

Ernst Mayr Library, MCZ



MCZ 1FXP

The "Blue Bird"

Is now published monthly, the year 'round, with new and interesting departments, features and contests, and AT NO ADDITIONAL COST TO SUBSCRIBERS.

Official organ of The Cleveland Bird Lovers' Association.

SEND 20c FOR SAMPLE COPY

Annual Subscription \$2.00

Agents Wanted Everywhere

THE BLUE BIRD

1010 Euclid Ave., Cleveland, Ohio

The Oologist

Birds - Eggs - Nests - Taxidermy

The Oologist is the only magazine published in America devoted to the interests of those making collections of Birds, their Nests and Eggs. For thirty-seven years it has been the recognized medium for the exchange of ideas along these lines and its columns teem with advertisements of this character, solely for exchange. It is the second oldest bird journal in America and indispensable to those engaged in either the amateur or scientific study of birds.

Subscription, fifty cents per year, with a free exchange notice. Sample copy free. Address The Oologist, Lacon, Ill.

JAN 26 1924

THE WILSON BULLETIN

Official Organ of the Wilson Ornithological Club

An Illustrated Quarterly Magazine
Devoted to the Study of
Birds in the Field

Edited by Lynds Jones



Nineteen Hundred and Twenty-two
Old Series, Volume XXXIV New Series, Volume XXIX
Published by the Club at Oberlin, Ohio

THE WILSON BULLETIN



OFFICIAL ORGAN OF
The Wilson Ornithological Club and The
Nebraska Ornithologists Union

JAN 26 1924

13,814

Vol. XXXIV. No. 1

March, 1922

THE WILSON BULLETIN



OFFICIAL ORGAN OF
The Wilson Ornithological Club and The
Nebraska Ornithologists Union

Entered as Second-class Matter, July 13, 1916, at the Post Office at Oberlin, Ohio, under Act of March 3, 1879.

CONTENTS

THE ROAD-RUNNER AT FORT WORTH, TEXAS	By George Miksch Sutton	3-20
FLORIDA BURROWING OWL	By C. J. Pennock	21-28
BIRDS OF CAPE FEAR REGION		28-33
BIRD BANDING	By William I. Lyon	34-36
EDITORIAL		37
BIRD BANDING DEPARTMENT		38-41
FIELD NOTES		42-44
NOTES—HERE AND THERE		45-47
PUBLICATIONS REVIEWED		47
COMMUNICATIONS		48
THE ANNUAL MEETING		49
MEMBERSHIP ROLL		53-64

THE WILSON BULLETIN

Published quarterly, March, June, September and December, as the official organ of the Wilson Ornithological Club and the Nebraska Ornithologists' Union, and edited by Dr. Lynds Jones, assisted by a board of five members.

All articles and communications intended for publication and all books and publications for notice, should be sent to Dr. Lynds Jones, Spear Laboratory, Oberlin, Ohio.

The subscription price is \$1.50 a year, including postage, strictly in advance. Single numbers, 50 cents. Free to all members not in arrears for dues.

Subscriptions should be addressed to the Treasurer, and applications for membership to the Secretary.

The officers of the Wilson Club for the year 1921 are:

President—Dr. R. M. Strong, Loyola University, Chicago, Ill.

Vice-President—Dr. H. C. Oberholser, Washington, D. C.

Secretary—Albert F. Ganier, 2507 Ashwood Ave., Nashville, Tenn.

Treasurer—George L. Fordyce, Youngstown, Ohio.

EDITORIAL BOARD

Lynds Jones, Editor-in-Chief
Oberlin, Ohio

G. L. Fordyce, Youngstown, Ohio; A. F. Ganier, Nashville, Tenn.; T. C. Stephens, Sioux City, Iowa; Dayton Stoner, Iowa City, Iowa
M. H. Swenk, Lincoln, Neb.

Published Quarterly at Oberlin, Ohio



ADULT ROAD-RUNNER ON NEST IN STRETCHBERRY TANGLE
(*Geococcyx californianus*)

THE WILSON BULLETIN

A QUARTERLY JOURNAL OF ORNITHOLOGY

VOL. XXXIV

MARCH, 1922

NO. 1

OLD SERIES VOL. XXXIV. NEW SERIES VOL. XXIX

NOTES ON THE ROAD-RUNNER AT FORT WORTH, TEXAS *

BY GEORGE MIKSCH SUTTON

More or less extensive notes on my experiences with pet Road-runners have appeared elsewhere †; but since these only partly cover the ground of my experiences with this exceptionally interesting species, I feel it to be worth while to record some additional observations on the tame birds, as well as other notes, unpublished before, on the bird in its wild state.

