" came to our desk. This pamphlet gives us a list of extinct birds (merely as a starter), a list of those on the verge of extinction, and still others that may yet be saved, etc. The pamphlet is a splendid one, and says many things that need to be said. We hope that every one of our readers who is interested in conservation of wild life, bird protection, etc., will secure one of these pamphlets and *read it*. We believe, however, that this pamphlet is a little too hard on the sportsman. Perhaps the sportsman is motivated in much of his conservation work by the desire to have better hunting. While this is probably true we should bear in mind that it was not the Audubon Societies that fought and labored successfully for the passage in Congress of the Migratory Bird Refuge Bill* with its appropriation of millions for bird protection. The Audubon Societies were committed to a policy of public shooting grounds instead of inviolate sanctuaries. The men who fought the fight for inviolate sanctuaries for bird life would probably be classified as sportsmen. Of course there was a division among sportsmen—some wanted the public shooting grounds. And yet the federal act for inviolate sanctuaries was pushed to a successful conclusion by a group of sportsmen rather than by Audubonites, and we feel it our duty to pay our respects to these men.

This pamphlet also takes a dig at the "prosperous ornithological clubs for the scientific study of birds, and scientific institutions" for their indifference to the cause of bird protection. Of course, if the word "prosperous" had been left out we might have felt ourselves included in this arraignment. As it is we can only wish more power to the critics. As we see it, it is the solemn duty of zoologists and ornithologists (professionals and amateurs of course) to do the utmost to save from extinction the materials upon which their sciences are based. If we are remiss in this obligation we deserve all the condemnation that will come now and hereafter.

Reverting now to another point. We believe that prevention of extermination or close approach to extermination is the big principle in bird protection. We do not shed tears over the death of a bird. We do not hold that every last bird should be saved. We are perfectly well satisfied with the idea of

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*Also called the "Migratory Bird Conservation Act," or the "Norbeck-Andresen Bird Sanctuary Bill."

conservation. We are perfectly willing that proper game birds should be hunted for sport under proper restrictions that will insure the perpetuity or conservation of the race. And we would much rather see sportsmen interested in the preservation of species for the sport of hunting than to have to witness the importation of exotic birds to take the places of our native birds. These are, of course, individual opinions. We think that every organization, scientific or otherwise, which deals with any form of wild life, birds for instance, ought to adopt a platform which would set forth to the world a statement of its beliefs and policies toward, and with respect to, wild life, birds for instance. We wish the W. O. C. had such a platform. We would be glad to see a definite platform of the National Association of Audubon Societies. Perhaps other ornithological societies have such a statement of principles which we have overlooked. Agreement on a policy, if it is a good one, will help much to make any organization a real force in wild life conservation.

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1. War is still a possibility.
2. Every nation is in danger of war.
3. The United States is in danger of war.
4. The United States should be prepared to defend herself in war.
5. Arms and ammunition are necessary in war and national defense.
6. The United States should maintain arms and ammunition resources for national defense.
7. Since arms and ammunition are produced by private industry, these industries must be encouraged by the government and the people.
8. Such industries may be encouraged by the public use of arms and ammunition.
9. The only legitimate public use of arms and ammunition is in hunting and killing wild animals.
10. Therefore, it is a patriotic duty to encourage the hunting and killing of wild animals; to oppose restrictive game laws; to encourage the importation of foreign species of game birds in substitution for the disappearing native game birds, in order to provide abundance of hunting and encourage the manufacture of ammunition, etc.

This is the gist of an informal argument we heard not long since, though we may have stated the conclusions a little more broadly and emphatically. Where is the fallacy in the logic? Our own belief is that we can have both preparedness and wild life protection, and that there is no essential relation between the two problems.

GENERAL NOTES

Conducted by M. H. Swenk

The White Pelican at Spirit Lake, Iowa.—A flock of more than 110 White Pelicans (*Pelecanus erythrorhynchos*) spent several days on Little Spirit Lake in April (1929). A large flock was reported here four years ago, also.—F. L. R. and Mary Price Roberts, *Spirit Lake, Iowa.*

Some Notes from South Carolina.—I saw four adults and two half grown young of the Florida Gallinule (*Gallinula chloropus cachinnans*) on Goose Creek, near Otranto, November 24, 1928. A Duck Hawk (*Falco peregrinus anatum*) was noted flying with a small rodent in its talons along the Cooper River, near the city dump on the east side of Charleston, November 25, 1928. I collected an immature Orange-crowned Warbler (*Vermivora celata celata*) that was molting on the throat, at Otranto, November 24, 1928.—William Howard Ball, *Washington, D. C.*

The Lazuli Bunting in Iowa.—On May 20, 1929, on the edges of a ravine within the limits of Sioux City, Iowa, the writer came upon a male Lazuli Bunting (*Passerina amoena*). The bird was in full breeding plumage and was feeding among the tops of the low second growth trees. It was typical bunting territory, as was evidenced by the presence of several Indigo Buntings (*Passerina cyanea*), which are summer residents in this particular spot. The bunting was carefully studied with 10x glasses and the bright blue, rich buff, and white colorings were seen in the best of light. The writer feels sure of his identification, having previously observed the bird and heard its fine song in the Killdeer Mountain region of North Dakota, where it is a summer resident.—William Youngworth, *Sioux City, Iowa.*

Black Snakes as Bird Killers.—While in company with Messrs. Arthur H. Howell and W. H. Ball, I had the unique experience of seeing a common Black Snake in the very act of killing a young Florida Blue Jay.

Professor Howell wished to see a Bald Eagle's nest along the road, and, having stopped the car about five minutes, I heard strange calls by some bird, as if in distress, while the White-eyed Towhees were scolding as if excited about something unusual. I ran over to the spot, which was not more than 100 feet from our car, and came upon a Black Snake wound around the body and neck of a fledgling Florida Blue Jay, which was crying loudly. The snake did not appear to mind me in the least, but was striking viciously, with rapid strokes, raining blows on the head, wings and body of the fledgling.

Wishing the others to witness this atrocity, I called for them to hurry over. They were just in time to see what was taking place, when the reptile sensed danger of interference and glided quickly out of sight. Picking up the bird, we found its head bloody and also a wound upon its wing, and the head was soaked with the saliva, appearing as if the reptile had actually attempted to swallow its prey alive. The bird did not seem to be exhausted, and was very much alive, thanks to our opportune arrival.

The parents did not appear, nor were they heard. Possibly they were off feeding. Perhaps our car frightened them, as these jays in the woods are quite shy, far different from the city birds.—Donald J. Nicholson, *Orlando, Fla.*

Nesting of the Purple Finch in Arkansas.—The various papers in the June, 1929, issue of the Wilson Bulletin, on the erratic nesting habits of the Pine

Siskin (*Spinus pinus*), prompt me to report a strange case of the nesting of the Purple Finch (*Carpodacus purpureus purpureus*), here during the summer of 1920.

On June 25, 1920, two boys came to me, telling of the nesting of some "red sparrows" in the Red Cedar trees (*Juniperus virginiana*) in their front yard. I, of course, went with them, and found their report to be true, there being four nests of the Purple Finch in the trees, three in one and the fourth in another near by, all four nests containing four eggs each, and all being placed from ten to sixteen feet high, some eighteen to thirty inches from the tree trunk, on the smaller limbs. They successfully raised the first brood, in spite of the many visitors coming to see these strange "sparrows," which may be the reason they vanished as soon as the young birds were old enough to fly well.

The nests, which are before me at this time, are very similar to those of the Chipping Sparrow (*Spizella passerina passerina*), only more frail than the usual Chippy's nest.

Locally the Red Cedars, as well as all other evergreens, are not native, and these birds are only rarely seen here, although during the past winter, and occasionally on other winter days, they appeared here in great numbers. As far as I can learn this is the only record of the bird nesting this far south, and it is the only time that they have remained here during the breeding season. The latest date at which they have ever been recorded here, with the exception of the 1920 season, was this year, when a large number of these birds were observed feeding on buds of various trees on the 14th of April.—J. D. Black, *Winslow, Ark.*

The Holboell's Grebe in Iowa in June.—As there apparently is only one very late spring record of the occurrence of the Holboell's Grebe (*Colymbus holboelli*) in Iowa (Fenton, Wilson Bulletin, XXVIII, 1916, p. 131), and that one, May 26, 1916, evidently doubted by Ira N. Gabrielson (Wilson Bulletin, XXIX, 1917, p. 97), I would like to record two recent observations of this species in central Iowa in June.

On June 6, 1928, Messrs. Arthur T. Watson and Kenneth Nelson of Des Moines, and the writer saw a pair of "large Grebes" at Long Pond, seven miles west of Perry, Dallas County. As the three of us are all familiar with this species in life, having seen it many times on the Atlantic Coast in winter, we recognized these birds immediately as Holboell's Grebes. After circling the pond to gain better light, we discovered that the first pair had joined with four others, and the six birds continued to swim and dive repeatedly within range of our glasses.

We were at a loss for an explanation of this late migration of a species classed by R. M. Anderson (Birds of Iowa, 1907) as "very rare in Iowa." One year later to the day, on June 6, 1929, the same observers found a single fully plumaged male of this species on Brenton's Slough, four miles west of Camp Dodge, Polk County. Do not these observations establish the Holboell's Grebe as a casual late spring migrant through Iowa?

Details of the field characteristics of the bird at this time of year may be of interest. The rufous throat patch is quite conspicuous and contrasts sharply with the white of the belly, especially when seen in flight. While the bird is at rest on the water, the long neck, the long pointed bill which is of a lighter shade than that of a loon, and the white of the upper throat and cheeks sharply cut by the black crown, can be seen plainly. The white on the secondaries is noticeable

only when the bird is flying and it is less extensive than in the female Red-breasted Merganser, a species with which it might be confused. As Ludlow Griscom (Birds of the New York City Region, 1923, p. 56) points out, this grebe holds the head and neck bent downward slightly in flight.—Philip A. Dumont, *Wilton, Conn.*

A Query About a Nest Habit of the Pine Siskin.—A point of special interest arises in view of the observations recorded by Mrs. Dales and Mr. Bennett in the June, 1929, number of the Wilson Bulletin.

In our yards here in California, if they are at all rustic, we have two fringillids which nest commonly. They are the House Finch (*Carpodacus mexicanus* subsp.) and Arkansas Goldfinch (*Astragalinus psaltria* subsp.). Superficially, these birds have little morphological resemblance.

In certain of their habits, however, they tie-in very closely. In both, with the approach of the breeding season and during incubation, the male feeds the female by regurgitation. The parents of both species feed their young by regurgitation. The young of both appear to be raised entirely on seed food, mostly seeds "in the milk." The nest of each species is apparently (I have not caught the parents in the act) kept clean by the parents during the first days after the young emerge from the eggs. By the time the young are half grown, such effort is abandoned, and the rims of the nests become filthy with fecal matter. The feces of the young of both at this stage are without membranous sacs and are, for this reason, less readily eaten or carried off.

In the article above referred to on the nesting of the Pine Siskin, the program was complicated by the introduction of the young of a species whose hereditary habits and functional processes probably vary widely from those of the Pine Siskin. The Cowbird is one of a group some, at least, of whose juvenals pass feces in sacs during the nest period and of whose parents maintain clean nests.

The habits of the Pine Siskins are essentially the habits of goldfinches. In other words, as the young Pine Siskins developed, the parents might be expected to cease nest sanitation, with the result that feces deposited on the rim by the young would remain there. The article in question states that the "excreta" were carried away on about the fourth day after hatching, which might still be within the period when these dainty fringillids keep their nests clean.

It would be of added interest, it seems to me, to have on record the behavior of Pine Siskins and other fringillids, the feces of whose young are without sacs in the late portion of the nest period, when these species are compelled to adopt a youngster whose phylogenetic ancestors presumably carried away sacked feces throughout the nest period.

Such sacked feces as I have seen have come from nestlings whose diet appeared to be entirely insectivorous. Would the juvenal whose phylogenetic groove called for insect food and feces in sacs, when forced to accept a granivorous diet, fail to provide the membranous sac for its waste products, or, passing sacked feces, would its foster parents become model housekeepers? Truly, the nestling Cowbirds will bear watching.—J. Eugene Law, *Altadena, Cal.*

The Status of Certain East Coast Red-wing Blackbirds.—The *Auk*, XLV, p. 155, April, 1928, carries the results of "A Study of the Red-winged Blackbirds of the Southeastern United States," by Howell and Van Rossem. Part of the conclusions as there set forth I beg to differ with.

The writer has also done a little work on these birds during his eight years of residence in the state, especially in Dade and Monroe Counties, these being the southmost part of the state; and much of it has been done since his "Birds of Florida" came out, late in 1925, which will cause the areas as set forth therein to be slightly changed.

My views coincide with Mearns, that "*floridanus*" (or "*mearnsi*") is now found on the east coast as far south as Brevard County (formerly given as New Smyrna), and through the central part as far south as a lower Okeechobee-Fort Lauderdale line. That "*phoeniceus*" breeds as far south as a Jacksonville-Gainesville line, I agree with. I do not at the present time feel disposed to comment on the west coast Red-wing (*littoralis*) as suggested by Howell and Van Rossem, owing to a lack of material.

However, their placing of (Maynard's) *floridanus* (p. 160) on the lower keys and peninsula as far north as Lake Worth, Palm Beach County, is a gross error, in my opinion; for "*bryanti*" is found in most of that section, overlapping with *floridanus* (or "*mearnsi*"). This is clearly shown by birds personally taken in the Bahamas and compared with a series from the lower coastal areas of Dade and Monroe Counties. These writers refrain from giving table measurements or other comparisons taken from Bahaman specimens of *bryanti*, and typical Dade and Monroe birds, which are identical.

It is not surprising, that "a female taken at Everglade March 12" (p. 161), should have been typical "*floridanus*," for it was not a breeding bird, and also was not far south of its regular breeding area.

When working along lines drawn so closely, or hair splitting, as these writers have done, only fresh skins or skins of a few years of age should be used, and not such as referred to as Museum of Comparative Zoology skins taken in 1870 (p. 161).

"*Bryanti*" would, therefore, be the breeding bird from about the Okeechobee-Lauderdale line south; and around the Gulf certainly to Everglade.—Harold H. Bailey, *Miami, Fla.*

The Fecundity of the English Sparrow in Utah.—On the afternoon of January 1, 1929, a student called the writer on the telephone to say that he had discovered a nest of English Sparrows (*Passer domesticus*) which were just hatching. An examination revealed five naked little birds. The nest was a bulky affair of feathers, rags, straw, etc., made inside a tightly constructed bird box, placed about twenty-five feet from the ground in a crotch of a Carolina poplar tree.

The day the eggs hatched the temperature was near the zero point and the ground was well covered with snow. A minimum temperature of fourteen degrees below zero was reached during January. The parent birds seemed to sense the seriousness of the cold, and as a result during the first eighteen days one or both parents were almost constantly on the nest. During the night both parents remained within the bird house. Contrary to the usual custom of these birds, the young were practically grown when they left the nest and began to fly. One of these juveniles, collected late in February, disclosed a body that was fat and in perfect physical condition.

Early in March parent birds were observed carrying more feathers and straw into the nest and by the last of the month they were incubating a second set of eggs. Inasmuch as the original tenants were not banded, one cannot be

absolutely sure that the second set of eggs was placed there by them. However, this is thought to have been the case.

During the second incubation period the weather conditions in this vicinity (Provo, Utah) seemed almost like winter. The temperature dropped far below the freezing point and the snowfall was heavy. The lateness of this spring makes these records all the more interesting and exceptional. Two other pairs of nesting sparrows were observed in March. When one considers that in this locality juveniles are observed as late as October, it shows that the fecundity of this importation is most amazing.

From W. B. Barrows' bulletin "The English Sparrow in North America," we learn that eight pairs were first introduced to the Brooklyn Institute from England. These did not thrive, and in 1852 two hundred dollars were raised to re-introduce the species. After this, numerous other importations were made into the eastern United States and Canada. In 1867, a colony was established at Galveston, Texas. In 1869, the city government of Philadelphia made the largest single importation, when it secured one thousand birds for the city. That same year twenty pairs were released at Cleveland, Ohio. During the next few years additional European specimens were liberated at San Francisco, Halifax, and at various places in Ohio, Michigan, Wisconsin, and Iowa.

Barrows shows that in 1873 or 1874, a colony of thirty was imported from England and liberated at Salt Lake City, Utah. Three years earlier than this, however, Dr. J. A. Allen[1], who made collections in the Salt Lake Valley from September 1 to October 8, 1871, records that the English Sparrow had recently been introduced and was apparently flourishing at Ogden. By 1886 this species was fairly common through most of central and northern Utah. Today it is found in every town and hamlet in the state. While it is normally a bird of the cities, it has become so numerous that it is often found far removed from human habitations. The writer has found it in the heart of the thirsty, sun-baked Escalante Desert, twenty miles from the nearest farm house. It is fairly common throughout the sparsely settled Monument Valley area of southeastern Utah, where no human dwellings except a few Navajo "hogans" are to be found.

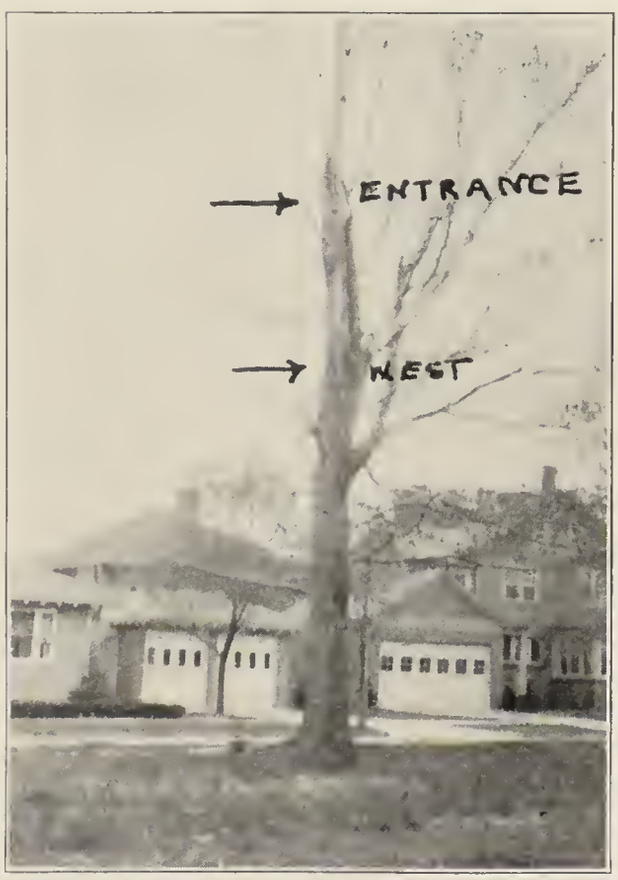
The bird is a pest chiefly because it is too prolific. Its gregarious nature, along with its ability to adapt to almost any type of environment, makes it a competitor and enemy to most of the other birds of a community. As a result it is driving away many of our best birds. It is a nuisance and an enemy to most agriculture. However, it has rendered valuable service in Utah in helping to hold the alfalfa weevil in check.—Clarence Cottam, *Provo, Utah.*

Nesting of the Sparrow Hawk.—In April, 1925, a pair of Sparrow Hawks (*Cerchneis sparveria sparveria*) were noticed trying to enter traps containing birds captured for banding. The clamor of Blue Jays indicated the nest of the hawks to be in a pin-oak tree, twenty inches in diameter, located about 300 feet east of the banding station and about 100 feet from the south shore of Lake Erie. On examining this tree the nest was found twenty feet up behind a strip of tin that had evidently been put in place several years before to prevent further decay of the trunk. The entrance was at an opening, about ten feet above the

[1]See "Notes of an Ornithological Reconnaissance of Portion of Kansas, Colorado, Wyoming, and Utah"—Bulletin of the Museum of Comparative Zoology, Harvard College, Cambridge, Massachusetts, Vol. 3, No. 6, pages 165 to 173.

nest. As it was possible to move the tin to one side and replace it without disturbing the nest, daily observations were made until the young hawks left their home.

On April 26, when the nest was found, it contained four typical eggs, rufous and blotched, agreeing well in color with the nest materials of reddish brown oak leaves and bark. One egg was added the next day, making a total of five. Hatching of the five eggs occurred on May 25, indicating an incubation period of twenty-eight to twenty-nine days. Two of the nestlings were missing on June third. The three remaining left the nest on June 25, bearing bands 293691-2-3. They were fed by the old birds for a week after having left the nest, staying on one branch of a nearby dead tree while one of their parents, usually the male, perched above them to ward off repeated and determined attacks of a pair of Kingbirds that were nesting in a small tree adjoining. When forced to obtain their own food the young hawks were observed hunting mayflies, following Robins that had learned that these insects could be found by jarring small branches and twigs.



In the nest were found remains of English Sparrows, Blue Jays, Flickers, and other birds. The tree had apparently been used for many years by hawks, Screech Owls, and Fox Squirrels, as evidences of these were included in a mass of accumulated rubbish several feet in depth under the hawk's nest. It became necessary to prevent the interference of the hawks with banding operations, so they have not again used this nesting site; but a pair, perhaps the same, have nested a half mile east of this location during the last three years.

Attempts were made to trap these Sparrow Hawks for banding, using decoy English Sparrows attached to the support of a drop trap, but were unsuccessful, the sparrows "freezing" on the approach of the hawks. On one occasion a hawk and a house cat were observed on each side of the trap, each apparently aware of the other, but both were intent only for a possible movement of the sparrows. Their instinct for pursuing and capturing moving prey only doubtless insures the practical result of fresh food for the young.

The nest has been made secure against the winter gales and is now (January, 1929) occupied as a winter home by a fox squirrel, which has made a nest, about a foot in diameter, of oak leaves and twigs. There are comparatively few

records of a complete nesting of the Sparrow Hawk, as most of the previous interest has been in collecting the eggs rather than in observing the life history.

The incubation period noted above together with that noted by Warren ("Birds of Pennsylvania," 1890, p. 141—21-24 days), by Althea R. Sherman (*Auk*, xxx, 1913, p. 406—29-30 days), and by Forbush ("Birds of Massachusetts," 1927, p. 178—21 days or 29-30 days), indicates variation which may be due to repeated or protracted absence from the nest of the parent birds. For instance, in the nesting described above the birds left the nest when a ladder was placed against the tree, and would not return for fifteen minutes or more after the intruder had gone.

That delay in development from partial chilling of the eggs may be possible, is indicated by the observations of Alfred R. Lee on the eggs of the domestic fowl (see *Farmers' Bulletin*, No. 1363, p. 4). Kendeigh and Baldwin (*Amer. Nat.*, lxii, 1928, p. 276) state that a young House Wren just out of the shell, and abandoned by its parents, survived three days. This may indicate that an egg about to hatch could endure a lengthening of the incubation period due to enforced absence of the parent. Just what effect prolonged cooling might have on development seems to be unknown, and an interesting problem for experimental study is here suggested. With the facts on the temperatures of birds now being collected by Mr. Baldwin, it should be possible to set up an artificial incubator for the eggs of wild birds, and to ascertain the effects of varying temperatures.—E. C. Hoffman, *Lakewood, Ohio.*

Ten Minutes with a Kingbird.—The rapidity with which birds of the flycatcher family catch and devour winged insects is remarkable. On July 16, 1926, the writer had the opportunity to observe an adult Kingbird (*Tyrannus tyrannus*) following his trade. The bird's perch was a cross beam on a telephone pole near the house. Both long and short sallies were made from here, with the bird always returning to eat the prey and often to wipe the sides of its beak on the edges of the beam. The smaller insects were eaten in a hurry but some of the larger ones required more exertion. This observation started at 6:30 P. M. and ended at 6:40 P. M., and in that time the bird made eighty-two successful catches, with returns each time.—William Youngworth, *Sioux City, Iowa.*

BIRD PHOTOGRAPHY

Conducted by Alfred M. Bailey

"*Sac-a-plomb*" (sack of lead) is the name the natives of the marsh country of the Louisiana gulf coast give the Pied-billed Grebe. And he is well named. Who has not seen a "hell diver" swimming quietly along, his body as buoyant as a cork? Suddenly, as though pulled from below, the grebe sinks from sight, and fortunate indeed is the observer who again sees that particular grebe—if the diver desires to remain hidden.

I had long desired to photograph a grebe on its nest, and this spring I had a good opportunity for there were many pairs nesting on a little reed grown lake a few miles from my home at La Grange, Illinois. The lake is in a thickly settled community and is bordered by the Lincoln Highway, so there is a continuous procession of cars whirring by—and yet, so secretive are the marsh birds that I found several species nesting within from fifty to one hundred yards of the road. Among these birds might be listed the American and Least Bitterns, King, Sora, and Virginia Rails, Coots, and Pied-billed Grebes.

I worked this pond last year—it is scarcely three hundred yards in length by one hundred fifty, wide—but had never seen a grebe. I found several old nesting platforms which I felt sure must have been the homes of grebes, so this year I was early afield. The fore part of May I found eight nests with from six to nine eggs, in a short time and did not half cover the field. At this time, the vegetation was scant with the tules and cat-tails scarcely a foot in height, and as there was a great deal of open water, the nests were easily found. But the grebes were so shy that I failed to see a single bird on this trip, and my subsequent ones, except from blinds which I had erected near nests.

I chose a nest in shallow water which was surrounded by a low growth of cat-tails. The grebe had covered her eggs with moss and dead vegetation, as is characteristic of these divers. I watched carefully for an hour without seeing a grebe, and had about given up hope when a rasping, throaty call was given from a nearby stand of cat-tails. A few moments later, there was a slight ripple behind the nest, and I saw, in line with tules, the head and neck of the grebe. She appeared without a sound from beneath the surface, and remained absolutely motionless behind the vegetation for minutes, and then, convinced that all was well, she slid out of her place of concealment, and slowly swam toward the nest. She paused for a moment, her colors blending with the drab surroundings, and then, with little commotion, climbed upon the moundlike nest and started to remove the moss which concealed the eggs. She worked around the nest, keeping her beak in the center and her tail to the outside: a second time she circled before the eggs were cleared to her satisfaction. Then she settled upon them and eyed the blind continuously.

On subsequent trips, I added to my film until a good series was secured. On one occasion the bird showed reluctance in returning to her nest, and the whirring of the motion camera seemed to disturb her more than usual. The eggs were not well concealed, and the grebe would climb out on the nest, rearrange the moss with a few deft dabs of her beak, and quickly dive from sight. Finally, however, she climbed out—within six feet of the camera, removed the vegetation from the eggs, sat upon them, and then, when I scuffed the water, she very obligingly re-covered her eggs, and disappeared over the side of the nest.—A. M. B.

The Pied-billed Grebe approaching her nest, and—

Settled.

PROCEEDINGS

The Joint Meeting of the N. O. U. and I. O. U. at Sioux City

One of the most important ornithological meetings ever held in the Middle West occurred on May 10 and 11, 1929, when the Nebraska Ornithologists' Union and the Iowa Ornithologists' Union met in joint session at Sioux City, Iowa. A total of ninety-two ornithologists were present at these meetings, of which forty six were from Iowa, thirty-four from Nebraska, eleven from South Dakota and one from Minnesota. All day Friday, May 10, was devoted to the program, and Saturday to the field trips in connection with the joint meeting.

Following registration of the members of the two organizations and their guests in the lobby of the West Hotel, the morning session was called at about 9:30 o'clock with President A. J. Palas of the I. O. U., in the chair. During the afternoon session President Mrs. A. H. Jones of the N. O. U., presided The program consisted of the following papers:

"Reviews of Authorities on the Origin of Bird Migration," by Mr. A. J. Palas, Des Moines, Iowa.

"Mishaps in Birdland," by Mr. Fred J. Pierce, Winthrop, Iowa.

"Winter Boarders," by Prof. W. H. Over, Curator of the Museum, University of South Dakota, Vermillion.

"Ecology of Birds and Insects," by Mr. C. N. Ainslie, Sioux City, Iowa.

"Some Water Birds and Their Homes," illustrated with lantern slides, by W. F. Kubichek, Coe College, Cedar Rapids, Iowa.

"Birds of a Neglected Area," by Mrs. Mary Price Roberts, Spirit Lake, Iowa.

"Who-Who-Whoo-Whooa," illustrated with lantern slides, by Mr. W. M. Rosen, Ogden, Iowa.

"Studies of the Rose-breasted Grosbeak and the Cardinal," illustrated with lantern slides, by Mrs. Addison E. Sheldon, Lincoln, Nebraska.

"The Colony of Great Blue Herons Opposite Fontenelle Forest," illustrated with lantern slides from photographs taken by Mr. W. W. Scott of Omaha, and explained by Mrs. Florence A. Steunenberg of Omaha.

"Behavior Factors in the Nest Building of Birds," illustrated with specimens, by Dr. R. H. Wolcott, University of Nebraska, Lincoln.

"The Present Status of the Fringillidae Volume of the Birds of Nebraska," by Prof. M. H. Swenk, University of Nebraska, Lincoln.

"Glimpses of Bird Life," illustrated with lantern slides and motion pictures, by Mr. Walter W. Bennett, Sioux City, Iowa.

From Iowa there were present: Mrs. Della C. Cutter, Castana; Mr. and Mrs. W. A. Kinnaird, Valley Junction; W. F. Kubichek, Cedar Rapids; Mr. J. P. McGraw and Mr. W. R. Mills, Pierson; Mr. H. R. Moen, Onawa; Dr. F. L. R. and Mrs. Mary Price Roberts, Spirit Lake; Mr. and Mrs W. M. Rosen, Ogden; Mr. B. O. Wolden, Estherville; Miss Kate E. LaMar, and Mr. and Mrs. A. J. Palas, Des Moines; and a large number from Sioux City.

From Nebraska there were present: Mr. and Mrs. Adison Adams, Mrs. A. H. Jones, and Miss Caryl Sylla, Hastings; Mr. Wilson Tout, North Platte; Mrs. Lilly R. Button, Fremont; Mr. and Mrs. C. K. Hart, Prosser; Mrs. H. C. Johnston, Superior; Mrs. L. H. McKellip, Seward; Miss Mary St. Martin, Wahoo; Dr. J. B. Bostick, Mr. L. C. Denise, Mr. and Mrs. L O Horsky, Mr and Mrs. R. Overing, Miss Elizabeth Rooney, Mr. W. W. Scott, Mrs. Florence A. Steunenberg, all of Omaha; Mr. and Mrs. O. D. Corey, Mr. and Mrs. M. O. Dewey, Mrs. Addison E. Sheldon, Mrs. G. E. Smith, Prof. and Mrs. Myron H. Swenk, Miss Olive Wallace, and Dr. Robert H. Wolcott, all of Lincoln; Mrs. C. E. Murphy, Mrs. W. V. Steuterville, Robert Murphy, Bertha D. Macomber, and Addie Milne, of South Sioux City.

From South Dakota there were present: Mrs. H. C. Abbott, Mr. Walter Thietje, Miss Lillian Kearns, Prof. and Mrs. W. H. Over, Vermillion; Prof. A. P. Larrabee, Yankton; Prof. Alexander P. Arlton, Prof. and Mrs. R. E. Dunbar, Mr. Bernie Glaus, Mr. Wilbur T. Reirson, all of Mitchell. Mr. William Kilgore, of Minneapolis, represented the state of Minnesota.

The two societies held their respective business meetings independently from 4 to 5 P. M., and at 6:30 P. M. held a joint banquet at the Elks Club Building. Members of the two societies and their guests to the number of about eighty attended the banquet, after which a public program was held in the Lodge Room of the same building. Mrs. Florence A. Steunenberg, of Omaha, first entertained the audience with whistled solos, after which she gave imitations of the songs of a number of Nebraska birds. This was followed by a lecture on "Minnesota Wild Life," by Mr. William Kilgore, Curator of the Museum of Natural History of the University of Minnesota, Minneapolis, which was illustrated by several reels of moving pictures.

Saturday, May 11, was cloudy, raining early in the morning, but not after the time of the start on the field trips, which was at 6 A. M. The members divided into three groups. One group, under the leadership of T. C. Stephens, visited Crystal Lake, southwest of South Sioux City, in Nebraska; a second group, under the leadership of Mrs. Mary L. Bailey, worked in the McCook region of South Dakota, and a third group, under the leadership of Mr. Walter W. Bennett, worked in the Brown's Lake region of Iowa. All three groups returned to the Sioux City Country Club at noon for a one o'clock luncheon, as guests of the Sioux City Bird Club, after which the composite list of the morning was compiled. The Nebraska party listed eighty species, and the South Dakota and Iowa parties noted respectively seventeen and twelve species that were not seen by the Nebraska party, making a total composite list of all of the field parties of 109 birds. About fifty persons were in the three field parties.

The N. O. U. and I. O. U. voted to again meet in joint session in May, 1930, at Omaha, the N. O. U. acting as host in conjunction with the Omaha Nature Study Club.

TO OUR CONTRIBUTORS

Our members are urged to submit articles for publication in the BULLETIN Short items are desired for the department of General Notes, as well as longer contributions, especially pertaining to life-history, migration, ecology, behavior, song, economic ornithology, field equipment and methods, etc. Local faunal lists are also desired, but they should be annotated, at least briefly, and should be based upon sufficient study to be reasonably complete. Authors are asked to include the common name, the scientific name (from the A. O. U. check-list), and annotations, and they should be arranged in this order. The annotations should include explicit data concerning unusual species. Omit serial numbering.

THE MANUSCRIPT. The manuscript, or copy, should be prepared with due regard for literary style, correct spelling and punctuation. Use sheets of paper of good quality and of letter size (8½x11 inches); write on one side only, and leave wide margins; if at all possible manuscript should be prepared with a typewriter, using double spacing and a reasonably fresh, black ribbon.

The title should be carefully constructed so as to indicate most clearly the nature of the subject matter of the contribution. Where the paper deals with a single species it is desirable to include in the title both the common and the scientific names, or, to include the scientific name in the introductory paragraph. Contributors are requested to mark at the top of the first page of the manuscript the number of words contained. This will save the editor's time and will be appreciated.

Manuscripts intended for publication in any particular issue should be in the hands of the editor sixty to ninety days prior to the date of publication.

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BIBLIOGRAPHY. The scientific value of some contributions is enhanced by an accompanying list of works cited. Such citations should be complete, giving author's name, full title of the paper, both the year and volume of the periodical, and pages, first and last.

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A Plea

Sometimes prosperity hurts us. The Editor of the WILSON BULLETIN is pleased to report that we are now receiving more manuscripts than we can publish promptly. This state of affairs has existed for some time, but we have not mentioned it publicly lest we might thereby lose some good material. However, the situation can no longer be ignored. Our authors have been very patient and considerate. But when it comes to waiting two or three years for publication we can not expect authors to submit. The question is now before us whether we shall henceforth decline articles which can not be given prompt publication, or accept them and hold them indefinitely until the authors complain, or enlarge the BULLETIN to better take care of the material offered.

It is expected, of course, that the latter plan will be preferred. How, then, can it be accomplished? We can not expect to continue to run along on small donations, much as they are appreciated. We will not expand and incur a deficit. The dues can not be increased. In the absence of an endowment fund we will have to rely upon an increased income from an increased membership. At the present time our total membership is a little below par in numbers, because of a rather large loss in delinquent members. If we could make up this loss and still add 100 new members, we would be able to add eight pages regularly. If we could secure 200 new members, we could add sixteen pages. The Editor believes that he can fill this additional space with good ornithological matter. Does the problem interest you? How many will try to secure the new members? If you will even secure one new member, and a few others do the same, we can succeed. Are we stationary or moving?—The Editor.

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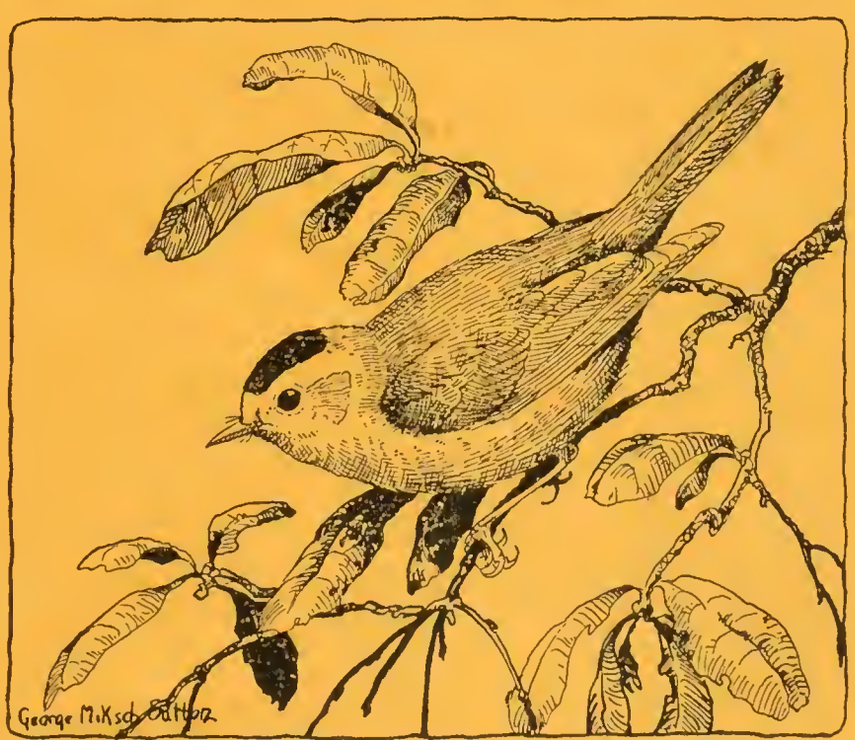
THE WILSON BULLETIN



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Claims for lost and undelivered copies of the magazine may be addressed to the Editor.

THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist, and called the "Father of American Ornithology."

The officers for the current year are:

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The Nebraska Ornithologists' Union.
The Iowa Ornithologists' Union.
The Kentucky Ornithological Society.
The Tennessee Ornithological Society.

The Loon on Its Nest in Northern Michigan

Photograph by Dr. Frank N. Wilson.

THE WILSON BULLETIN

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IN SEARCH OF THE LOON *(GAVIA IMMER)* WITH MOVIE CAMERA

BY OWEN J. GROMME*

Illustrated with Photographs by the Author and Frontispiece by Dr. Frank N. Wilson.

In Northern Wisconsin the large area known as the Land O'Lakes furnishes almost unparalleled opportunities for the naturalist and wild life photographer. Many years ago the waters of the hundreds of natural lakes were raised to facilitate logging operations; and the resulting deep thoroughfares make it possible to travel for many miles by canoe with few land portages.

In the spring of 1925, during the month of June, the Milwaukee Public Museum party, while engaged in general field and movie work, located the nest of a Loon in Bass Lake, Michigan, just across the Wisconsin line. The nest was merely a heap of vegetation and contained the usual two eggs. It was situated on the only cattail islet in the lake, and a nearby clump of willows suggested itself as a possible means of concealment from which a photographer could work.

Having had no previous experience with the Loon, a general discussion ensued as to just how to go about getting the movie camera close enough without disturbing the subjects. An old unused scow looked likely enough, so with the aid of hammer and nails and a few boards it was made temporarily seaworthy. A rude, spacious canvas blind was constructed over a light framework in the bow and built to accommodate the cameras and operator.

Next morning the party started out with the clumsy barge in tow of a canoe, propelled by a small outboard motor. A heavy head wind brought progress to a snail's pace, as the blind acted as an impediment which put us more or less at the mercy of the wind. Consequently, our "rudder end" was continually pulled out of a straight course. When out in the middle of Mamie Lake the barge began to sink, so a member of the party was assigned to a one-man bucket brigade. After an hour of hard work, the "Loon Island" was reached.

*Associate Taxidermist, Milwaukee Public Museum.

The two Loons were observed out on the lake several hundred yards from the nest, and seemed to manifest no apparent interest in our activities.

As the nest island was nothing more than a floating bog, the scow was easily towed up behind the willow bush and brought to a position from which the front of the blind was but seven feet from the nest. By filling the scow with water it was sunk to firm bottom, thus assuring a rock steady footing for the camera tripods. A rude seat was constructed for the operator and holes cut in the canvas through

Fig. 1. Blind from which Loons were photographed.

which the camera lens was to project. Everything was made in readiness so that the camera outfit could move in without in any way disturbing the surroundings. It was decided to give the birds several days to acquaint themselves with the new surroundings before attempting any photographic work.

While maneuvering the blind into position, a faint peeping was heard in the direction of the nest. Investigation proved the interior of the eggs as the source of the sound, so we decided that the hatching was soon to take place.

On the morning of the second day, three of us in a canoe quietly paddled out to the "set up" and were encouraged by the sight of one

of the old birds as she left the island. She had at least accepted our blind as part of the general order of things. The writer and camera were quickly placed within the blind, and the two remaining men paddled away. Immediately the cameras were focused and convenient peep-holes cut in the canvas for observation. As is the general rule, the writer prepared himself for the usual long vigil. Imagine his surprise when upon trying out one of the peep-holes he beheld Mrs. Loon there at the edge of the nest and almost within arm's reach. She had appeared as if by magic, but later observations proved that

Fig. 2. Young Loons.

this was the "submarine route" up a tiny waterway that led from the open lake to the nest.

Perhaps from the Loon's point of view, the departure of the men in the boat removed the human element and totally unsuspicious she came straight to the nest before the departing boat was two hundred yards away. Needless to say, this moment was for the movie operator, an exciting one. So absorbed was he in admiration of the graceful wild thing, that he almost forgot about the camera. Lest the Loon frantically depart at the first click of the shutter, the "Akeley" was very slowly brought into motion, and soon the normal speed of sixteen pictures per second was attained. Ten—twenty—fifty feet of film, and the bird remained motionless. Perhaps she associated the

low buzz of the shutter with the continual hum of boat motors going up and down the lakes—at any rate she held her ground. In my excitement, a board was accidentally rattled and the Loon disappeared like a flash. In less than five minutes she was back again. Clumsily she climbed aboard the nest, and while resting on her entire tarsus and feet, she slowly turned over the eggs. This she did with the body quite erect and with the shoulders of the wings slightly away from her sides. The neck was bent downward at an angle of about forty-five degrees, and the bill when brought in contact with the egg, was slightly opened like a shears and the sides used to maneuver the eggs into position. This gave the bill two points of contact, thus enabling the egg to be moved in any desired position. Accompanying photographs show this action quite clearly.