My residence in Fort Worth, Tarrant County, Texas, was from July, 1911, until July, 1914. During this time one of the most interesting birds encountered, and at the same time one of the most difficult to study in its wild state, was the Road-runner (*Geococcyx californianus*). Though the bird is well known locally, in fact one of the best known birds in that region, it is not an easy bird to locate, and a number of people who volunteered to show me the "Chaparral-Cocks" failed in many attempts. And so it was some time before I had a chance to become intimately acquainted with the birds in question.

The country about Fort Worth offers a pleasing variety; it is somewhat rolling, with suggestions of bluffs in places, back from the banks of the Trinity River. Part of it is rather heavily wooded with deciduous trees and occasional bunches of live oaks. Suggestive of more arid conditions are frequent bunches of Prickly Pear Cactus which sometimes cover large areas, and Yucca, whose charming flowered spikes are among the most graceful of the prairie's features. The wooded areas are almost without exception along the streams, which are for the most part rather intermittent, due to a rather fickle climate. We were fortunate in living at the edge of the settlement for most of the time, and my notes on the wild Road-runner are

* Thanks are due Mr. W. E. C. Todd, who has kindly offered valuable suggestions and criticisms.

† Bird-Lore, Sept.-Oct. 1913, and Jan.-Feb. 1915.

limited to a region including about six square miles, stretching from the Texas Christian University Campus northeast to the borders of Forest Park on the one hand, and west to the banks of the Trinity River on the other. Included in this area are some fair-sized hills, a number of runs or "branches" (tributaries to the Trinity), and several small ponds or puddles. The region worked most was to the west of Texas Christian University, along the banks of a little stream known as "Howard's Branch" at that time, and further west, over a bold divide to the valley of a larger stream—this region known (to me at least) as the "second woods." These woods were very wild and dense in places, and sheltered such forest-loving species as the Barred Owl, Chuck-will's Widow, and Red-bellied Woodpecker. The region in and about Forest Park was largely more or less open, with large areas covered with stretch-berry tangles and small open groups of trees. I am sure there are regions about Fort Worth more ideally adapted to a study of the Road-runner, but these I did not know about, or at least did not take advantage of at the time.

My first "close-up" of a Road-runner was of a crippled bird. A friend called me, saying he had "one of those birds I had been looking for." The bird—a full adult—had been a little too confident in human nature, and for some reason had run into town, and been shot through the side with a 22-calibre bullet, so that it was naturally somewhat under the weather. I remember vividly my amazement, when I first held the weird-looking bird in my hands, at its light weight. It seemed to be all feathers and sinew, and the tibiae seemed to be heavier than the breast. This individual was very savage, and bit at my hand viciously. Though he was utterly unable to run on account of an injured femur, he was very vivacious, and would surely have been able to capture food enough to live on, had he been freed. But I kept him for study. It must be borne in mind that I knew absolutely nothing of Road-runner nature when I acknowledge that with all good intent to both parties I put my new captive in the same cage with a Painted Bunting! "Why not?" thought I, "a Road-runner is really a Cuckoo, and perfectly harmless." As a result I came out a few seconds later to find the Bunting in the Road-runner's mouth, and his feathers flying. I rescued the little victim; but the mauling and beating he must have received proved fatal in a short time. Thus I learned, with attendant regrets, that the Road-runner is a carni-

vore. Since then I have wondered how I ever could have considered him anything else, for I have found him to be the most rapacious and ever hungry of all my bird acquaintances.

From this time on I kept constant lookout for this species. It is apparently very keen of sight, and must also have very acute hearing, for rarely did I ever succeed in surprising one; more often it turned out that I was discovered first. Usually I succeeded merely in catching a glimpse of a fleet, graceful, slender creature gliding noiselessly away, perhaps never to be encountered again that day, even after prolonged search. There was one point of a hill where I frequently observed one, and where there may have been a nest. It was here that I had the one experience of actually *flushing* a Road-runner. Apparently there was no escape for him, save flight. With a mighty leap he threw himself several feet into the air, and without a flap sailed into the valley below on stiffly set little wings. The primaries curved up visibly during this unique act, and one could easily tell that he was resorting to methods not commonly used. I endeavored to find some reason for this bird's flying here, but could not; though it was apparently more difficult for a Road-runner to run down a rough hillside than to progress over level stretches. I often found the birds running stealthily along a beaten path, or at the edge of a road; and individuals were often bold in hunting in the most open fields and prairies, though they always kept at a safe distance. My closest glimpses of wild Road-runners were always secured on or near the nest; but I once had the rare pleasure of seeing a bird steal down to a quiet woodland pool, take a long drink, and steal away again — as quietly as the shadows among which he moved. Several times have I heard the characteristic rattling noise, made by rolling the mandibles sharply together, when no bird was ever seen, though seemingly the noise was close at hand. This noise may be very sharp and alarming in quality—and is learned very early in life, since I have often heard young in the nest rolling their vindictive anathemas at the intruder. This performance in the immature birds is, of course, softer in quality, due to the unhardened condition of the mandibles. Another note given by the adult bird is a coarse and rather reptilian grunt, with a suggestion of a hissing squeal, which is apparently indicative of anger, since I have heard it particularly when I was at the nest. I have yet to hear the chicken-like noises referred to by various authors; but the adult birds occasionally make the