Fig. 3. Loon approaching nest. Shifting egg with partly opened mandibles.

After a brief inspection, she pushed herself forward a few inches, and very heavily flopped down. It seemed as if the eggs would be broken, but the forward part of the breast only received the force of the impact, and she carefully backed over the eggs nestling them under the breast well to the rear of the body. As she covered the eggs completely, their exact position could not be observed from the operator's limited point of vantage. She quietly settled to her brooding, but kept an unfaltering gaze of her red eye on the source of the sound in the blind, for every movement was being recorded on the ribbon of film.

She remained on the nest for half an hour—left for five minutes, and returned repeating the same performance described above. The operator stayed in the blind for the remainder of the hours of light, and the bird's several departures and returns were repetitions of already recorded performances. She always turned the eggs upon her

return. During the operator's time in the blind, the other bird was nowhere in evidence.

It was hoped that the following day would find us "sitting in" on the hatching, but a driving cold rain discouraged any work from the blind. As we had expected, upon our return the next bright day, we found only an empty nest with the flattened fragments of eggshells. Our time was limited and it was impossible to await hatching from other nests, so our "much movied" Loon family was soon located in the shelter of a quiet cove on the opposite side of the lake. From the bow of a canoe, both young were photographed as well as the frantic maneuvers of the adults in their vain attempt to distract our attention from their helpless offspring.

Considering our efforts well repaid, we postponed further work with the Loons for a later date, and returned to Milwaukee.

Milwaukee Public Museum.
Milwaukee, Wisconsin.

ON A COLLECTION OF GYRFALCONS FROM GREENLAND

BY WALTER KOELZ

The bird collection of the University of Michigan contains eighty-one Greenland gyrfalcons. All but nine are in juvenile plumage; four are full fledged nestlings. Except for three specimens (two nestlings and one adult) taken by me along Smith Sound north of Cape York (about lat. 78° N.) and five from the Lehn-Schioler collection, Copenhagen, taken on the east coast at Carlshavn (lat. 72° N.) and Shannon Island (lat. 75° N.) all the rest are from the west coast from Upernivik (about 73° N.) to Frederikshaab (about 62° N.).

The three Smith Sound birds were taken as follows: two nestlings (male, female), Etah, August 13, 1925; adult male, Igloodahauny, August 20, 1925. The five east Greenland birds have the following data: Carlshavn, adult female, September 25, 1923; juvenile female, September 2, 1921; juvenile male, September 28, 1923; juvenile female, September 19, 1921; Shannon Island, juvenile male, September 9, 1920. Of the other birds, listing the localities from north to south, juveniles are present as follows: two from Upernivik, "summer" and December 21, 1925; two from Godhavn, September, 1923; fifteen from Christianshaab District, September 12 to November 5, 1925, and one February 25, 1926; fourteen from Egedesminde District, August 23 to November 4, 1925, and 1926, and two nestlings July 15, 1926; one from Holstenborg, fall, 1928; one from Kanga-

miut, March 12, 1918; four from Sukkertoppen, August 27 to September 27, 1923, and 1924; nineteen from Godthaab, August 15 to May 2 over several years; seven from Frederikshaab, October 30, 1921 to January 26, 1922. The eight adults from the west coast were taken as follows: Christianshaab District, male, September 30, 1925; Egedesminde District, female, January 20, 1926; Sukkertoppen, female, February 28, 1926; Godthaab, female, December 7, 1896, male, March 27, 1897, female, March 12, 1905, male, January 8, 1913; Fiskenaesset, male, February 10, 1913.

It is now generally believed that there is but one species of Arctic falcon, typically *Falco rusticolus* Linnaeus from Sweden. The range of *rusticolus* is given as Scandinavia to N. Russia. The number of forms accepted in this species group is variable, but no one would probably find it necessary to recognize more than five variants. Subspecies *candicans* Gmel. is found in north Greenland and Arctic America; *islandus* Brunn is variously attributed to South Greenland, Iceland, and Arctic America; *obsoletus* Gmel., Labrador; *alascanus* Swann, Alaska; and *uralensis* Sew. and Menzb., Siberia.

Hartert in "Die Vogel der palaarktischen Fauna" recognizes the existence of several forms in Greenland but designates them all as *candicans*, probably because he believes that they all breed together. He says (p. 1066) that certain Greenland birds cannot be distinguished from Iceland birds and on page 1068 that some Greenland and Iceland birds cannot be separated by their plumage from Scandinavian birds. The differences in measurements between any of the forms are slight.

Even if it should be found to be true that these morphological forms are not segregated in breeding, it seems unfortunate that a subspecific name should be based rather on the population of a geographic unit than on a morphological form. Under such a system three birds of identical size and plumage have different names depending on whether they originate in Scandinavia, in Greenland, or in Iceland! Ornithologists in general are loathe to give up the geographical connotation of the subspecies concept, though botanists and some other zoologists have come to realize its inadequacy. Circumstances that contribute to retain it are connected with the ability of birds to move over vast areas, but it will certainly be found when variation in birds is intensively studied that geographical units have not so homogenous a population as has been supposed.

FIG. 4. Falco rusticolus candicans Gm. Left to right, juvenile male and juvenile female, taken from a nest at Etah, North Greenland, on August 13, 1925; adult male Igloodahouny, North Greenland, August 20. 1925.

FIG. 5. Falco rusticolus islandus Brunn. Left to right, juvenile male and juvenile female, taken from a nest at Nivak, Egedesminde District, Greenland, on July 15, 1926: adult male Godthaab, Greenland, March 27, 1897.

My collection shows the three forms of gyrfalcon that Hartert assigns to Greenland. The two juveniles from Etah, North Greenland, and the August adult from Igloodahouny, North Greenland, would certainly be considered good examples of *candicans*, coming as they do from the northern limits of the species range. The juveniles are male and female, wings 330 mm. and 363 mm., respectively. (These values are low and it is likely that the quills are not full grown. The birds were still in the nest). A third was reared in the nest but fell off the cliff earlier in the season, according to Nukapingwa, who located the aerie.

The two birds are almost alike in color, (Fig. 4).* The under parts are entirely white with a creamy cast, except for a band of narrow streaking of brown on the feathers of the breast (the male specimen has only the sides of the breast streaked), and broader streaks of the same color on the feathers of the sides. The under tail coverts and the tarsals are immaculate. The general tone is white above. The top and the sides of the head are faintly lined along the feather shafts with dark brown. The feathers of the back have a streak of brown along the shaft of the feathers, which broadens as it nears the tip to become rather pendant-shaped. On the shortest scapulars the drop becomes broader so that the feathers here may be described as brown with a broad border of white. The upper tail coverts are streaked like the breast. The tail feathers are pure white. The wing coverts are marked about like the scapulars; the short ones with a central field of brown and the longest ones with broken v-shaped crossbars. The wing feathers are white with dark shafts and a few broken bands of dark brown, chiefly near the tips. The adult has the entire under parts immaculate (Fig. 4). The back is chiefly white. The crown, sides of head, and fore part of the back are unspotted except for a few lines of black brown on the ear coverts and on a few feathers of the occiput. The upper tail coverts, the rest of the back, and the wing coverts are barred with arrow-shaped blotches of black brown. The tail is virtually pure white.

The plumages of adult and juvenile are thus different. Young birds have the markings paler, probably more numerous, and they tend to run lengthwise of the feather, especially on the short feathers.

The two nestlings from Nivak, Egedesminde District, collected on July 15, 1926, are also much alike (Fig. 5). They are marked male

*Two young birds which were given to the Boston Society of Natural History by Capt. Donald MacMillan in 1924, were virtually like these. They also were reared at Etah, possibly by the same parents.

and female, wing 317 mm. and 315 mm., respectively, indicating that the feathers are not yet full grown. These birds are much darker than the young *candicans* described above and would be considered representatives of subspecies *islandus*.

The general tone of the under parts is buffy white. (The buff apparently fades out with age, though old specimens that have been blood-stained show local areas of such tone). All the feathers, including the undertail coverts and tarsals, have heavy pendants of dark brown at their tips, except the throat which is rather faintly streaked. The back is dark. The top of the head is heavily streaked with dark brown but the tone is decidedly lighter than that of the back. The short feathers of the back are brown with a narrow border of buffy white. An irregular V of whitish is cut out toward the free end, though often only one branch of the V is present. The longer feathers may have two or three such V's while the longest of the scapulars and tertials may be described as dark brown with notches of white about 1 cm. wide extending from opposite sides of the feather almost to the shaft, with intervening spaces of brown of about the same width. The outer web of the primaries and secondaries is dark brown with small islands of cloudy buff. The inner web is whitish with saw teeth of brown extending into it from the shaft, with the free border lined irregularly with pale brown. These saw teeth are shortest on the first primary. On the secondaries they usually extend to the margin of the web.

The two central rectrices of the tail are crossbarred with dark brown. The dark bands are about 8 mm. wide, the light ones slightly wider. The final band tends to be elongate. The outermost rectrices are barred only on the outer web. The bars of the inner web are broken into mottling which, however, still shows the position of the bars. The intervening feathers are longitudinally striped and mottled on the outer web with an occasional blotch or bar near the free border of the inner web.

Fortunately, I have a young bird taken at Frederikshaab on January 26, 1922, very similar in color to these two birds, which is molting to adult plumage. Comparing the new feathers with those of my fully adult specimens I find two birds which it would probably closely resemble. Both were collected at Godthaab, one female on March 12, 1905, and one male March 27, 1897. These two birds are almost identical in plumage. I shall describe the latter. (Fig. 5).

The under parts are white. The throat and breast are immaculate except for a black shaft line on an occasional feather of the side of the breast. The feathers of the belly and sides and the tarsals and the shorter undertail coverts have irregular arrow-shaped blotches near the tip; the longest feathers have one or more other blotches, chiefly on the outer web, along the shaft. The color of the blotches is black brown except on the long tarsals and on the under tail coverts where they are greyish brown. The longest undertail coverts have usually only a faint line of brown black along the shaft near its tip.

The general tone above is slaty. The top of the head is creamy, broadly streaked with black brown, its tone distinctly lighter than that of the back. The two spots of the hind neck are whitish with faint streaks. The feathers of the lower back, rump and upper tail coverts are slaty blue with darker transverse bands, the bands of light and dark about equal in width. The rest of the back feathers and those of the wings, exclusive of the primaries and secondaries are grayish white with transverse bands of gray brown, darker than those of the lower back.

The longest primaries are white on the inner web with saw teeth in brown extending to or nearly to the web margin. The outer web is brown with whitish notches along the free margin. The feathers become darker as they decrease in length, the areas of brown becoming greater and the white becoming mottled grey-brown.

The tail is whitish with narrow (5 mm.) gray brown crossbars, the crossbars fading to a slaty blue. The dark areas are about half the width of the light areas.

The collection contains specimens of every intermediate stage between the two types described and it also contains many examples that are much darker. In Fig. 8 are shown three birds, an adult (right) and two juveniles from East Greenland, all examples of *candicans*. The bird to the left is as light as the Utah juveniles. The central bird is about as dark as the form becomes. Darker birds show spotting on the undertail coverts, which has been considered the characteristic that separates *islandus* from *candicans*. The adult is comparable in plumage with this dark juvenile. In Fig. 6 (left) is shown another such dark *candicans* in juvenile plumage, along with a juvenile *islandus* and a light *rusticolus*.

The darkest of these Greenland birds (in juvenile plumage) may be predominantly dark in tone on all surfaces. The throat in such specimens is palest, being whitish, more or less heavily streaked with

FIG. 6. Left to right, juvenile specimens taken at Godthaab: Falco rusticolus candicans Gm. (dark phase), female, April 2, 1926; Falco rusticolus islandus Brunn, male, October 10, 1925; Falco rusticolus rusticolus, female, February 5, 1926.

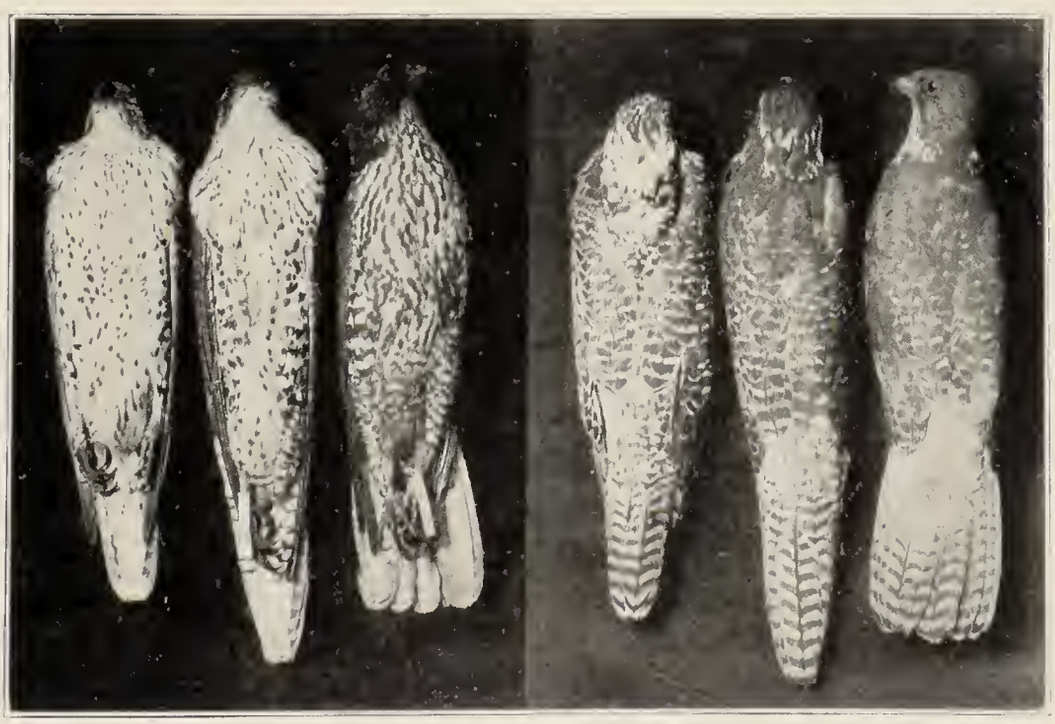

FIG. 7. Falco rusticolus adults, left to right, islandus, male, Godthaab, Greenland, January 8, 1913; rusticolus female, Karasanda, Lapland, April 14, 1896 (M. C. Z. No. 47845); obsoletus male, Stowe, Mass., 1881 (M. C. Z. No. 13560).

dark brown. There are distinct moustache patches, i. e., the side of the head from the crown to the throat is uniformly dark. The feathers of the under parts are dark brown with streaks or longitudinal spots of whitish, except those of the belly which are all brown with narrow rims of paler. The upper surface is almost uniformly dark. The feathers of the back are dark brown with narrow borders of lighter. The crown is as dark as the back, the only light tones being in the two nuchal "spots," where the feathers are broadly edged on the sides with whitish, and on the longest upper tail coverts where small scallops of whitish to brownish white are cut out of the borders of the feathers. All the tail feathers are broadly tipped with whitish. The two innermost rectrices may be completely dark, but there are always about twelve irregular lighter crossbars, 10x5 mm., usually indicated only as slightly paler areas. The outermost rectrices are predominantly dark. The outer web is bordered with a very narrow band of light brownish mottling, broadest as the base is approached. The inner web has twelve or more narrow bands of mottled buff to light brownish white invading the field from the border, not extending to the shaft. These bands are narrower than the dark areas that they separate. The intervening rectrices tend to have spots on the outer web and the barring of the inner web becomes less mottled as the central rectrices are approached. Fig. 9 shows the darkest bird of the collection, a juvenile female, taken by me at Godthaab on September 15, 1925. Fig. 6 (right) shows a bird paler, especially below, than the one described here. The other *rusticolus*[1], from Sukkertoppen, is a little paler below than Fig. 9.

Two of these dark juveniles, a male taken March 5, 1926, and a female November 11, 1923, at Godthaab, are molting. The adult feathers are darker than those of my darkest adult, a male taken on January 8, 1913, at Godthaab (Fig. 7 left). This bird is in general like the adult *islandus* previously described but the breast is heavily streaked, the throat alone being immaculate. The entire upper surface is darker, the light areas being reduced in intensity and area and the dark areas being much darker, with no slaty blue except on the upper tail coverts.

The darkest adult is in color much like a specimen from Lapland, typical *rusticolus* (Fig. 7 center), except that the light color of the feathers of the nuchal patches is more brownish than in the bird from

[1]This is one of Lehn-Schioler's birds and was identified by him as *F. rusticolus rusticolus*.

Greenland and there is more white throughout. There is, however, a molting young bird which shows the same brownish tone in the nuchal feathers, so this may be no constant character. The darkest of the juveniles from Greenland would undoubtedly assume an adult plumage indistinguishable from *rusticolus* or even *obsoletus* (Fig. 7 right), as Hartert says.

Distribution

The specimens of the collection may be grouped according to locality, beginning north, as follows:

Locality	*No. specimens*	*Date*	*Subspecies*
East Greenland	5	September	candicans
West Greenland			
Etah	3	August	candicans
Upernivik	2	Summer Dec. 21	islandus, rather dark
Godhavn	2	September	one candicans, one rather dark islandus
Christianshaab Dt.	16	Sept. 21-Nov. 5 Sept. 12-Feb. 25	9 candicans, 5 rather dark 7 islandus, 1 very dark
Egedesminde	15	Sept. 26-Jan. 20 July 15-Nov. 1	8 candicans, 2 dark 7 islandus, 3 dark
Holstenborg	1	Fall 1928	islandus
Kangamiut	1	March 12	islandus
Sukkertoppen	5	Sept. 7, Feb. 28 Sept. 26, 27 Aug. 27	2 candicans 2 islandus, 1 dark 1 rusticolus
Godthaab	23	Aug. 15-April 5 Sept. 16-Mar. 27 Aug. 20, Mar. 5	10 candicans, all but 2 dark 11 islandus, 6 dark 2 rusticolus
Fiskenaesset	1	Feb. 10	islandus
Frederikshaab	7	Oct. 30-Dec. 20 Dec. 2-Jan. 26	4 candicans, 1 dark 3 islandus, 1 dark

To these data may be added sight records made by me in August, 1925, while with the MacMillan Arctic Expedition of 1925. On the 14th at Nawyardi, some five miles north of Etah, a gyrfalcon was observed at close range. The Eskimos later pointed out the aerie on a cliff about twenty feet high and said the young birds had just left the nest a few days before. On the 20th a flock of four birds was seen flying at Etah. Two juvenile birds were seen on the 25th on Bell Rock (about lat. 77° N.) where Captain MacMillan said they always nested. All these birds were very white and were certainly referable to the form *candicans*.

Mr. C. O. Erlanson, of the University of Michigan, informs me that he found a nest of gyrfalcons, located about 100 feet high on a cliff on the Nakajanga Peninsula (West Coast), lat. 66° 50′, in the summer of 1927. Both adults came very close to the observer. Mr.

Erlanson says these birds were certainly not white, but rather of a grayish cast beneath with wings barred with dark and light. They were undoubtedly *islandus*, the form I should expeet to find in this area.

It thus appears from these data that the breeding birds of the west coast of Greenland as far south as lat. 76° N. and probably from the east eoast as far south or farther (the east coast is mueh eolder) are *candicans*. From this point southward birds of all three types are known. Except for the two nestlings (*islandus*) from the Egedesminde Distriet and Mr. Erlanson's two adults from Nakajanga none of the rest of the specimens eollected in this area were certainly native to the areas in which they were taken. The adult male taken at Godthaab on Mareh 27, 1897, (*islandus*) and the two juvenile females taken on April 2, 1926, and April 5, 1924, (dark *candicans*) may or may not have been breeding. (The young birds were just beginning to molt to adult plumage).

The *candicans* type is represented from every locality from whieh more than two specimens were taken. Beginning with Upernivik about lat. 73° N. *islandus* specimens are represented from every locality. One out of five birds from Sukkertoppen and two out of twenty-three from Godthaab (about lat. 66° to 64° N.) are very dark birds probably referable to *rusticolus* or *obsoletus*.

That the falcons may migrate extensively is true beyond doubt. This migration, furthermore, probably may be either northward or southward, so that birds bred in the south may be found far north of their breeding range. This is certainly true of other hawks. The *candicans* taken below lat. 76° N. all then are probably migrants. All had abundant time to get so far away from the supposed breeding range of the form except one young bird taken at Godthaab, August 15, 1926. If this bird is a bird of the year and was bred north of 76°, it traversed some 700 miles from the time it left the nest. This seems improbable inasmueh as the Etah birds were still in the nest on August 13; the Nawyardi birds had flown about that time; the Bell Roek birds still lingered at the site. Of eourse, the breeding range of *candicans* may extend several hundred miles to the south, in which case it would be more tenable to assume that this bird was a migrant. It is also possible that the date of capture is ineorreet or that the bird is not of the year and not a breeder. It has further been suggested that non-breeding gyrfaleons may linger during the year in their winter quarters. We know this to be true in some birds.

Islandus is probably the breeding bird south of the range of *candicans*. The nestlings from Egedesminde are rather light examples. Their parents are said to have been light birds also, though how light is not known. Mr. Erlanson's birds seem to have been typieal birds of the form. From this point southward I assume that the birds grow darker, so that around Sukkertoppen and Godthaab the darkest ex-

Fig. 8. Falco rusticolus candicans Gm. from East Greenland. Left to right. juvenile male, Shannon Island, September 9, 1920; juvenile female, Carlshavn, September 19, 1921; adult female, Carlshavn, September 25, 1923.

Fig. 9. Falco rusticolus rusticolus L. juvenile female from Godthaab, Greenland, September 15, 1925. This is the darkest bird in the entire collection, but unfortunately the high lights make the bird appear lighter than it is. (Compare with Fig. 6, right).

amples oceur, whether regularly or only sporadically. These are the birds which seem elose to the darkest forms known in the species group. (The effect of the Gulf Stream is strongest in this area. It is still felt somewhat north of Egedesminde, so that the southern flora is found on parts of Diseo Island).

The distribution of the gyrfaleon forms in Greenland is in general like that of the redpolls. North of 76° (the range may be lower) is the palest form, *Acanthis hornemanni* of American ornithologists. Southward the birds grow darker until around Disco Island the dark bird. *Acanthis linaria rostrata* is found. It ranges south all along

the west shore. I found it very abundant at Godthaab, even far into the fiord. Two females in worn plumage taken by me at Etah in August are practically indistinguishable from southern birds, due to the abrasion of the lighter parts of the feathers. Some twenty-five examples in fresh fall plumage were also taken and these are of course much paler than the birds of the south. I have no doubt (there being no other differences in the two groups of specimens except that the northern birds have a somewhat longer wing and tail) that the two forms intergrade and I consider them both races of *Acanthis linaria*. The ptarmigan (*Lagopus rupestris*) in Greenland appears to vary in the same way, as Lehn-Schioler has shown.

Size. The various forms appear to be of the same size. Arranged according to sex as indicated on the label, the wing length in centimeters is given below for the individuals of the collection not including the four nestlings:

Sex	34	35	36	37	38	39	40	41	42	43
Male	1	1	9	8	2	2	5	8	2	
Female	1	0	3	3	2	3	9	13	3	1

Very probably the larger "males" and the smaller "females" are improperly sexed.

Molt. It has been stated often that the falcons did not molt to adult plumage until several years old. These observations have been based mostly on captive birds. In the following table are given observations on plumage condition of birds taken after January first:

Place	*Date*	*Sex*	*Plumage condition*
Godthaab	Jan. 5, 1926	male	no molt
Godthaab	Jan. 8, 1913	male	adult
Egedesminde	Jan. 20, 1926	female	adult
Godthaab	Jan. 18, 1926	male	no molt
Frederikshaab	Jan. 26, 1922	?	molting upper tail coverts
Godthaab	Feb. 5, 1926	female	no molt
Ikamiut	Feb. 25, 1926	male	no molt
Sukkertoppen	Feb. 28, 1926	female	adult
Godthaab	Mar. 5, 1926	male	molting upper tail coverts on back and hind neck
Godthaab	Mar. 12, 1905	female	adult
Kangamiut	Mar. 12, 1905	female	no molt
Godthaab	Mar. 27, 1897	male	adult
Godthaab	Apr. 2, 1926	female	molting on the back
Godthaab	Apr. 5, 1924	female	molting upper tail coverts
Godthaab	May 2, 1910	female	no molt

In addition to these a female taken at Godthaab on November 23, 1923, had begun molting her upper tail coverts.

Of the fifteen birds collected after the first of the year five were fully adult. Of the remaining ten, six showed no signs of molting. It is possible then that the Greenland gyrfalcons retain juvenile plum-

age for at least a year. The upper tail coverts, and the feathers of the back and hind neck seem to be changed first.

Museum of Zoology, University of Michigan,
Ann Arbor, Michigan.

DR. ELLIOTT COUES—A SKETCH

BY MRS. H. J. TAYLOR

Elliott Coues was born in Portsmouth, New Hampshire, September 9, 1842. He died in Baltimore, Maryland, Deeember 25, 1899, aged 57 years. He is buried in the National Cemetery at Arlington. When he was 11 years old the family moved to Washington, D .C. Aside from being stationed at various posts during his seventeen years of Army serviee, Washington was home throughout his life. Here he was graduated from Columbian University with the degree of A. B., in 1861. Two years later he received the degree of M. D. from the same university. Some years later this institution conferred on him the honorary degree of Ph.D.

While studying medicine Coues was a eadet in the United States Army. On reeeiving his degree in 1863, he was appointed Assistant Surgeon and ordered to duty in Arizona whieh had, in February, 1863, been made a territory. The population was 581, exclu ive of Indians and Mexieans. Arizona ranks fifth in size among the states. having an area of 113,040 square miles; this gave about one white person for every 200 square miles. No wonder the detaehment took with them eighty wagons laden with subsistenee, twelve luggage wagons, a herd of 300 beef eattle and 800 head of sheep, 560 mules to draw the wagons, and 163 horses for cavalry and officers![1]

Men sent to such a new eountry needed a good physieian and they had one in Dr. Coues. But a man with his energy, zeal and brain could not express his life through a single ehannel and that one limited. His interest in birds began early; he was fortunate to have been under the tutelage of Profe-sor Baird with whom he was eonneeted in the Smithsonian Institution before he graduated from eollege. With his friend, D. W. Prentis, he published a list of birds of the Distriet of Columbia, in 1861, and it was re-published in 1883.

Arizona with its wonderful rivers and ineomparable canyons. its mountains, plains, and mesas, lay before this eager student as a rich and interesting field. ". . . Dr. Coues entered Arizona in 1864, and spent nearly two years studying the natural history of the Territory."[2]

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[1]Curtis, Capt. C. A. *Bird-Lore*, IV, 1902, page 6.

While at Fort Randall in Dakota, in 1873, he was appointed surgeon and naturalist of the Northern Boundary Commission, which surveyed the line along the 49th parallel from Lake Of The Woods westward. "In 1876 his services were secured as secretary and naturalist of the United States Geological and Geographical survey of the territories under Dr. F. V. Hayden."[3] This furnished a wide field and a rare opportunity for further study of birds. Dr. Hayden, referring to "Birds of Colorado Valley," says: "Results of Dr. Coues's continued studies of North American ornithology, in connection with the Survey under my charge, are herewith presented as one of the series of *Miscellaneous Publications* (No. 11)."[4]

The main text in "Birds of Colorado Valley" is "life histories" and it was the aim of Dr. Coues ". . . that this portion of the subject should be so far divested of technicality as to meet the tastes and wants of the public rather than the scientific requirements of the schoolmen in ornithology."[5] Dr. Coues edited all the publications of the Survey from 1876 to 1880, besides contributing several volumes from his own pen during this time. Among these were "Furbearing Animals" and "Monographs of the Rodentia," both published in 1877. "Birds of the Colorado Valley" was published in 1878. It extends over territory not covered in his "Birds of the Northwest," which was published in 1874. He also published several installments of "Bibliography of Ornithology." This attracted attention in Europe and placed him in the front rank as a bibliographer. "Dr. Coues was signally complimented by an invitation, signed by Huxley, Darwin, Flower, Newton, Sclater, and about forty other leading British scientists, to take up his residence in London and identify himself with the British Museum."[6] His "Bibliography of Ornithology" is an immense work. Several installments were published in 1878-1880. ". . . the greater portion still remaining in manuscript."[7]

The highest honor an American scientist can receive was bestowed on Elliott Coues in 1877 when he was elected a member of the National Academy of Science which had been incorporated by the 37th Congress in 1863. In 1878-1880, he became a member of nearly all the scientific societies in America and of several in Europe.

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[2]F. V. Hayden *in* Prefatory Note, "Birds of the Colorado Valley," 1878, page x.

[3]National Cyclopedia of American Biography, page 240.

[4]F. V. Hayden, *op. cit.*, page v.

[5]F. V. Hayden, *op. cit.*, page vi.

[6]National Cyclopedia of American Biography, page 240.

[7]Elliot,, D. G. *Auk*, XVIII, 1901, page 4.

The practice of medicine seems never to have been an absorbing interest with him, yet he was intensely interested in the subject of anatomy, and after resigning from the army in 1881 he lectured for ten years on this subject in the medical school from which he had been graduated. The world knows him, not as a physician, but as a naturalist, ornithologist, and historian. His ever widening horizon and increasing interest, his knowledge, his accuracy, his energy, led him into the field of Natural History till it became all absorbing, when suddenly he was ordered to duty on the frontier. "He obeyed the order and proceeded to Arizona."[8] Here he faced a situation that called for decision. The Missouri River basin and the whole Northwest had been opened to him as a rich field of study. He realized that he had outgrown routine medical duty. It was wearing on him and distasteful to him. He returned to Washington November 17, 1881, resigned from the army to which he had given seventeen years of service, and was free to follow the deep interests of his life. A man with such varied interests, with strength and zeal to pursue them, with rare ability to express them, could not and should not have his tasks laid out for him. He returned to his desk in the Smithsonian Institution. "New England Bird Life" came from his pen in 1881. This was followed by "Dictionary and Check-list of North American Birds" in 1882, also a new edition of "Key to North American Birds," of which Dr. Chapman says: "It is, beyond comparison, the best book on general and systematic ornithology ever published, and has contributed more to the advance of American ornithology than any other work since the time of Audubon."[9] In 1895, Coues began to prepare the fifth edition of the "Key to North American Birds." This was fortunately ready for publication several weeks before his death.

Of "The Key," Dr. D. G. Elliot, one of the leading biographers of Coues, says: "The work by which he (Coues) will probably be best known and remembered, and which has had above all others the most influence on ornithology in our own land, is his 'Key to North American Birds,' a work that in its conception and the masterly manner in which it is carried out in all its details stands as one of the best if not *the* best bird book ever written."[10] His "Key" is the work of a rare student whose unbounded energy, undaunted perseverance, unlimited ability and literary gift, bequeathed to ornithology a priceless volume.

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[8]National Cyclopedia of American Biography, page 240.
[9]Chapman, F. M. *Bird-Lore*, II, 1900, page 4.
[10]Elliot, D. G. *Auk*, XVIII, 1901, page 4.

In 1880 Coues became interested in the doctrines of theosophy, and held important offices in the American branch of the Society. He was eventually expelled from this organization.

Coues was a prolific writer. He had a marvelous command of language, a style clear and concise. Time and labor mattered not to him when investigating a subject. His ability and his vast store of knowledge had no market value for him. He loved scientific work and to it he gave all his talents. His papers, reviews, and criticisms on scientific subjects numbered about one thousand. He was the author or joint author of thirty-seven volumes—all in fifty-seven short years. He edited the departments of Zoology, Biology, and Comparative Anatomy for the Century Dictionary. To this he devoted seven years of work and contributed some 40,000 entries.

As editor of the *Osprey* from the middle of 1898 till shortly before his death in 1899, we have a different and very interesting view of this many-sided man. When he made a copy his statements were unquestioned; his mechanical structure was correct; his style unparalleled. Now he is on the other side of the desk. He is a marvelous critic, gives favorable comment where it is deserved, and when not deserved he sends shafts direct and piercing as an arrow, all clothed in delightful humor.

A few examples of his editorial style may be appreciated more now than at the time.

First we may take the following quotations from his review of D. G. Elliot's "The Wild Fowl of the United States and British Possessions." He says: ". . . Mr. Elliot shows that he has opinions of his own and is not afraid to express them; that is to say, he follows the A. O. U. Code and Check-list when he thinks proper, and differs from it when he thinks he can improve upon it. . . . Mr. Elliot differs from the Check-list in perhaps twenty cases . . . and we trust that the committee which holds all this matter in the hollow of its collective hand will reckon with Mr. Elliot, most of whose departures from the Union's nomenclature seem to us distinct improvements upon it. We also note to our joy the outward signs of that inward grace which makes Mr. Elliot try to spell right, instead of preferring to spell wrong, as is done in so many cases by the distinguished impurists, or advocates of illiteracy, who at present, we believe, have a majority of four to one on the nomenclatural committee."[11]

[11]Osprey, III, 1898, page 48.

In an editorial, Coues writes: "How to become a truly great ornithological author is a question which seems to agitate the mind of many a person. . . . The treatment we recommend to the patient is simple and natural; it is warranted to kill or cure the worst case. Here is our prescription:

"1. Learn to spell correctly.

"2. Learn to punctuate properly.

"3. Learn to construct sentences grammatically.

"When the patient has taken this medicine for a few years, he will either be dead or in a fair way to recovery. In the latter event, the rest is easy, as follows:

"4. Find out something that nobody else knows about birds.

"5. Write it legibly.

"6. And send it to *The Osprey*.

"If the Archangel Gabriel were to send us the glad tidings of salvation on both sides of the paper we should decline his article with thanks, and tell him that is no way to blow his horn. . . . One trouble with Audubonians seems to be that there are too many inspired idiots among them, who fancy they have a God-given mission not to hide their light under a bushel. The shotgun people are mostly made of sterner stuff; they are realistic and can be cultivated, educated, and really helped in various ways. But the opera glass fiends! They always live too near the great heart of nature to know anything of her head or hands, or do a stroke of sensible work, even to protect the birds. . . . One woman wrote to say she was so unhappy because the cats in her neighborhood killed birds. We were going to write back and suggest that she collect the murderous felines and read the Audubon circular to them; but we restrained ourselves and advised her to feed the cats."[12]

In another editorial he takes up the much agitated question of bird protection and destruction. He says: "We [*The Osprey*] are asked to . . . state whether we stand for the Protection of birds with a big P, or the Destruction of birds with a big D. . . . We can put the whole thing in a nutshell, which we leave to be cracked by our readers according to their inclination or ability:

"1. Birds must and shall be destroyed by the acts of God, such as stress of weather, snakes, monkeys, cats, foxes, skunks, weasels, hawks, owls, jays, and numerous other destructive natural agencies ordained by Divine Providence.

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[12] *Ibid.*, III, 1899, page 106.

"2. Birds must and shall be destroyed and deprived of their nests and eggs to any extent which may be neeessary and proper for ornithologieal and oologieal purposes.

"3. Birds must and shall be destroyed for legitimate sport. . . .

"4. Birds must and shall be destroyed for eeonomie and eommereial purposes, the flesh and eggs of some birds being among the most important food products of the United States.

"On the other hand—

"5. Birds must and shall be proteeted from wanton, eruel, needless, unreasonable or illegal destruetion of themselves or their eggs.

"Regarding the first of these propositions, *The Osprey* does not coneern itself partieularly with the aets of God. They are beyond the scope of this magazine . . . nor does *The Osprey* ever fly in the faee of Providenee. We give God eredit for knowing what He was about when He made things, and for ability to mind His own business without our assistanee. . . .

"Proposition 2. . . . *The Osprey* advoeates the killing of birds and the taking of their eggs to any extent which may be found neeessary for ornithological . . . purposes. . . .

"Our last proposition, No. 5 . . . we shrink from inflieting pain, even as we do from enduring it; we love birds with a love that sprang up in the heart of our ehildhood, and is fostered in our mature years as a preeious posses ion . . . we applaud every ornithologist who kills or otherwise aequires what specimens of the birds and their eggs he needs for seientifie purposes. . . ."[13]

No sketch of Dr. Elliott Coues would be eomplete without mention of his very valuable work in editing the journals of early explorers of the great west. It is due to him, more than to any other, that the original sources of the early explorers west of the Mississippi River are preserved. The ever-moving life of the Army acquainted him with the west in an intimate and real way. He edited the manuscript journals of Alexander Henry and David Thompson, written by them 1799 to 1814, and giving the history of the great northwest. Likewise the journals of Jaeob Fowler giving his adventure from Arkansas through Indian territory from 1821-1822. Also of Charles Lapenteur, a fur trader on the Upper Missouri from 1833-1872. This was published in 1898. The aeeount of Zebulon M. Pike's explorations through the Louisiana Territory to the head waters of the Mississippi from 1805 to 1807 was published by Coues in 1895 with full notes

[13] *Ibid.*, III, 1899, page 123-4.

and a memorial to Pike. "On the Trail of a Spanish Pioneer," describing the wanderings of Francisco Garces in the Southwest was published after the death of Coues. Coues made many long and wearisome journeys to know at first hand the wanderings of these explorers, and to locate the places mentioned in their journals.

Of all his work in editing journals of western explorers, Coues' new edition of Lewis and Clark Expedition stands first. Because of his interest and invaluable work on the Lewis and Clark journals, Dr. Coues was invited to be present at the reburial of the bones of Sergeant Charles Floyd, the only man to die on this perilous undertaking. The ceremony took place at Sioux City, Iowa, August 20, 1895. It was here that I first met Dr. Coues. During his brief stay of three days he called at our home. I remember him as a tall, well proportioned, scholarly looking man, straight as an arrow, and with dark hair, a full beard, and deep gray eyes. He was dignified but kindly. I felt at ease in his presence, but I didn't understand how he could refrain from comment on our beautiful three-months old babe; it seemed worth a trip half way across the continent to see him. He talked of the Lewis and Clark expedition like one who had been a part of it—not of the hardships and dangers, but of the aim of the expedition and its success.

On the afternoon of August 20, 1895, Dr. Coues spoke very briefly at the grave of Sergeant Floyd, located on a high and sightly bluff about two miles from the city, closing with the lines that Captain William Clark had written in his diary August 20, 1804, and probably on that very spot:

> "Died with a great deal of composure, before he died he said to me 'I am going away I want you to write me a letter'—We buried him on the top of the bluff ½ mile below a small river to which we gave his name, he was buried with the Honors of War much lamented, a seeder post with the Name Sergt. C. Floyd died here 20th of August 1804 was fixed at the head of his grave—This man at all times gave us proofs of his firmness and Determined resolution to doe service to his country and honor to himself after paying all the honor to our Decesed brother we camped in the mouth of floyd's river about 30 yards wide, a butifull evening."[14]

The Floyd Memorial Association arranged its evening program to be held at an auditorium in the city. At this meeting Dr. Coues and Prof. J. D. Butler, of the University of Wisconsin, were the speakers. Dr. Coues spoke on the Lewis and Clark expedition. He called it our national epic of exploration. His personality, his voice,

[14]In Memoriam Sergeant Charles Floyd. Report of the Floyd Memorial Association. Prepared on behalf of the Committee on Publication by Elliot Coues. Sioux City, 1897, page 42.

his language, his knowledge, recited the epic and made it memorable to all who heard him. He closed with these words: "Thus was brought to a happy conclusion the most memorable expedition in the history of our country—one accomplished at the utterly insignificant expense of about $2500, which Congress had appropriated for the purpose, and with the loss of but a single life—that of him whom we honor today."[15]

On May 30, 1901, Mrs. Coues again came to Sioux City. We regretted that Dr. Coues could not have lived to be at the ceremony and help to dedicate the monument erected to Sergeant Floyd. The shaft commemorates not only the life of the brave soldier, but stands also as a monument to the opening of the great west by the Lewis and Clark expedition.

While in Sioux City on May 30, 1901, Mrs. Coues gave an interview to the Sioux City Journal which I quote in part:

". . . Dr. Coues had already been making some investigations regarding the enterprise [Lewis and Clark Expedition] and was glad to undertake the work of getting out the new book. . . . Papers and documents were stored away in the vaults of the [Philosophical] Society [of Philadelphia] which had not been looked at for nearly one hundred years. . . . After a tedious search he found the official data of the Lewis and Clark expedition as written by the men themselves. . . . There was not a work that Dr. Coues engaged in, in which he became so interested as in this history of Lewis and Clark. The following year, after he published the book (1893) he and I made a trip over the route taken by Lewis and Clark in their famous expedition of 1804."[16]

During his stay of three days in Sioux City in 1895, Dr. Coues was the guest of our family physician and friend, Dr. Grant J. Ross, who was in the army service for three and one-half years with Coues. On October 31, 1928, I visited Dr. Ross in his home in Sioux City. He is now 87 years old. He stands as straight as a soldier and is well preserved in all his faculties. I asked him to give me his recollections of Coues. Dr. Ross said: "Dr. Coues was, as I knew him in the army, a quick, energetic, active man; forceful and competent; a good soldier, not a very prudent man; a little rash, withal very methodical. He spoke well, was a scholarly man, a fluent and intersting talker. He was a man of ordinary size, weighing 162-4 pounds. Dark hair

[15]In Memoriam Sergeant Charles Floyd. Report of the Floyd Memorial Association. Sioux City, 1897, page 49.

[16]Sioux City Journal, May 30, 1901.

and beard, gray eyes. He was very approachable. He enjoyed nothing better than a conversation with a lone Indian. He picked up Indian dialect readily and used it quite well. The three days he spent in Sioux City he was a delightful guest in my home, and was like a friend. As a thinker and investigator he had a very active mind. He seemed not particularly interested in medicine."[17]*

After the Sioux City & Pacific Railroad came to Sioux City the bluff on which Sergeant Charles Floyd was buried was eroded, the soil being Missouri River loess. The coffin protruded and some of the early settlers moved it back about six hundred feet, leaving a complete record of the reburial which was in 1857. Sioux City grew and was extending to the bluff where Floyd is buried, and it was decided to take up the bones and preserve them in more permanent burial. Among letters from interested men was one from Dr. Coues who questioned the reburial of Floyd's skull, which he thought would be better preserved in some historical depository, but the Floyd Memorial Association decided to bury it and did so on August 20, 1895. In my interview with Dr. Grant J. Ross on October 31, 1928, I asked him about the casts of Floyd's skull which I remembered he had made at that time. The first one was placed in the museum of the Sioux City Public Library. Dr. Ross said: "I made two additional ones. One I gave to Dr. Coues, the other I sent to the State Historical Society of Iowa."

Prof. J. D. Butler, of the University of Wisconsin, attended both the reburial in 1895 and the dedication of the monument in 1901. On both occasions he brought with him the original diary of Sergeant Floyd, which was discovered in the Historical Library at Madison, Wisconsin, by Reuben Gold Thwaites on February 3, 1893. Professor Butler was a guest in our home. He told us that the American Antiquarian Society of Worcester, Massachusetts, of which he was a member, asked him to speak on Floyd's Journal. On hearing the address the society voted to print Floyd's Journal *verbatim et literatim et punctuatim*. Dr. Coues first saw this Journal when Prof. Butler showed it at Floyd's grave August 20, 1895. Coues was the latest historian of the Lewis and Clark expedition, which he published November, 1893. He regretted that he had no mention of the Floyd Journal in his new edition, and he seemed somewhat annoyed by it. It was unfortunate that it did not come to his notice before he published this edition.

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[17]Personal interview with Dr. Grant J. Ross by this author, October 31, 1928.
*Dr. Grant J. Ross died in Sioux City on April 18, 1929.

Dr. Coues was a student and thorough investigator in diversified fields. The fruits of his labors were prolific. He was a literary man, brilliant in composition, and radiating an atmosphere of culture. The world will know him best and longest as an ornithologist, but I believe that dearest to his heart was his work as historian of the Lewis and Clark Journals recording the greatest expedition of our country.

Nowhere did I find reference to the personal or home life of Elliott Coues save that "Prof. Coues was twice married; once early in life, and again in 1887 to Mrs. M. E. Bates who was well fitted to aid him in his scientific work."[18]

Of deep warm friendships little is revealed and perhaps they were not possible to one who had such a wealth of historical and scientific knowledge to give to the world. No soul can wholly reveal itself in this life, and often what lies deepest in the human heart fails of expression and hides a warmth of personality that would draw men together as individuals. We know that back of varied and tremendous expression through his writings stands the man Dr. Elliott Coues greater than all his works.

Sioux City, Iowa.

THE FLORIDA CORMORANT AS OBSERVED IN PINELLAS COUNTY, FLORIDA

BY WILLIAM G. FARGO

The following notes relative to that form of the Double-crested Cormorant (*Phalacrocorax auritus floridanus*) which inhabits the southeastern portions of the United States are from observations made during annual visits from January to May in the years 1923 to 1929. While these particular notes pertain to the mid-section of the west coast of the Florida peninsula, I have noticed no variation in the general habits of this cormorant elsewhere on the Florida coasts.

Cormorants are occasionally seen on the fresh water lakes of Florida, but I have collected none there and am not aware whether they represent the southern or the northern form. In general the Florida Cormorant is a coastal species, a bird of the salt water. They swarm throughout Tampa Bay and its tidal estuaries.

In the years 1924, 1925, and 1926 these cormorants roosted in large numbers nightly during the winter and early spring months on

[18]National Cyclopedia of American Biography, page 241.

exposed sand bars lying to the north of the entrance to Tampa Bay. In 1925 the winter roost on the bar to the south of Pass-a-Grille averaged about three thousand cormorants. About sunrise they would leave this roost in single file, the individuals about eight or ten feet apart, and separated into flocks of fifty to one hundred by longer gaps.

Fig. 10. 1. Pine tree on Ward's Island containing thirty nests of the Florida Cormorant. April 14, 1929. 2. Florida Cormorant with the crests raised. 3. A leafly nest of the Florida Cormorant in a Mangrove tree on Bird Key.

The practically continuous flight of the cormorants nearly every morning of this period in 1925 lasted fifteen or twenty minutes and, passing a few hundred feet off shore of Boca Ciega Bay, enabled a fair count of the birds to be made.

The time of leaving the roost varied with the weather and probably with the fishing conditions, for the cormorant does not fish much in a rough sea. The winds are strong much of the time on this sec-

tion of the Gulf Coast and choppy seas result, both in Tampa Bay and in the smaller Boca Ciega Bay. I recall one day in late winter when the cormorants remained on the roost until early afternoon, although the water was calm. Then nearly the whole roost in a dense raft drifted into Boca Ciega Bay on the rising tide. The near side of this raft of birds following the strongest tide past the town of Pass-a-Grille was within fifty yards of shore. As they drifted past the populous part of the town they would rise in the air in detached flocks and fly back beyond the rear of the raft to repeat the process. So far as I was able to observe they did little feeding that day and returned to the roost within an hour from the time they came in on the tide.

Due to encroaching civilization, and possibly other causes, the number of cormorants roosting on the bars immediately south of Pass-a-Grille has been much reduced since 1925. Only a few roosted there in 1928 and 1929 compared with previous years: perhaps as many as 800 or 1,000 on all the bars between Pass-a-Grille and Mullet Key, a distance of two and one-half miles.

The cormorant feeds principally upon fish and, like the Mergansers, can easily swallow fish that seem quite too large for its throat. The fish are mostly taken while the birds are diving or swimming below the surface. Fishermen in these waters using live bait not infrequently hook cormorants and occasionally Brown Pelicans. Usually the pelican breaks the line and escapes but the cormorant often is landed. The Red-breasted Merganser common on this coast in winter is also caught in this manner.

Various species of birds that feed on fish, and especially the diving birds fly long distances daily from their roosting places to take fish when food is scarce nearer by. Thus various gulls, terns, and Florida Cormorants may be seen returning to the roosts a half hour or more after dark at night. In these latitudes there is little twilight, darkness following soon after sunset; consequently at sunset and shortly before, the air near the roosting places is full of birds winging their way home. In a stiff wind they fly as close to the crests of the waves as possible, for the wind resistance is less there.

The "double-crest" of this cormorant consisting of two pointed tufts of feathers, one on each side of the head pointing upward and backward, begins to appear upon the heads of the adults early in March in the latitude of Tampa Bay. These tufts, in shape somewhat resembling mule's ears can be erected and lowered. The crests are not seen after about the time when mating is over and the eggs are

laid. An unmated adult appears to carry the crests for a considerable time.

Like the Brown Pelicans of the Tampa Bay region, the Florida Cormorants leave their roosting places when the nesting season arrives and when not fishing both males and females may be found in the nesting colony. There appear to be but two breeding colonies of Florida Cormorants on the Gulf side of Pinellas County, that is to say in a distance of about forty miles of coast. If there are others on the east side of the Pinellas Peninsula I have not discovered them.

The larger of these nesting colonies is on Bird Key (also called Indian Key) a federal reservation in Tampa Bay southwest of St. Petersburg. This low-lying key with only its shore rims above high tide is a little more than a half mile in length and less than half as wide. It has a central lagoon open to the north. The key is thickly covered with mangrove trees, mostly the red and black varieties. Few of the mangroves are over twenty feet in height. On this key several thousand birds have nested each spring in recent years. Among the species nesting there are Florida Cormorants, Ward's Herons, Little Blue Herons, Louisiana Herons, Black-crowned and Yellow-crowned Night Herons, American Egrets, Snowy Herons, White Ibises and Brown Pelicans. In general each one of these different species has its separate habitat although the Ward's Herons are scattered about more, as this species nests nearly throughout the year. My observations on Bird Key were made in the early spring months of 1924-25-26-27 and 1928. Without disturbing the birds unduly it is most difficult to estimate closely the number of any one species nesting there. However in 1925 approximately 1,800 pairs of Florida Cormorants nested on this key, in latter years a less number, but still large colonies.

The cormorant nests are in the upper slender branches of the larger mangroves, eighteen to about twenty-two feet above ground, and the colony has been in the years mentioned near the northwest side of the key. Mating and nest building begin late in March or early in April. The nests are rather flat and fragile mostly composed of green branches of the mangroves often with leaves attached. In the years mentioned the whole colony appeared to begin nest building about the same time, that is there was little evidence of late nesters nor have I noticed any indications of more than one brood. However later visits than those I have made in May would be necessary to determine this. Three eggs seem to make the usual clutch.

Adjoining this cormorant colony and to some extent overlapping on the east has been the American Egret colony. To the north of the egrets until 1928 has been the Ward's Heron colony, but in that year this species went to Tarpon or Bush Key lying two miles to the southeast.

All of these different species of birds appear to dwell in harmony.

On Bird Key if one moves about slowly and quietly a blind is unnecessary in studying and photographing the birds; that is if one is satisfied by approaching them within about thirty or thirty-five feet. Many times I have watched the cormorants mating and constructing nests at such distances and the birds hardly indicated that they were aware of my presence but if one climbs a tree in the colony or otherwise disturbs them they are likely to leave their nests with a rush and raft for a long time on the waters of the bay near the key.

The cormorant is a bit awkward among the slender top branches of the mangroves for the bird is web-footed and heavy but where they nest in trees with branches strong enough to bear their weight without bending, as in pines or cypresses, they seem quite agile for such a bird.

For nest construction any sticks about a half to three-fourths of an inch in diameter suffice. On Bird Key green mangrove branches broken off and with leaves attached are mostly used. Some few leaves are also laid in the rather flat nest bottom. One of the birds of a pair remains on the nest platform as soon as the start at building is made and the other brings a stick. The pair sit side by side facing the same direction, both grasp the stick and lay it in place after which they often caress by rubbing bills, and one or the other goes for another stick. If one of the pair did not remain on the nest during construction the neighboring birds would at once pilfer nest material.

Copulation takes place in the trees at the nest site or near it, apparently before the nest is begun. The male grasps the female by the feathers at the back of the neck as in the case with domestic fowl.

The other considerable breeding colony of Florida Cormorants in Pinellas County is along or near the mainland shore of the Gulf of Mexico about a mile south of the village of Ozona. In 1925 the cormorants nested in low mangroves on some small islands close to the mainland. Early in April, 1929, Florida Cormorants were observed nesting in large long leaf yellow pine trees on Ward's Island which lies some 500 feet off the mainland shore about a mile and a quarter south of Ozona. This small island about an eighth of a mile in length is in the general area where Florida Cormorants have nested and

roosted for many years. One large pine had thirty occupied nests on April 7, 1929, and several other pines had as many as twelve nests each. In all there were then about 125 nests in this colony. I visited the colony again April 14 and made photographs from a boat as close as fifty feet without causing any apparent uneasiness among the sitting birds.

The nests of these cormorants in the pines are in most cases more bulky, much deeper and in general better constructed than those in the mangroves. The reasons are evident; the upper branches of the mangroves afford a poor and unstable foundation, there are seldom suitable crotches to receive a deep nest and nest material is less plentiful in the mangrove areas. The cormorants in the pine colonies, however, exhibited the same habits in mating and nest building as described above for the occupants of the Bird Key colony.

Fig. 11. Florida Cormorant on nest of sticks at Ozona, Florida. April 24, 1929.

On April 14, 1929, I noticed from a distance about eighty cormorants apparently roosting late in the forenoon in tall yellow pine trees on the mainland in the southwest part of the village of Ozona, directly alongside the paved road that follows the shore. Upon going there I found a few nests approaching completion and a dozen or more being started. The cormorants would fly to the ground, grasp sticks and twigs, often with the long gray moss (*Tillandsia*) attached and fly back to the trees. Passing cars and people afoot within a hundred feet caused little concern.

On April 24, 1929, I again visited this mainland cormorant colony and found about twenty-five nests occupied and more under construction. Numerous photographs were made at distances of forty or fifty feet without recourse to a blind, using a 19-inch focus lens. The ground beneath the pines, being nearly clear of under-growth and all in bright sunlight, made one far more conspicuous than in a densely shaded mangrove colony. When I approached nearer than forty feet a few birds left their nests without particular alarm and perched in nearby trees. As I moved away after photographing, two Fish Crows (*Corvus ossifragus*) came into the colony and approached the unprotected nests for the purpose of stealing eggs, but by the time I had reached the highway, a hundred feet off, these nests were again occupied by the owners.

On Bird Key if visitors land in the company of the warden and are not quiet and slow moving the birds of all sorts become frightened and leave the nests. This is always a signal for several waiting Fish Crows and vultures—both the Black Vulture and the Turkey Buzzard— to start an egg hunt. In the Ozona colonies the birds are more accustomed to seeing people nearby and, being unharmed by them, have gained confidence.

This confidence of the birds of various species in the presence of numerous people has become a common occurrence in Florida. Water birds swarm along shores where traffic passes the nearest. Herons and egrets alight on docks and take bait minnows from the wells of anchored motor boats. Guns in the hands of boys and idle men are much scarcer than in even quite recent years and the birds are gaining confidence.

The cormorants only frequent Bird Key during the nesting season and the same is true of the herons and pelicans that nest there, but the cormorant rookeries near Ozona also serve as roosts at least during the winter and spring months. I have not been there in summer. In consequence of this more or less continual use of the trees by cormorants they become white-washed by the excrement and ultimately are killed. I have observed no cormorants nesting in the dead trees.

Secluded bars and beaches are scarce in the vicinity of Ozona which probably accounts for the tree roosting habit of the cormorants of that colony. The cormorant generally roosts in close formation, whether it be on a bar, beach, or in trees. This close roosting habit of cormorants and their liking for isolated roosting and resting places off shore has been taken advantage of by collectors of guano along

the gulf coast of Florida who have built tight plank platforms on piles at intervals from Tampa Bay to Cedar Keys, as I have observed, and very likely beyond those limits.

The cormorant although heavy of body and short of wing is an easy and swift flier. The flatness of the body, large tail area, and the shape of the head and neck result in a good "stream-line" proportion, all contributing to the ease of its flight. I never have seen a cormorant soar. The Anhinga whose body from the point of view of flight characteristics much resembles that of the cormorant is both swift in flight and accomplished in soaring. Anhingas often may be seen one or two thousand feet in the air over their cypress swamp retreats circling about on set wings as gracefully as any hawk or vulture. Pelicans, especially the White Pelicans, do the same thing occasionally.

In the cormorant nesting colonies the young, like young herons, will disgorge partly digested fish when alarmed by the presence of man, and the large size of such fish often is surprising.

Jackson, Michigan.

SPRING BIRD NOTES FROM RANDOLPH COUNTY, GEORGIA

BY FRANCIS HARPER

Ornithological literature for southwestern Georgia is so meager that even such a slight contribution as the present one may be helpful in filling some gaps in our knowledge of bird distribution in that part of the state. As far as I am aware, there is no general bird list available for any part of the "Red Hills" region of Georgia. This is a physiographic area or natural division extending across the state, a little below the fall line, from Augusta to Fort Gaines (and also into South Carolina, Alabama, and Mississippi). It averages about thirty miles in width, and includes the greater part of Randolph County.[1]

I happened to spend the period from March 16 to April 18, 1921, on a farm about seven miles northeast of Cuthbert, the county seat. Meanwhile, though the amount of time devoted to ornithological observations was rather limited, I kept a daily list of the birds found in the dooryard and in the near-by fields and woods. This was a time of year when some of the winter residents still remained, while transients and summer residents were arriving from the south.

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[1]For a map and a further description of this region, see R. M. Harper, *School Sci. and Math.*, vol. 18, no. 8, Nov., 1918, p. 704; also *Georgia Hist. Quart.*, vol. 6, no. 2, July, 1922, p. 101.

The following list of fifty-three forms is made up approximately as follows: permanent residents, 29; winter residents, 9; summer residents, 13; transient visitants, 2.

Bob-white. *Colinus virginianus virginianus.* A flock of half a dozen seen, April 4.

Mourning Dove. *Zenaidura macroura carolinensis.* Seen or heard frequently, March 17 to April 16. Usually only one or two were noted at a time, but on April 3 there were fifteen in a single pasture.

Turkey Vulture. *Cathartes aura septentrionalis.* A flock of half a dozen on March 24 and 25, and a single bird on April 11.

Black Vulture. *Coragyps urubu urubu.* About five flocking with half a dozen Turkey Vultures, March 25. One or two seen on other days, up to April 17.

Marsh Hawk. *Circus hudsonius.* A single bird near Cuthbert, April 18.

Florida Barred Owl. *Strix varia alleni.* One seen in a creek swamp, March 20; one hooting, April 5.

Belted Kingfisher. *Ceryle alcyon alcyon.* Noted a few times, March 22 to April 6.

Southern Hairy Woodpecker. *Dryobates villosus audubonì.* One, April 6.

Southern Downy Woodpecker. *Dryobates pubescens pubescens.* Several, March 20 and April 3.

Yellow-bellied Sapsucker. *Sphyrapicus varius varius.* One heard, March 26.

Red-headed Woodpecker. *Melanerpes erythrocephalus.* Single birds seen fairly often, March 20 to April 14.

Red-bellied Woodpecker. *Centurus carolinus.* Only a few seen, March 18 to April 16. One on the corner of a smokehouse gradually hitched down to a hen's nest in a box, where it pecked away at something, and was seen to "lick its chops." On going to investigate, I found in the nest a spoiled, broken egg. It may have been broken originally by some other agency than the woodpecker, but the latter was evidently feeding on it.

Flicker. *Colaptes auratus* subsp. One, March 18.

Kingbird. *Tyrannus tyrannus.* One or two seen frequently, April 5 to 16.

Wood Pewee. *Myiochanes virens.* Several, in song, April 17.

Florida Blue Jay. *Cyanocitta cristata cristata.* These familiar and noisy birds of the dooryard were seen in small numbers almost daily, March 17 to April 17. One was carrying nesting material on April 4. On one occasion several Blue Jays and English Sparrows worried a half-tame young Gray Squirrel in an oak tree in the yard. Two of the jays were collected.

Crow. *Corvus brachyrhynchos* subsp. Found in small numbers, March 18 to April 15.

Southern Meadowlark. *Sturnella magna argutula.* Small numbers noted, March 20 to April 3; a flock of about twelve on March 21.

Orchard Oriole. *Icterus spurius.* A male in song noted nearly every day, April 11 to 16.

House Sparrow. *Passer domesticus domesticus.* Some nearly always in evidence.

Vesper Sparrow. *Pooecetes gramineus gramineus.* Small numbers recorded, March 17 to April 2. Since these birds were apparently not in song, is it not possible that the males had already departed for the north, and that only females remained at this season?

White-throated Sparrow. *Zonotrichia albicollis.* Four or five in a band noted on several occasions, March 22 to April 5.

Chipping Sparrow. *Spizella passerina passerina.* A few silent birds seen from March 20 to April 7, including a flock of about ten on April 6. Finally one in song on April 17. To judge by the distribution of the species in Alabama (cf. Howell, "Birds of Alabama," p. 239), Randolph County is probably close to the southern limit of its breeding range in Georgia.

Field Sparrow. *Spizella pusilla pusilla.* Single birds seen, March 20 and April 6.

Bachman's Sparrow. *Peucaea aestivalis bachmani.* A mile collected on March 26 in an old field; another heard singing on April 6.

Chewink. *Pipilo erythrophthalmus erythrophthalmus.* A male or two, with reddish eyes and with the call-note of northern birds, found on April 5 among deciduous undergrowth in pine woods. Probably the form described by Howell (*Proc. Biol. Soc. Wash.*, vol. 26, 1913, p. 202) as *canaster.*

Cardinal. *Cardinalis cardinalis cardinalis.* One or more noted rather frequently, March 16 to April 10.

Summer Tanager. *Piranga rubra rubra.* A few noted, April 10 to 17.

Purple Martin. *Progne subis subis.* Small numbers present, March 25 to April 18.

Cedar Waxwing. *Bombycilla cedrorum.* Flocks of four to thirty individuals seen rather commonly, March 30 to April 15.

Loggerhead Shrike. *Lanius ludovicianus ludovicianus.* One or two were seen very frequently from March 18 to April 18. A song heard on March 19 strangely suggested the Rusty Blackbird's note. On March 25 a nest in a pear tree in a garden contained four eggs. It was situated near the trunk at a height of eight or ten feet above the ground. It was composed in part of grass, and was lined with chicken feathers. There was said to have been a nest in about the same place the previous year. A sitting bird was noticed on March 30, but within a week thereafter the nest was empty—possibly rifled by Blue Jays.

In flight the Loggerhead's tail shakes vertically, reminding one of some of the European wagtails (*Motacilla* spp.).

Boys of the neighborhood called this species "French Mocker," being apparently quite unacquainted with the name of "Butcherbird."

Yellow-throated Vireo. *Lanivireo flavifrons.* Several noted in song, April 3 and 7.

White-eyed Vireo. *Vireo griseus griseus.* Single birds seen, March 20 and April 6.

Black and White Warbler. *Mniotilta varia.* A few birds, in song, March 20 to April 6.

Parula Warbler. *Compsothlypis americana americana.* Single birds, in song, March 20 and 27, and April 3.

Myrtle Warbler. *Dendroica coronata coronata.* Noted from March 17 to April 6, usually in very limited numbers, though about twenty were seen on March 20 and again on April 3. Up to March 20, at least, no males in breeding dress were observed. A specimen was collected on April 1.

Yellow-throated Warbler. *Dendroica dominica dominica.* Single birds, in song, March 20 and 22, and April 3.

Pine Warbler. *Dendroica vigorsi.* Noted commonly from March 20 to April 17; in song throughout this period.

Palm Warbler. *Dendroica palmarum palmarum.* Individuals and small bands of not more than five individuals, April 6 to 18. Apparently all of those observed, including a specimen collected, were

of the present subspecies. On April 27 one sang a sprightly, gurgling lay from a perch about forty feet up in an oak.

Louisiana Water-thrush. *Seiurus motacilla.* One or two noted on a number of days from March 20 to April 17; in song throughout this period, and very likely nesting by the last-mentioned date. The birds frequented a patch of lowland woods, with a small stream running through it. If they actually did breed here, it would probably constitute the southernmost record for the state.

Florida Yellowthroat. *Geothlypis trichas ignota.* Song heard on March 16 and 20. To judge by the migration dates in Alabama (cf. Howell, "Birds of Alabama," 1924, pp. 317-320), *ignota* would be the form most likely to occur here in the middle of March.

Hooded Warbler. *Wilsonia citrina.* Present in small numbers, and singing, March 27 to April 17.

Mockingbird. *Mimus polyglottos polyglottos.* Very common; seen and heard singing practically every day, March 17 to April 18.

Brown Thrasher. *Toxostoma rufum.* A few observed, March 20 to April 18.

Carolina Wren. *Thryothorus ludovicianus ludovicianus.* Common, March 17 to April 6.

Florida White-breasted Nuthatch. *Sitta carolinensis atkinsi.* One heard, March 20.

Brown-headed Nuthatch. *Sitta pusilla.* Noted a few times from March 29 to April 17.

About 5 p. m. on April 10 I noticed a number of Brown-headed Nuthatches among some pines in an old field. Presently three or four of them huddled together a couple of feet from the tip of a long limb thirty-five feet from the ground. The limb was well provided with twigs and needles. Then a couple of others began visiting those lined up on the limb, and feeding them. I was astounded to realize that fledglings were abroad thus early in the season. Sometimes the adults passed over the food from a perch on the same level, but about as often as not they clung to the under side of the limb in acrobat fashion and fed the youngsters from below.

By degrees several more came and lined up on the limb, till there were finally six, if not seven, all touching each other in close array. Some faced in one direction, some in the other. They kept up a gentle, musical twittering. The adults often gave their loudest call (a nasal, twanging *knee-tnee; knee-tnee-tnee*) as they searched

the pine cones, limbs, and trunks for food. They also gave, while so engaged, a much lower, conversational note: *pik*. Once in a while one of them would hammer some piece of food on a limb, in the manner of one of the larger species of nuthatches.

Up to about 5:30 P. M. the old birds fed the youngsters assiduously, returning every half minute or so. Then, when the latter were pretty well quieted, though the sun had scarcely set, the old birds disappeared for some minutes. Eventually they returned, but did not go to the young ones, merely feeding industriously in the adjacent trees. All this was so like a human family, where the babies are given an early supper and put to bed, after which the parents can attend to some of their own wants.

I waited till after six o'clock to see if the adults might not join their brood, but apparently that was not their intention. Toward the last one of them flew to the same limb a couple of yards away, and thereafter I lost sight of both of them, but felt quite certain that neither joined the group of young ones. It was then after sunset, and the birds were undoubtedly established for the night. It seemed strange that a hole-nesting species should roost thus in the open.

Tufted Titmouse. *Baeolophus bicolor*. A few, March 20 to April 17.

Carolina Chickadee. *Penthestes carolinensis carolinensis*. A few, March 20 to April 3.

Ruby-crowned Kinglet. *Regulus calendula calendula*. Noted in song on a number of days from March 20 to April 6.

Blue-gray Gnatcatcher. *Polioptila caerulea caerulea*. Several noted, March 17 to April 3; in song on the first-mentioned date.

Hermit Thrush. *Hylocichla guttata pallasi*. One seen, March 26.

Bluebird. *Sialia sialis sialis*. Seen very frequently, but in small numbers, March 17 to April 12. A nest in a fence-post contained four eggs on March 30.

Natick, Mass.

THE WILSON BULLETIN

Published at Sioux City, Iowa, by the Wilson Ornithological Club.

The present editorial organization is as follows: T. C. Stephens, Editor-in-Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

The subscription price in the United States is $1.50 a year, and 50 cents a number; in all other countries of the International Postal Union the price is $2.00 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Dr. Jesse M. Shaver, Peabody College, Nashville, Tennessee, U. S. A.

EDITORIAL

THROUGH SOME INCIDENT, now forgotten, we were led to speculate on the selection of the ten "best" bird books for the private library of an American amateur ornithologist. Just what is meant by the term "best" we may have to leave undefined. It does not mean most scientific, for often the most scientific papers are of the least use to the average bird student. It does not mean most useful, for sometimes the bird student reads for pleasure as well as for instruction—at least he may wish to enjoy his reading. And yet, we are selecting the books for the serious student of ornithology, and will overlook the works of the literary interpreters of nature. What we probably want is a small collection of bird books that will give the maximum amount of information about birds, and the maximum amount of pleasure in reading it.

In selecting such a list of books we have found it necessary to establish certain criteria—to make a sort of score card. After considerable alteration and elimination we have settled on five points, or qualifications, upon which to score the books. 1. Authoritativeness. The author must have professional standing in order to assure confidence in his statements. 2. Readability. So many books are poorly written, and so many are well written, that we may as well choose on this score. 3. Availability. We should not select for this purpose books that sell at a high price, nor out-of-print books that can not be easily obtained. 4. Variety. The ten books chosen should cover as many phases or branches of ornithology as possible, and avoid duplication of authors. 5. Utility. This is a relative term, and might not mean the same to every individual. Nevertheless, each from his own standpoint must consider the value on this point.

The writer's judgment may be in error, and he may be unacquainted with better books for such a list; but such as it is, here is the list:

1. Handbook of Birds of Eastern North America. By Frank M. Chapman. For classification and description.
2. A Popular Handbook of the Birds of the United States and Canada. By Thomas Nuttall. For description of habits, especially of song. Rather expensive in the original, but a cheaper reprint in one volume is obtainable.
3. Michigan Bird Life. By Walter B. Barrows. For general information and because of low cost. There are several other equally good state books, but this one is selected because of the centrality of the region treated.
4. Territory in Bird Life. By H. Eliot Howard. Bird life is here interpreted from a new angle, which will be enlightening to the average student of birds. It is also an interesting example of logical thinking.

5. The Practical Value of Birds. By Junius Henderson. As a treatise on economic ornithology. It is difficult to choose between this and Forbush's "Useful Birds and Their Protection."
6. The Migrations of Birds. By Alexander Wetmore. As an account of this important habit of birds.
7. Home Life of Wild Birds. By Francis H. Herrick. For information on the domestic habits of birds.
8. Birds and Their Attributes. By Glover M. Allen. As a general discussion of birds and their habits.
9. Game Birds, Wild Fowl and Shore Birds. By Edward Howe Forbush. Besides giving information on many of the wild fowl and game birds, this book gives a history of the most important extinct species and an excellent exposition of the principles of bird conservation.
10. The A. O. U. Check-List. If the new edition of the Check-List is not published within the next five or six years we may have to strike it from the list. But when published it will be quite essential to every student of birds in this country.

Of course, everyone can suggest changes in this list. And there are various state publications, government publications, and periodicals which everyone should have. There should be a history of ornithological science in such a list: but unfortunately there is none in English.

Our readers will observe that this issue of the BULLETIN contains an extra eight pages. This is made possible by contributions from two authors amounting to about forty-five dollars.

It is desired to compile a list of wild fruits and seeds which are eaten by native birds. Any readers who have some random notes which they will wish to put into a common pool will greatly oblige by sending to the Editor the data, including the name of the plant (seed, berry, fruit, etc.), name of bird, place, date, and name of observer. Such data should be repeated as many times as different observations were made, even for the same species of bird.

Senator McNary has introduced Senate Bill 2015 which provides for a reduction in the bag-limit on game birds. The daily limit provided for ducks is fifteen, and for geese, four. other game birds are reduced proportionately. Representative Haugen will introduce the Bill in the House.

Those who wish to have a room at the Headquarters Hotel should secure a reservation at least a week or ten days in advance of the meeting. The Des Moines Audubon Society will hold the annual bird census on Thursday, the 26th. They invite visitors to the W. O. C. meeting to come a day earlier and attend the field trip. Notify Mrs. J. E. Stewart, 1245 37th Street, Des Moines, Iowa.

THE DES MOINES MEETING

The Sixteenth Annual Meeting of the Wilson Ornithological Club will convene in Des Moines., Iowa, December 27-28, 1929, in conjunction with the American Association for the Advancement of Science.

The reading of papers will form a prominent feature of the meetings. All members are earnestly requested to contribute, and to notify the Secrteary as to the titles of their communications, the length of time required for thir presentation, and whether they will be illustrated by lantern slides or films, in order that complete arrangements may be made. Meetings will be held in the Lecture Room of the City Library, (three blocks from our hotel headquarters) from 9:00 A. M. until 5:00 P. M.

The Des Moines Audubon Society has arranged an excellent exhibition of bird paintings at the library for this meeting. The Brown Marine Museum, at the Brown Hotel, two blocks from Savery Hotel, invites all members to visit this museum and examine the Marine exhibits. These include water and shore birds. The annual banquet of the Wilson Club will be held at Younker's Tea Room, Saturday evening, December 28, 1929.

The headquarters of the Wilson Club will be at Hotel Savery III, where rooms may be secured at the following rates:

Single rooms with bath, $2.50, $3.00, $3.50, $4.00, or $5.00 per day. Single rooms with bath and double bed, $4.00, $4.50, $5.00, $5.50, or $6.00 per day. Rooms with bath and twin beds, $5.00 or $6.00 per day. Reservations should be made well in advance.

Special Railroad Rates

A special railroad rate is made to all members of organizations affiliated with the American Association for the Advancement of Science. Since the Wilson Club is thus affiliated, this special rate applies to its members. To secure this special rate, purchase a one-way ticket to Des Moines, Iowa, and secure from the agent a certificate to the annual meeting of the American Association for the Advancement of Science. Do not purchase a ticket without securing this certificate. This certificate must be presented to the proper official at the convention for validation. After validation, the certificate entitles its holder to a return ticket at one-half the regular rate.

Each member is requested to recommend to the Secretary the name of at least one new member for election to the Wilson Club.

Jesse M. Shaver, *Secretary.*

George Peabody College for Teachers,
Nashville, Tenn., October 28, 1929.

GENERAL NOTES

Conducted by M. H. Swenk

The Starling in Michigan.—In the March, 1929, number of the Wilson Bulletin (p. 62), Mr. E. C. Hoffman proposes to prepare a distribution map of the Starling (*Sturnus vulgaris*) and suggests that reports concerning the appearance of these birds be sent in. I lived in Grand Rapids, Michigan, from 1921 to 1928, and noted, from time to time, reports of the presence of the species in the neighborhood of Detroit and, later, at Battle Creek. I do not recall any report of a western extension in the Lower Peninsula beyond the point last named. In February, 1927, about a dozen Starlings were present in East Grand Rapids. The birds congregated at the water tower, the lower part of which was encased with wood. The perforations in this casing made by woodpeckers served as roosting places for the Starlings. I saw them again in this place in 1928, but do not know whether they resorted to the locality again this year.—Edward R. Ford, *Fort Lauderdale, Fla.*

Nesting of the European Starling in Butler County, Ohio.—On April 4, 1929, I noted a pair of European Starlings (*Sturnus vulgaris*) gathering material for a nest. The nest was in an old catawba (*Catalpa bignonoides*) tree five feet from the ground. Both birds assisted in gathering the nesting material. The birds were identified by their brownish black color and yellow bills. This is, I believe, the first record of their nesting in this county.—C. K. Lloyd, *Oxford Ohio.*

The European Starling at Urbana, Illinois.—In the March, 1928, issue of the Wilson Bulletin I published a short note under the above title, in which I offered sixteen new records for the European Starling at Urbana, Illinois, these covering a period of two years. At the time of that publication a Starling was to me a most interesting find, a bird rare enough to warrant enthusiasm. The manuscript of the 1928 note left my hands the middle of December, 1927. Beginning in February, 1928, the number of Starlings in this vicinity began to increase, and I added twenty-two new records during February, March, and April of 1928. Then the number of reports of Starlings dropped off materially until November, when the increase resumed. Since November, 1928, I have lost all track of Starling records in this vicinity, as there have been so very many of them. Now (March, 1929), the species is so common here that I can not spend two hours in the field without finding from ten to fifty Starlings. When I published my first note just a year ago, I fully expected to publish a yearly account of new central Illinois records. I hereby resign that intention. Central Illinois is no longer "very close to the periphery of the range of the Starling." The vanguard of the westbound Starling army has passed me by.—A. R. Cahn, *University of Illinois, Urbana, Ill.*

The Starling at New Hampton, Iowa.—On March 31, 1928, a Starling (*Sturnus vulgaris*) was taken in a sparrow trap belonging to Louis Fliger. This is the first record, so far as I know, for northeast Iowa, and follows very closely on the taking of individuals at Oxford, Iowa, by Prof. Kubichek, of Coe College, Cedar Rapids. Last summer (1928) I drove from here to Columbus, Ohio, during the last week in June, and the first Starlings seen as I went east were at Greenfield, Indiana.—Chas. J. Spiker, *New Hampton, Iowa.*

The European Starling at Des Moines, Iowa.—On March 21, 1929, a pair of European Starlings (*Sturnus vulgaris*) were observed by Mr. and Mrs. A. W. Lee of 4323 Ingersoll Avenue, Des Moines, feeding in their backyard and around the Purple Martin house. Although neither observer was familiar with the Starling they were able to furnish such an accurate description of the pair to Mr. A. J. Palas that he felt there could be no doubt as to their identity.

The Starlings remained only during the one day and were described by Mr. Lee as "larger than Purple Martins, purple in color with their backs shaded brownish and had very prominent bills, large at base, yellow in color. The notes were different than I had ever heard, being loud, harsh whistles."—Philip A. DuMont, *Wilton, Conn.*

The Starling at Hillsboro, Ohio.—On November 15, 1928, the Starling (*Sternus vulgaris*) appeared at Hillsboro. In a few days the number increased to seven, and on December 31 to thirty. This number remained until March 1. The regularity of their movements was very marked. At 8:30 A. M. they appeared in an oak tree and after chattering a few minutes, they flew to a clump of locust trees and then off to their feeding ground, returning by the same route about 4 P. M. and then to their roosting place. After March 1 the group varied in numbers and in their movements.

On May 1 I noticed a pair in a maple tree. They were trying to gain possession of an abandoned Downy Woodpecker's nest occupied by a Red-headed Woodpecker. The male sat on a limb near by while the female explored the cavity, passing in and out frequently. The Redhead sat in a nearby tree just looking on. During the investigation a Flicker leaned into the opening and gave the Starling two hard thrusts with his stout bill. The Starling slid out and the Flicker left as suddenly as he had come. The Starlings gained possession more by a continued persistence than by physical force. They spent several days in carrying out the old material. They would go to a limb near by and drop it very leisurely. On May 15, the nest was abandoned. Probably the eggs were destroyed by squirrels. Several days afterward the female visited the nest. I have found three nests in the cavities of trees about twelve feet from the ground, and have seen several carrying food to their young. They stay in pairs or groups of four to eight. They are general this summer but not common. They do not seem to affect the bird life and the other birds do not bother them. The first one observed here was a stray one in early January of 1928. It stayed in a neighbor's garden and our yard for several days.—Katie M. Roads, *Hillsboro, Ohio.*

Additional Records of the Starling in Michigan.—As to records of extensions of the range of the Starling (*Sturnus vulgaris*) asked for in the March, 1929, number of the Wilson Bulletin, I have the following to give: At Three Rivers, St. Joseph County, I first saw a Starling on August 22, 1925. From what I have seen at this locality, it appears that they are a resident and very likely nest there, as I found them during the months of March to October, inclusive. The largest number seen at one time at this locality was seventeen on September 20, 1925. At Schoolcraft, Kalamazoo County, I first saw Starlings on October 13, 1925, three being seen. It is perhaps a resident and breeding bird at that locality. I found them there during the months of July, October, and December on my few visits at that locality. The largest number seen at one time was a

flock of twenty-five on July 29, 1927. Although this species was reported from Vicksburg, Kalamazoo County, Michigan, before I first saw them there on my visits, I found Starlings there in February and saw some feeding young in May. The first that I happened to see at that locality were three on February 2, 1926.

Here in Luce County, near McMillan, I first saw Starlings on April 22, 1928, two being seen. A pair nested in an old Flicker cavity. They may not be a resident yet, as I have only seen them during the months of March to July, inclusive, and September and October. Very likely some were near this locality in August, but I failed to find any. This year (1929) three pairs started nesting in bird houses. Two were blown down by a strong west wind this month (May) and of course left, and the other pair seems to have gone with them. The two nests that were blown down contained eggs. My largest number seen in a day at this locality is fourteen on March 27, 1929.—O. M. Bryens, *McMillan, Mich.*

The Snowy Egret in Stark County, Ohio.—On the afternoon of June 16, 1929, three observers noted a Snowy Egret (*Egretta candidissima candidissima*) in a small cat-tail pond near Wilmot, Ohio. As we stood near the edge of the pond the beautiful white bird was clearly identified, both with and without our 6x binoculars. While we watched the bird it was constantly harried by two Red-winged Blackbirds that followed as it circled above the pond, nipping it many times. After its third flight the Egret flew away and did not return, as we learned later. We inquired from the owner of the pond when the Egret had arrived there and he told us it was the morning of our observation, June 16.—May S. Danner, *Canton, Ohio.*

The Turkey Vulture in Iowa.—The Turkey Vulture (*Cathartes aura septentrionalis*) is a rather rare rare species in the Sioux City, Iowa, region. On a tour of the Iowa State Parks made during the latter part of August, 1928, we usually found these birds in the vicinity of the heavy timber of the parks. The largest number seen at one time was twelve, near Adel in the middle of the state. The first record was August 21 at Dolliver State Park in Webster County. Other records are: August 28 at Palisades State Park in Linn County; August 30 near Tracy in Marion County; August 31 near Winterset in Madison County; September 1 at Adel in Dallas Country; and September 2 and 3 at Ledges State Park in Boone County.—William Youngworth, *Sioux City, Iowa.*

An Early Nesting of the Killdeer.—On April 4, 1917, a nest of the Killdeer (*Oxyechus vociferus*) with four eggs was found, placed in the charred remains of a burned brush-pile. So perfect was the blending of the color of the eggs with the debris that had I not seen the bird on the nest, I would not have found it. On March 29, 1921, a Killdeer was flushed on a small knoll in a rocky pasture traversed by small spring-fed streams. She feigned dying for a couple of minutes, and then suddenly flew to a near-by field. In searching for the nest where she had risen we found four eggs, all disarranged. On April 13 and 15 there were only three eggs.—Katie M. Roads, *Hillsboro, Ohio.*

The Pine Siskin in Nebraska in 1928-29.—Following the commonness of the Pine Siskins in southeastern Nebraska in the spring of 1928, when they nested at Omaha, Fairbury, and Hastings, and probably did so also at Lincoln (see Wilson Bulletin, XLI, pp. 88-89), they disappeared from this region late in May or early in June. None were then seen until the following December. On

December 6, 1928, Mrs. L. R. Button found Pine Siskins numerous on McLain's Island in the Platte River near Fremont. Six of them were seen on the Island as late as December 23, and an occasional one occurred in the city of Fremont during the winter. On December 28, the Misses Ellsworth and others noted ten of them in the Fontenelle Forest near Omaha. The Brooking Bird Club at Hastings noted one there on January 1, 1929. Mr. C. S. Ludlow saw a flock at Red Cloud on February 5, and the members of the Fairbury Nature Study Club saw fifteen of them on February 22.

Late in February and early in March there was a reappearance, or an increase in numbers, of the Pine Siskin in southeastern Nebraska. Mr. C. S. Ludlow saw eight of them at Red Cloud on March 1, and by March 15 a flock of twenty was present there. The first ones seen at Hastings were on March 4, and they were still present there on May 18, according to the records of the Brooking Bird Club. Mrs. H. C. Johnston reported the first ones at Superior on March 16. At Fairbury Mrs. H. F. Hole reported them paired in her yard on March 20.

At Lincoln, the first ones were seen—five of them—on February 28 by Miss Louisa Wilson, who saw others on March 1 and 7. The writer first noted them on the College of Agriculture campus on March 14, and Miss Wilson found them commonly in another part of Lincoln on March 16. By April 27 they were present in pairs in the vicinity of the College of Agriculture campus. The monthly mean temperature for March, 1929, was 42.6°, or 5.1° above normal. For April it was 54.2°, or 2.7° above normal. For May it was 60°, or 1.7° below normal. According to the conclusions reached on pages 91 and 92 of my paper in the June, 1929, Wilson Bulletin, there might have been attempts to nest by the Pine Siskins in March, and probably would be nesting in May. Surely enough, Mrs. Swenk and the writer found a nest about thirty feet up in a spruce tree on the College of Agriculture campus on May 5. The birds were seen at the nest on May 17 and May 19, but on May 26 had disappeared. This constitutes the twenty-second breeding record of the Pine Siskin in Nebraska, and further corroborates the relation between nesting and spring temperatures pointed out in the paper above mentioned.—Myron H. Swenk, *Lincoln, Neb.*

Does the Great Horned Owl Have a Poor Memory?—During latter December, 1928, and early January, 1929, Mr. E. C. Rosenberry, of Enola, Cumberland County, Pennyslvania, lost chickens and guinea fowl almost every night. He could not find the culprit, but inferred that a bird of prey was taking them, since no footprints could be found. On the night of January 2 he placed a steel trap on a post near the poultry yard. A few feathers had been found at the base of this post, suggesting that the victims had been carried there. On the following morning the trap was gone; evidently it had not been fastened securely. Another trap was wired to the post and set. On the morning of January 4, a large female Great Horned Owl (*Bubo virginianus virginianus*) was found in the trap, caught by its left foot. On the right foot was the other trap, its chain dangling. The bird was brought to this office for identification.

According to my experience certain species of birds, Crows for instance, would not have made the mistake of returning so promptly to a perch where they had encountered a trap. But the owl, either poor of memory, or excessively hungry, had returned within about twenty-four hours, though she bore upon her

foot a constant reminder of the disagreeable experience. It is probable that hunger and the memory of source of sustenance are respectively stronger and more accurate in this muscular, bold creature than any recollection of pain or inconvenience which may have been caused at or near the source of food supply.—George Miksch Sutton, *Game Commission, Harrisburg, Pa.*

The Breeding Range of the Black-necked Stilt.—The breeding range of the Black-necked Stilt (*Himantopus mexicanus*) has been steadily increasing throughout different parts of southern and central Florida during the last few years. Where it was not found at all a few years ago it now breeds. In 1909 I found these birds nesting at Kissimmee and also at Lake Kissimmee on Rabbit Island. In 1915 they bred in numbers at Lake Harney, Seminole County. These places are still used as breeding places to the present date, May, 1929. They breed at Marco Island, some of the Keys, Puzzle Lake, Seminole County, Merritt's Island, along the St. John's River between Sanford and Lake Harney, and at Geneva Ferry.

The latest places discovered were at Turkey Hammock, Osceola County, which is where the Kissimee River begins at the south end of Lake Kissimee. About a dozen pairs were found evidently breeding, judging from their behavior, by Messrs. Arthur H. Howell and W. H. Ball, and me, on May 12, 1929. We also found four breeding pairs at Alligator Bluff, which is along the Kissimee River, on May 11, 1929. In March, 1908, March, 1910, and in 1912, I had covered this same territory and failed to see Black-necked Stilts in these two places. I could not have overlooked them had they been here.

Since the lowering of Lake Okeechobee, the river has been far below its normal level, thus leaving exposed mud flats, suitable to the needs of this bird and it has taken advantage of conditions offered.

Three other new breeding places have been just discovered, and eggs collected. A few pairs were found in May, 1929, and one nest with four eggs collected five miles west of Indian River City, Brevard County, in a brackish swale between St. John's River and Indian River. On May 15, 1929, Mr. H. Redding sent me two sets of three eggs and two sets of four eggs. Three sets were collected from a small colony on the sandy shores of Lake Winder (part of St. John's River), Osceola County. The eggs were slightly incubated, and some were fresh. A fourth set was taken close to Lake Washington at the "Jams." The eggs of this set were half incubated. The Indian River district and the latter are both new breeding localities.

A wide jump was made when the birds were found breeding at Lake Conway, five miles south of Orlando, Orange County, in May, 1927, for the first time. No eggs or young were seen, but their actions betrayed them, and it was not until May, 1928, that Messrs. J. C. Howell, Jr. and Wray H. Nicholson found two sets of three eggs each at this place. The author first saw them in 1927. At the most the birds could not have come earlier than 1926. Again in 1929, I saw the Stilts there on May 24, 1929. Only four pairs have ever been seen. This is another instance of the lowering of the lake, and causing mud banks to form. The birds breed several hundred yards from a main highway, where a meadow runs to the border of a lake. This is the only breeding record for Orange County.

Thousands of acres of the old St. John's marsh, which remained under water practically all the year around, are now partially or completely dry, forming excellent feeding grounds for the Stilts, and it is my prediction that this species will most certainly congregate on this newly formed land, which was caused by the drainage of this locality.

The only place where to my knowledge Stilts are to be found nesting in any numbers is on the south end of Lake Harney. There are about 100 pairs.—Donald J. Nicholson, *Orlando, Fla.*

Additions to the List of Birds of the Douglas Lake Region.—The University of Michigan Biological Station is situated on Douglas Lake in Cheboygan County, about midway between Lake Huron and Lake Michigan and about seventeen miles south of the Straits of Mackinac. Two other extended lists of the birds of this region have been published.[1] Hence, in the present report it is our intention to add only birds recorded since the publication of the list by Messrs. Wood, Smith and Gates. Some of the birds in the present list were seen only at Burt Lake, a much larger body of water due south of Douglas Lake; but since more or less field work is constantly being done on Burt Lake by members of the Biological Station and since the two lakes are so near each other, it seems advisable to add these birds to this list. We have also added certain species observed by Dr. R. M. Strong in 1916 and certain other species observed by Dr. Dayton Stoner in 1919 and 1920, so that the present list, together with the list by Messrs. Wood, Smith and Gates, will give a complete record of the species for the region. Messrs. Wood, Smith and Gates recorded 128 species. To this list we add 18, making a total of 146 for the region.

Horned Grebe (*Colymbus auritus*). One seen on Burt Lake, August 9, 1921.

Black Tern (*Hydrochelidon nigra surinamensis*). One seen on Burt Lake, August 8, 1921.

Golden-eye (*Clangula clangula americana*). One found dead on the beach, August 15, 1919, by Dr. Stoner.

Least Bittern (*Ixobrychus exilis*). Solitary individuals were seen on several occasions on Douglas Lake. One on Burt Lake, August 9, 1921.

Sora (*Porzana carolina*). One seen near the mouth of Maple River, Burt Lake, August 9, 1921. We were able to approach to within about four or five feet with a boat.

Florida Gallinule (*Gallinula galeata galeata*). Apparently common in the marshes at the mouth of Maple River, Burt Lake, August 9, 1921.

Least Sandpiper (*Pisobia minutilla*). One seen with the Semipalmated Plovers on Fairy Island, August 13, 1921.

Semipalmated Sandpiper (*Ereunetes pusillus*). Douglas Lake, August 22, 1921.

Semipalmated Plover (*Aegialitis semipalmata*). Three seen on Fairy Island, August 13, 1921.

Pigeon Hawk (*Falco columbarius columbarius*). One taken Douglas Lake, August 24, 1920, and another August 21, 1921.

[1]The Birds of the Douglas Lake Region. By J. S. Compton. Wilson Bulletin, XXVI, pp. 173-180 (1914). The Summer Birds of the Douglas Lake Region, Cheboygan County, Michigan. By Norman A. Wood, Frank Smith, and Frank C. Gates. *Occasional Papers of the Museum of Zoology*, University of Michigan, XXVII, pp. 1-21 (1916).

Yellow-bellied Flycatcher (*Empidonax flaviventris*). One taken at Burt Lake, August 9, 1921. One seen near Biological Station, August 15, 1921.

White-winged Crossbill (*Loxia leucoptera*). An immature female taken at Douglas Lake, July 31, 1916, and two individuals seen in pines near North Fish-tail Bay, August 21, 1916, by Dr. Strong.

Redpoll (*Acanthis linaria linaria*). One seen near camp, August 11, 1919, by Dr. Stoner.

Northern Parula Warbler (*Compsothlypis americana usneae*). One seen at Reese's Bog, July 22, 1919, and one seen August 7, 1920, at Smith's Bog, by Dr. Stoner.

Water-thrush (*Seiurus noveboracensis noveboracensis*). Two in cedar bog of Douglas Lake, August 14, 1920, by Dr. Stoner. One near mouth of Maple River, August 9, 1921.

Connecticut Warbler (*Oporornis agilis*). Two seen near Burt Lake, July 12, in cedar bog.

Short-billed Marsh Wren (*Cistothorus stellaris*). One taken July 14, 1921, at Ingleside.

Long-billed Marsh Wren (*Telmatodytes palustris palustris*). One seen at Lancaster Lake, August 2, 1921. August 9, 1921.—Harry C. Fortner and Z. P. Metcalf, *University Biological Station, Mich.*

A Foot Disease of the Chipping Sparrow in Eastern Ohio.—Through the operation of a drop trap, six by six feet in size, the writer was succecssful in trapping for banding purposes during the summer of 1928, twenty-two Chipping Sparrows (*Spizella passerina passcrina*). It was at once evident that a diseased condition of the feet was prevalent among this species, thirteen individuals of those trapped acting as a host for the malady.

Well advanced cases of the disease, resulting in the ultimate loss of the nails were noted, as, for example, No. B62659, banded September 9, for which the following entry in my records was then made: "Nails gone from middle toe of both feet, hind toe of both feet also infected." It would appear that infection occurred at no great distance from the site of trapping operations. In one case this was certain, No. 697819 being apparently healthy when banded, but when taken twenty-eight days later had contracted the disease, the afflicted parts already being greatly distended. The following notation was then made: "Right foot, middle and hind toes, and tarsus; middle toe left foot, infected."

At the suggestion of Mr. Frederick C. Lincoln, of the Biological Survey, I have concluded that this disease is apparently that known as "bird pox," and is probably identical with that affecting Chipping Sparrows at Thomasville, Georgia, studied in detail in 1923, by Mr. T. E. Musselman (The *Auk*, XLV, pp. 137-147, April, 1928). It is apparent that essentially the same general conditions, in relation to cause and effect, are operative at both widely separated points.

In contrast to conditions at the Thomasville station, it is noted that instead of forty-two per cent of infected birds, as at Thomasville during the year of greatest abundance, there were but fifty-nine per cent found to be suffering apparently from "bird pox," during 1928 at the writer's eastern Ohio trapping station. Preceding the time these birds were taken (August 5 to September 9) the weather was marked by a period of abundant precipitation, which according to Mr. Musselman, serves to "stimulate the activity of the disease."

In the writer's opinion the distribution of "bird pox" is apparently more widespread than is inferred by Mr. Musselman, possibly extending locally throughout the range of the Chipping Sparrow. Its abundance is apparently governed to a large degree by weather conditions during the season when the birds are not taxed with domestic duties and when they are more or less gregarious in their habits. By transmitting the disease from bird to bird, during their migratory movement, it is apparent that new territories will continuously be invaded far removed from the place of original inception.

Although the Chipping Sparrow is the chief subject of attack, the disease is apparently not restricted to this species, but occasionally extends its scope to include other members of the family Fringillidae. To give an idea of the proportion thus afflicted, the total number trapped and banded by the writer, of the species in which the disease was represented, is herewith given, one each of the following having yielded to the attack of this malady. Field Sparrow (13); White-crowned Sparrow (23); Song Sparrow (45); Slate-colored Junco (55).

The writer is aware that the limited number of birds taken by him is inadequate to permit any definite deductions. This note is submitted to point out that insofar as the writer's limited experiences extends, the results of his observations approximately parallel the important findings obtained by Mr. Musselman, and to suggest the probable existence of a more extensive distribution of the disease under consideration.—Paul A. Stewart, *Leetonia, Ohio.*

New Cliff Swallow Colonies in South Dakota.—In the numbers of the Wilson Bulletin for March and September, 1928, Dr. F. L. R. and Mary Roberts, Alfred M. Bailey and T. C. Stephens (in Editor's note), gave some information in regard to the nesting of Cliff Swallows (*Petrochelidon lunifrons lunifrons*) along the "Dells," and about one mile south of Dell Rapids, South Dakota.

Dells Creek leaves the Big Sioux River within the city limits of Dell Rapids and again joins it some three and one-half miles down stream. The colony along the gorge of Dells Creek is an old one, and while no accurate data have been kept, it has seemed to the writer that the colony has been on the decrease during the past few years. The English Sparrows have harrassed this colony for years, and any decrease in numbers can probably be mainly attributed to them.

This summer (1929) it was evident that the colony was much smaller, and on July 13 an attempt was made to count occupied nests. Glasses were used in making observations from the opposite bank and the count showed there were about sixty occupied nests. The English Sparrows were much in evidence and had appropriated nests here and there throughout the colony. The colony had moved a few rods south this year.

Some time previous to making this count I had noted Cliff Swallows gathering mud at three points far removed from the old colony, and this led me to believe that there were other colonies being started in the vicinity. During the period from July 13 to 20 I found three other colonies within one and one-half miles of the old colony, and this probably explains why the original colony was much reduced in numbers this year. One of the new colonies was located along the gorge of the Big Sioux River, near the western city limits, and contained about twenty occupied nests. This is about three-fourths of a mile, in a bee line, from the old colony.

There have been a few scattered nests here in previous years but last year I could find only one nest, so while this probably is not strictly a new colony, there is at least a good increase. The two other colonies, both entirely new, were located under eaves of barns on farms, one containing thirty occupied nests and located one and one-half miles southeast from the old colony, and the other about the same distance northwest having about forty occupied nests. English Sparrows had occupied three or four nests in the new colonies but on the whole the Cliff Swallows seemed to be holding their own fairly well. On July 20 there were still quite a number of nests under construction, and this seems late for nest building.

Some thirty or thirty-five years ago it was a common sight to see rows of Cliff Swallow nests under eaves of farm buildings in this vicinity, but these were entirely given up nesting sites probably some twenty or twenty-five years ago, and I think this was mainly due to increase in English Sparrows at that time. Of late years this pest seems rather on the decrease around here. It is to be hoped that these new Cliff Swallow colonies will be able to maintain themselves and that the birds will also spread to other farms in the neighborhood.—Edwin C. Anderson, *Dell Rapids, S. Dak.*

Occurrence of the Russet-backed Thrush in Iowa.—In the Dwight Collection, at the American Museum of Natural History, there is a specimen of the Russet-backed Thrush (*Hylocichla ustulata ustulata*) from Keokuk, Iowa. It is a male, collected May 20, 1907, formerly in the C. K. Worthen Collection, and now No. 26745 in the Dwight Collection. The bird was identified by the late Dr. Dwight and so noted in his catalog. A comparison of the specimen with a series of *H. u. ustulata* shows it to be typical of that subspecies. The back and rump are olive-brown and the upper breast is faintly spotted with a few triangular marks. The tail is a slight shade grayer. Measurements in millimeters are: Length, 172; wing, 99 and 100; tail, 71; exposed culmen, 13.8; tarsus, 30; middle toe, 17.5, and bill from nostril, 9.2. I know of no other record of this bird from the state of Iowa.—Philip A. Dumont, *American Museum of Natural History, New York City.*

The Raptor's Mistake.—An interesting episode was witnessed on a tract of meadow land, with grass six or eight inches high, near Liberty Creek, in Keokuk County, Iowa. There was a woodland on one side of this meadow and a group of farm buildings on the other.

A large Red-tailed Hawk (*Buteo borealis borealis*) came out of the timber and leisurely flew around over the meadow, hovering over one point a moment for special inspection. Then he flew back to the woods again. A few minutes later he flew out and hovered over the same place, then returned to the woods as before. After having performed this round trip movement several times, the Hawk finally flew to this point and plunged down into the meadow. Instantly there was a mighty commotion. Hissing, flopping, spitting, caterwauling; and one could see feet, claws, wings and tails whirling about just over the grass. The air was full of fur and feathers for a few moments, then the Hawk made his getaway, and with feathers much ruffled flew for the timber as fast as his wings could carry him. And an old gray tom cat went with great bounds in equal haste for the farm buildings! Both Tommy and hawk were licked but still able to go.—E. D. Nauman, *Sigourney, Iowa.*

NECROLOGY

ROBERT RIDGWAY—ORNITHOLOGIST, BOTANIST, GENTLEMAN
1850-1929

Within a few months three of the older group of widely known ornithologists have crossed the bar—Jonathan Dwight, Edward Howe Forbush, and Robert Ridgway. Each of these great scientists filled a special niche in the advancement of ornithology, and their passing entails an irreparable loss which may not easily be repaired. Robert Ridgway, more than anyone else known to the writer, exemplified the ability of the individual to go far into a chosen field of knowledge without the advantages of college preparation. From his earliest childhood he was intensely interested in animal and plant life, and his thirst for knowledge was never quenched.

Robert Ridgway was born at Mt. Carmel, Illinois, July 2, 1850. He died at Olney, Illinois, March 25, 1929, in his 79th year. The region in which he grew up was one of the richest fields in the eastern United States for the study of out-of-door life—the meeting place for the northern and southern fauna and flora of Illinois and Indiana.

Possessing a marvelous and orderly memory, having from childhood an almost uncanny sense of proportion and color, Robert Ridgway before he was thirty years of age became a proficient artist and writer. In addition to the voluminous writings of Mr. Ridgway on ornithology he prepared a book of color standards and nomenclature, published in 1912, which proves again the wonderful versatility of this modest, retiring, and altogether lovable man. This color key is now the standard among scientists.

His writings cover a period of over sixty years, and at his death he was actively engaged in the completion of tenth volume of "The Birds of North and Middle America." The ninth volume of this work had been completed by Mr. Ridgway and sent to Washington for publication. It is expected that the tenth volume will be finished by competent hands, thus completing the entire work. Mr. Ridgway's name will be perpetuated, not only in the 540 papers and books which he has written, but also in the names of twenty-three species of birds, and nine subspecies.

His objection to publicity amounted almost to eccentricity, except when his chosen avocations were concerned. He said more than once that the fifty years spent away from his loved southern Illinois were fifty years or homesickness. His devotion to Mrs. Ridgway, during the period before her death in 1927, laid a heavy burden upon him; but there was no shirking or complaining.

While the proverb "A prophet is not without honor save in his own country" does not quite apply to Mr. Ridgway, it is nevertheless true that his fame as an ornithologist and scientist was greater throughout the scientific world than at home. He was an inimitable story teller, with a delightfully keen sense of humor. Anyone who made his acquaintance, if interested in birds or plants, was treated as an equal in scientific knowledge, for Mr. Ridgway never paraded his own knowledge. It was always a source of pleasure to him to find anyone who was interested in the things he was, and no effort was too great when he could pilot his friends through Bird Haven and the Wabash bottoms near

ROBERT RIDGWAY—1850-1929

Mount Carmel. He was ever willing to answer questions, and his letters were models of diction and clarity of expression.

In 1927 he visited Chicago for the first time in twenty-seven years, not traveling by train, however, but in a Ford sedan; for he refused to come if the train was the only way to travel. His delight in the Morton Arboretum in Dupage County, and in Wychwood, the Mrs. Charles Hutchinson Estate at Lake Geneva, of which he was a trustee, gave much pleasure and zest to the friends who had his itinerary in charge. Nothing escaped his keen eyes, and he was greatly interested in the larger number of shocks of grain in northern Illinois and southern Wisconsin as compared with southern Illinois.

At the service marking Mr. Ridgway's passing the Ridgway home was filled with friends and neighbors, and through the open doors could be heard the songs of the Cardinal, the Carolina Wren, and other singing birds—an ideal accompaniment to the service, in which the clergyman said, "While Mr. Ridgway was not known as a religious man, yet never have I known a man more spiritually minded." Mr. Ridgway's resting place is an open knoll in Bird Haven, surrounded by the beautiful trees that he loved so much, and only a few steps from the site of the cottage where he and Mrs. Ridgway lived before they moved to Olney.

To have known Robert Ridgway was an honor, and to have enjoyed his friendship was a rare privilege. A great scientist, a staunch friend, and a worthy descendent of early Quaker pioneers in Pennsylvania, his ornithological work will live long after those who have enjoyed the charm of his personality will have become forgotten memories.—Orpheus Moyer Schantz.

Frank C. Pellett (left) and Robert Ridgway
Photograph made at Olney, February 13, 1929

THOMAS HAYES WHITNEY—1877-1929

THOMAS HAYES WHITNEY
1877-1929

Thomas Hayes Whitney was born in Atlantic, Iowa, on July 9, 1877, and died in Atlantic on September 10, 1929, having lived in the same home throughout the 52 years of his life. He was the son of Franklin H. and Ella Graham Whitney, the former being the founder of the city of Atlantic. The subject of our sketch grew up in his home town as "Tom" Whitney, and was honored and revered by his townspeople. In 1907 he was married to Miss Mabel Taylor who, with a daughter and a son, survives him.

Mr. Whitney, with his brother James G. Whitney, owned and operated the Whitney Loan and Trust Company Bank, Mr. T. H. Whitney being the Vice-President. In one of the obituaries we find this statement: "No finer story was ever written into the annals of any community than the story of how these two brothers discharged all of the obligations of their deceased father and paid every creditor in full. There is not much in life, in the last analysis, but to so live that things are just a little better for one's having been here, but there is much in holding high the torch of honor. And this the Whitney brothers did with fidelity and undying credit to themselves."

The writer first met Mr. Whitney at the meeting of the Nebraska Ornithologists' Union on May 7, 1915, at Omaha, although we had been in correspondence for several years before this. Mr. Whitney became a member of the Wilson Ornithological Club in 1916, and took an active part in the organization of the Iowa Ornithologists' Union in 1923. He served as Vice-President of the W. O. C. from 1925 to 1928. During this time he took the initiative in formulating plans for an endowment fund, and in securing the society's incorporation.

He frequently contributed brief notes to the bird magazines, and his longest paper was a report on his long-continued study of the Purple Martin, which was published in the June number of the Wilson Bulletin, in 1925.

Mr. Whitney was a dignified and somewhat reserved gentleman, not aloof, but cordial and friendly. His enthusiasms were contagious, and attracted to himself many friends who came to enjoy the same pursuits that he enjoyed. It was probably largely through his leadership that his community maintains a flourishing local bird study club. Among other diversions he was fond of music, and was a leading spirit in his local Congregational Church. Only his friends and acquaintances will fully realize the loss in his premature demise; while his native modesty kept him in the background, his own sterling qualities made friends at every point of contact. With the words of John G. Neihart we close this obituary, as another begins:

"Let me go quickly, like a candle light
Snuffed out just at the heyday of its glow.
Give me high noon—and let it then be night!
Thus would I go."

—T. C. S.

IN MEMORIAM: WALTHER FREDERICK HENNINGER

1873-1929

Rev. W. F. Henninger, former Treasurer and President of the Wilson Ornithological Club, died after a long illness on February 2, 1929, in Manchester, Michigan. He was an indefatigable, painstaking, and observing ornithologist, as well as mammalogist and entomologist.

Henninger was born on December 2, 1873, at Herman, Missouri. His parents were Rev. Frederick Henninger and his wife, Mary, nee Lenz. The interesting

natural surroundings of his early boyhood home laid the foundation for the intense love of nature that characterized the man throughout his life. When the boy was eleven years old, his mother took him to Europe to have him trained at the schools maintained by the Moravian Brethren at Niesky, Saxony. After seven years of study here, he returned to his native country and finished his theological training in the Seminary of the Evangelical Church at St. Louis, Mo.

In 1894 he was ordained and took his first charge in Ohio, first at Jackson-South Webster. later at Waverly; still later, in 1903, he went to Tiffin. In 1907 he was called to New Bremen, Ohio, where he remained until 1921. In this year his church asked him to go to South America, to assist in the organization of a school in southern Brazil. He accepted this commission, and from 1922 to 1927 threw himself into this new and arduous work with his customary energy. He gave instruction in Latin, Greek, and literature. But in spite of this routine grind, he managed to collect about 800 birds, many large and small mammals, and thousands of insects—all well prepared.

Due either to overwork or to climatic conditions Henninger contracted a disease of the heart and kidneys, which brought him almost to the point of death. But with excellent care and remarkable will-power he recovered sufficiently to make a trip to Europe, to Bad Nauheim in Germany, where the waters have a peculiar regulating effect on the heart. After being pronounced cured he returned to America in 1927. While sojourning with relatives at Tiffin, Ohio, he received a call to the pastorate at Manchester, Michigan, which he accepted. Shortly before his death he contracted influenza, an especially dangerous infection for a person with a weak heart; but when apparently about to recover he suffered two apoplectic strokes, which were fatal.

Henninger was Treasurer of the Wilson Ornithological Club from 1909 to 1914, and President in 1917. We have record of seventy-seven scientific papers published by Henninger, of which forty-four appeared in the Wilson Bulletin. twelve in the *Auk*, five in the *Osprey*, six in the *Bulletin of the Michigan Ornithological Club*, one in the *Ohio Naturalist*, and nine in foreign journals. Of these forty-eight were brief notes, while the others were longer articles.

In the death of Rev. Henninger American natural history has lost a capable, untiring, and gifted worker; his family, a kind and loving father; his church, a sincere and eloquent servant; his friends, a true and lovable friend, a personality so stimulating and invigorating that there will always be a void in their lives because of his going.—C. W. G. Eifrig.

Professor Harris Miller Benedict was born at Buda, Illinois, on December 8, 1873, and died at Cincinnati, Ohio, on October 8, 1928, as a result of an automobile accident. He attended Doane College and the University of Nebraska, receiving at the latter institution the degree of B. S. in 1896, and M. S. in 1897. He was given the degree of Ph. D. in 1914 by Cornell University. He was a member of Phi Beta Kappa and of Sigma Xi, of the American Association, the Botanical Society of America, the Ohio Academy of Science, and the Wilson Ornithological Club. He is credited with having originated and developed the Emery Bird Reserve of Cincinnati, the first municipal refuge of the kind. At the time of his death he was professor of Botany in the University of Cincinnati.

ORNITHOLOGICAL LITERATURE

Life Histories of North American Shore Birds. Order Limicolae (Part 2). By Arthur Cleveland Bent. Bull. 146, U. S. National Museum. Washington, 1929. Pp. i-ix+1-412. Pls. 66. Price, $1.00.

The eighth volume in this series is now before us. The format and plan of treatment under each species follow the last preceding volume. The present volume completes the account of the shore birds, including forty-two forms with two subspecies of the Turnstone.

It seems to be a pity that these volumes are issued in such limited editions. They are bound to be standard for some years to come, and yet the first four or five volumes of the series are even now exhausted—so we are told by persons who have been unsuccessful in securing them. When the Government goes to the expense of publishing a work of this kind the edition ought to be large enough to supply the demand longer than four or five years. The next volume is to be on the Raptores, and will more than likely be in greater demand than any of the preceding ones.—T. C. S.

Development of Temperature Control in Nestling House Wrens. By S. Charles Kendeigh and S. Prentiss Baldwin. Amer. Nat., Vol. LXII, May-June, 1928, pp. 249-278.

In obtaining the temperatures of young birds the authors worked with a specially devised thermocouple, supplemented with an ordinary mercury thermometer. They found that the young wrens at the time of hatching were poikilothermic, i. e., cold-blooded; and that by the time the young birds were ready to leave the nest they had become homiothermic, i. e., warm-blooded. This regulation of body temperature is attributed to four factors, viz., 1) body growth, increase of body mass in higher ratio than external body surface, 2) development of feather covering of body, 3) development of an "internal dissipating surface" through the respiratory system, 4) the metabolic function of the organism. The young bird passes from the cold-blooded to the warm-blooded condition during the nestling period. "That this fact is of significance in the phylogeny of the class is at once evident and suggests that the immediate pre-avian ancestors were cold-blooded."—T. C. S.

Contribution to the Knowledge of the Avifauna of North-eastern Labrador. By Bernhard Hantzsch. Translated by M. B. A. and R. M. Anderson, and published serially in the Canadian Field-Naturalist. 1928-1929.

These contributions by Hantzsch to aretic ornithology appeared originally in 1908 in the *Journal fur Ornithologie*, and have now been translated by Dr. and Mrs. R. M. Anderson, and republished in eleven installments in the *Canadian Field-Naturalist*. The eleven papers have also been combined under one cover without change in pagination. Hantzsch seems to have been one of the rare individuals who are willing to undergo the most extreme hardships for the sake of discovery. His work in north-eastern Labrador was done in 1906, and his report gives notes on ninety-eight species. We notice that the Saxon Ornithological Society recently published a sketch and portrait of Bernard Hantzsch (*Mitt. d. Verein sachsischen Ornithologen*, Sonderheft to Bd. II, April, 1929, pp. 1-28). We thank Dr. and Mrs. Anderson for a copy of the reprint.—T. C. S.

A Study of the Food Habits of the Ring-necked Pheasant in Colorado. By W. L. Burnett.

Feeding Habits and Food of the Ring-necked Pheasant. By Asa C. Maxson. Both papers in Circular 31, Colo. Agric. College, Fort Collins, 1921.

Mr. Burnett examined the stomach contents of 48 pheasants, 31 males, 15 females, and 2 unsexed young. Mr. Maxson examined the stomach contents of 11 adult males. The food items in the crop and gizzard are reported in detail. Both investigations reach the conclusion that the pheasant is chiefly vegetarian, and not a pronounced insect eater. The authors do not draw a conclusion as to the economic value of this bird in a farming community, but leave that for the reader. From the facts presented in these papers we would infer that the Ring-necked Pheasant is of very doubtful economic value.—T. C. S.

Pterylography of Certain North American Woodpeckers. By William Henry Burt. Univ. Calif. Publ. in Zool., Vol. 30, No. 15, pp. 427-442, 7 text figs. Berkeley, 1929.

The author finds a great uniformity in feather distribution on North American Woodpeckers. Excellent diagrams of the pterylography in the Pileated Woodpecker suffice for all twenty-three forms studied. Pterylosis does not seem to be of much value in generic diagnosis, except in the genus *Sphyrapicus*. This phase of ornithology does not seem to have been overworked, and the paper has morphological as well as taxonomic interest.—T. C. S.

The Avifauna of Emeryville Shellmound. By Hildegarde Howard. Univ. Calif. Publ. in Zool., Vol. 32, No. 2, pp. 301-394, pls. 1-4, 55 text figs. Berkeley, 1929.

The Emeryville Shellmound was of Indian origin, and was located on the east coast of San Francisco Bay. When this mound was opened in 1924 bird bones to the number of 6700 were collected in it. At least 46 species of birds were identified from these remains, and all appear to be recent forms. Most of the species were recognized as water birds. The age of the mound is not known, but one authority estimated that its accumulation required possibly 1,000 years. —T. C. S.

A Systematic Study of the Cooper Ornithological Club. By Harry S. Swarth. San Francisco, 1929.

Mr. Swarth has presented in booklet form an excellent sketch of the history of the Cooper Club, from 1893 to 1928, and preceded by a brief account of general ornithological history in that region. The abundance of pictures, groups, and portraits, adds much to the interest and value of the text. We can assure the author that his effort is appreciated widely.—T. C. S.

Bulletin of the Essex County Ornithological Club of Massachusetts. 1928. Pp. 1-64. Apply to Ralph Lawson, Secretary, 88 Washington Square, Salem, Mass. Price, 50 cents.

This publication was first issued in 1919, and has been issued annually since, making ten in all. The 1928 number contains articles by Dr. C. W. Townsend, on a Crow roost; by James L. Peters, on the molts and plumages of the Starling. The remaining pages include five signed articles, six short notes, a

list of the birds seen by the Club during the year, and a list of members. A compact volume of this sort makes a very satisfactory record of the year's activities, and is, no doubt, more permanent than the more frequent mimeographed, or printed, communications issued by other local societies.—T. C. S.

Second Bulletin of the International Committee for Bird Protection. Compiled by T. Gilbert Pearson, Chairman. New York, 1929.

The second bulletin was issued in July of this year, the first one having been issued in 1927. It appears that four meetings of this International Committee have been held, the first three of which are considered informal, viz., London in 1922, Paris in 1923, and Luxembourg in 1925. The first formal meeting was held in Geneva in 1928. This Bulletin includes the proceedings of the Geneva meeting and the papers (in full or abstract) of thirteen of the delegates from various countries. We are interested in the statement by Dr. Hj. Broch, of Norway, that in northern countries, where it takes longer to raise a crop or repair damage, the insect-destroying habit of birds becomes especially important.

The United States personnel of the Committee includes two from Washington, D. C., one from Boston, six from New York City, and one from elsewhere in New York. These members represent two ornithological societies, two sportsman's clubs, and the Audubon Association. The possibilities for bird protection through an international organization are very great, and it would seem that a secure foundation has been laid.—T. C. S.

The Summer Birds of Lake Nipigon. By L. L. Snyder. Trans. Royal Canad. Inst., Vol. XVI, Part 2, pp. 251-277, 1928. Reprinted from the Royal Ontario Museum of Zoology.

The Summer Birds of Lake Abitibi. By L. L. Snyder. Univ. of Toronto Studies, Biol. Series, No. 32, pp. 17-34. 1928. Reprinted for the Royal Ontario Museum of Zoology.

The Nipigon paper is based upon two summers (June and July, 1923, and June, July, and early August, 1924) spent in the region by the author, and some notes from Dr. Walter Koelz, who was in the region in the summer of 1922. This list includes 99 species or subspecies, 92 of which were verified by specimens taken.

The Abitibi paper is based upon field work from June 1 to August 3, 1925 (we infer the year from other papers in the report). This list includes 102 species, of which 85 were collected. At Abitibi the Water-Thrush (*S. n. noveboracensis*) was found, while at Nipigon the only Water-Thrush found was Grinnell's (*S. n. notabilis*). The House Wren (*T. ae. aedon*) was fairly common at Abitibi, but was not found at Nipigon; at the latter place a single pair of Western House Wrens (*T. ae. parkmani*). At Abitibi the Red-winged Blackbird was *A. p. phoeniceus*, while at Nipigon it was identified as *A. p. fortis*. The distance between the two lakes is roughly 400 miles east and west. As might be expected the warblers make a good showing in both of these lists.—T. C. S.

The European Starling in the United States. By E. R. Kalmbach. U. S. Department of Agriculture Farmers' Bulletin No. 1571. Pp. 1-26, Figs. 1-8. Price, 5 cents.

This bulletin deals chiefly with the life history and economic relations of the Starling. The author's conclusion is that the species is distinctly beneficial, but that its habit of congregating in large flocks tends to magnify such bad habits as it may have. Notwithstanding this judicial verdict the report gives evidence of damage done by this bird to several fruits—apples, cherries, grapes, peaches, and pears. No matter what facts in favor of the bird may be hatched up, its presence in this country is probably generally conceded to be a mistake.—T. C. S.

The Spread of the European Starling in North America (to 1928). By May Thacher Cooke. U. S. Department of Agriculture Circular No. 40. Pp. 1-9, 1 map, 1 colored plate. Issued, November, 1928. Price, 5 cents.

This circular treats especially of the extension of range in the United States, with a brief account of Old World distribution, introduction into America, etc. The colored plate, from a painting by E. R. Kalmbach, shows the adult birds in the spring and fall, and the immature bird. The wide distribution of this circular will help materially to secure early reports of the species as it reaches new localities. The bird is spreading with astonishing rapidity, and a new range has been established before a bulletin can be prepared and published.—T. C. S.

Gourds for Bird Houses and Other Purposes. By W. L. McAtee and J. H. Beattie. U. S. Dept. of Agric. Leaflet No. 36. Pp. 1-4, Figs. 1-2.

Kinds of gourds, method of cultivation, use as bird houses, are the topics discussed.—T. C. S.

A Travelogue of Birds. By E. Laurence Palmer. Cornell Rural School Leaflet, XXII, No. 4, March, 1929. Pp. 1-40, Figs. 1-22.

The story of migration is told for the school children. The thirty-two outline drawings of common birds will interest teachers, and a wealth of information is tabulated concerning the same list of birds. This is another educational pamphlet which will have a wide circulation in the state which publishes it.—T. C. S.

Summer Birds of an Iowa Farm. By J. E. Guthrie. Extension Service Bulletin No. 142, Iowa State College, Ames, Iowa. February, 1928.

We missed this pamphlet at the time of its publication. The purpose of the bulletin is to disseminate information about the economic value of birds in an agricultural state. Every effort of this kind must help to awaken a wider interest in bird life. Enough evidence has by this time been gathered to convince nearly everyone that birds, on the whole, are far more useful than harmful. However, there are plenty of people who have not had a chance to examine the evidence. The bulletin contains paragraph descriptions of fifty common birds of the prairie region. Some day Iowa may want to have an unabridged treatise on its birds. —T. C. S.

There comes to our desk regularly a neat little magazine called the *Oologists' Record,* edited by Mr. K. L. Skinner. It deals especially with the nesting of

birds in all parts of the world. The price of the *Record* is $1.25 in U. S. money, but Mr. Skinner states in correspondence that he will be glad to accept one dollar from any W. O. C. member in payment for a year's subscription, and that this may be sent in the form of a "greenback." (Mr. K. L. Skinner, Brooklands Estate Office, Weybridge, England).

The *Florida Naturalist* now continues the "Florida Audubon Bulletin," and we have before us the July, 1929, number edited by R. J. Longstreet. This number contains articles by D. J. Nicholson, Charles J. Pennock, Charles J. Maynard, R. C. Hallman, S. A. Grimes, B. O. Crichlow, and W. M. Buswell. We are sorry not to have seen this magazine sooner. It is well edited, well printed. and contains numerous articles of general interest.

We are glad to examine the first three issues of a new publication called "The Wren-Tit," a four-page Bulletin of the Santa Clara Valley Audubon Society, edited by Dr. Gayle B. Pickwell, of State Teachers College, San Jose, California. In general this leaflet is similar to the *Gull*, and the *Kentucky Warbler*, both of which, we believe, have been temporarily suspended. The subscription price is twenty cents per year.

The *Indiana Audubon Bulletin* for 1928-29 has just been issued, and, like its predecessors, is full of interesting reading. This number contains articles by Dr. Amos W. Butler, S. E. Perkins III, Sidney R. Esten, and several others. The corresponding publications of Indiana, Illinois, Florida, and perhaps a few other states, have adopted a very similar size, which seems to establish a convenient standard.

The *Audubon Annual Bulletin* (of the Illinois Audubon Society) for 1928 was received in April. It contains a variety of prose and poetry. Among the articles we may mention a sketch of Louis Agassiz Fuertes, by Dr. W. H. Osgood; "The Pine Warbler's Song," by Chresswell J. Hunt; and account of the A. O. U. meeting at Charleston, by Ruthven Deane; and a very interesting observation of a pair of House Wrens in the act of destroying an entire brood of nestling Bewick's Wrens. It is planned hereafter to issue this publication as an annual bulletin supplemented by quarterly leaflets.

The Cornell Rural School Leaflet for March, 1929, is devoted to the subject of bird migration. These leaflets are written especially for the use of the schools of New York. A mass of interesting information concerning thirty-two of the commonest species is tabulated at the end of the pamphlet. Dr. E. Laurence Palmer, the Editor, is producing a most useful source book of ornithological and nature facts in this series of leaflets.

INDEX FOR VOLUME XLI, 1929

Compiled by R. D. Hissong

At this time the program of the Des Moines meeting is not complete, but we are assured of one of the best in our history. We can only mention a few of the pictorial features already promised. Mr. Stoddard's wonderful movie reels of Florida birds are on the list. These were shown two years ago at the Nashville meeting, and nothing better exists. The exciting movie pictures of the Loon in its wild habitat, as described by Mr. Gromme in this issue, will also be shown. Mr. W. F. Kubichek will show some new slides and movies of water birds. Mr. W. W. Bennett will show colored slides and some new movies, the latter including the Ruby-throated Hummingbird and the Pine Siskin. Dr. Jones and Mr. Ganier also have illustrated papers. We are also sure of other movies and lantern slide papers from authors who have not yet given us the final word. There will be numerous other papers, whether illustrated or not, to fill two days and evenings. You are invited to attend.

Mr. George Miksch Sutton is now on Southampton Island, Canada. The Broadcasting Station KDKA broadcasts to the far north twice a month. Messages for Mr. Sutton may be sent through this Station, and should be sent to KDKA, Pittsburgh, Pa., addressed to Mr. Sutton. His friends are invited to send some word to him through the long winter.

The Editor wishes a Merry Christmas and a Happy New Year to all readers of the WILSON BULLETIN. The past year has been a happy and fairly prosperous one for the BULLETIN. We are all much indebted to our Treasurer for his splendid work in keeping our funds in excellent condition, and our debts paid up. The Editor is appointed each year by the officers. He should not be appointed for a longer term, lest he cease to reflect the will of his organization. This year closes the fifth for the present Editor. Careful attention should be given this year in the selection of the Editor. The present Editor can not very much change his methods, but he can, and gladly will, give way.

Our members and readers are requested to notify us of any advance of the Starling into new territory. Mr. E. C. Hoffman is preparing a map which will be published in the March issue. You may send reports either to the Editor or to Mr. E. C. Hoffman, 740 West Superior Ave., Cleveland, Ohio.

Lest We Forget

"Nevertheless he must here record an earnest protest, futile though it may be, against the fatal facility with which the system of trinomials lends itself to sad consequences in the hands of immature and inexperienced specialists. No allusion is here intended to anything that has been done, but he must reiterate what was said before (Key, p. xxvii) respecting what may be done hereafter if more judicious conservatism than we have enjoyed of late be not brought to bear down hard upon trifling incompetents. The 'trinomial tool' is too sharp to be made a toy; and even if we do not cut own own fingers with it, we are likely to cut the throat of the whole system of naming we have reared with such care. Better throw the instrument away than use it to slice species so thin that it takes a microscope to perceive them. It may be assumed, as a safe rule of procedure, that it is useless to divide and subdivide beyond the fair average ability of ornithologists to recognize and verify the result. Named varieties of birds that require to be 'compared with the types' by holding them up slantwise in a good strong light—just as the ladies match crewels in the milliner's shop—such often exist in the cabinets or in the books of their describers, but seldom in the fields." Pages ix-x.

"The pliability and elasticity of our trinomial system of nomenclature is very great. . . . We seem to be in danger of going too far, if not too fast, in this direction. It is not to cry 'halt!'—for any advance is better than a standstill; but it is to urge prudence, caution, and circumspection, lest we be forced to recede ingloriously from an untenable position—that these words are penned, with a serious sense of their necessity."—ELLIOTT COUES, Key to North American Birds, 5th edition, page xxvii.

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