insect-like buzzing noise of the immature, accompanied by actions similar to those of the young when begging for food. My first experience with the rattling note of this bird was at the first nest I discovered. After I had forced my way through a dense tangle of vines, and reached the loose pile of twigs that composed the nest, I was almost shocked at the fierce visage of the brooding bird, and the sharp incisive rattle. Though she left the nest at once, and quietly, she gave me the impression of having some sinister purpose in doing so.

I do not know whether both parent birds incubate, as the sexes are quite indistinguishable in the field, and I never tagged any birds at the time. However, it was often possible to come very near the sitting bird, and on one occasion I very nearly touched the tail of a bird brooding in a thicket of stretchberries.

Many old nests were discovered before finding one in use. Invariably they were placed some feet from the ground, nearly always in trees, and with an apparent preference for a horizontal bough or crotch, true to Cuckoo custom. I could not see that they favored any special species of tree, and nests were often placed in rather open situations, where they were not especially difficult to see or approach. The first occupied nest I found was built about seven feet from the ground in the midst of an almost impenetrable thicket growing at the edge of the "second woods." Here from a distance I saw the iridescent tail of an incubating bird sticking up, parallel with and in front of one of the limbs upon which the nest was built. The bird was eyeing me all the time, and when I came too close she (?) raised her head, put up her crest and left the nest in great haste, though with wonderful poise and grace. In the nest were ten eggs, all apparently somewhat incubated, or at least more or less clouded and dirty. This nest was situated in a crotch, and was not at all symmetrical, being about eighteen inches one way, and only eleven inches the other, and a large part of the foundation material bulged out in a careless and overbalanced way. The material used was largely twigs, and the lining of the nest looked as though it had dropped in by chance from the surrounding vegetation rather than placed there by the parent birds. This nest was found on April 13, 1913. The next day two birds were hatched, and the following day a third, until on the 17th there were eight birds, and I presume, two eggs. In my former account of this nesting* I stated that there were two

* Bird-Lore, 1913—Sept.-Oct.

eggs, but this may have been, and probably was, surmise, since I distinctly noted that I did not remove all the young birds from the nest, and I cannot say whether the eggs were actually there, covered by the bodies of the young birds, or had been destroyed by rolling out of the nest. What a sight this nestful of young birds was: smooth, and dark of skin, with long white hairs covering their bodies, and an indefinable reptilian look about them! Those of the lot that were hungriest tried to swallow my finger; others merely looked up with that innocent, contented look which means that they have just been fed. The cry made by the young bird is rather loud and incessant, and reminds one of a vast throng of winged insects humming inside the bird. When next I visited this nest—about a week later—but two birds remained, and one of these I took home to raise. He proved an interesting and delightful pet.

The second nest of these birds I found in a tangle near Howard's Branch. This nest was about six feet up, and was much more neatly constructed than Nest 1. It has occurred to me that the first nest may have been an old one re-used, though I know of no well-established such case. The parent bird in the case of this nest was quite wary, and I rarely ever saw her. Once I discovered that she left the nest by one leap, without the unfolding of her wings, and sped away along the near-at-hand creek bottom. Once, and only once, I saw her creep stealthily back to the nest with a large striped race-runner lizard (*Cnemidophorus sexlineatus*) in her bill. I never saw the two parent birds together. Some accident, such as human interference possibly ruined this nest, with all its interesting prospects, and I saw no more of the birds as far as I know, though this same pair may have built nests found later.

The next nest I discovered on April 27 in a dense, but closely confined tangle on the very banks of Howard's branch, on the horizontal main trunk of a fallen, dead hackberry tree. This nest had five young birds, rather well along in development. These birds all left the nest without mishap; and it is remarkable that I never knowingly saw one of these young birds again through the season. Another new nest, which was unused, I found on a well-wooded, rather steep bank about a half mile further up the stream, and but a very short distance from the hole of a Burrowing Owl.

I should have been scientific enough to have observed the actions of these birds about their nests that season by patient



NESTLING ROAD-RUNNER BEGGING FOR FOOD
IMMATURE ROAD-RUNNER WITH HORNED LIZARD

watching, hour by hour, but my time was actually so taken up with the feeding of the pet bird, and also with school work, that this phase of the study was left quite undone. However, I had the good fortune to observe one or two Road-runners each day regularly for some time, in the wild state, and of course the tame one was the source of a good deal of interest. Aside from being a confiding and fearless companion, the bird was extraordinarily amusing, and one could never know from one hour to the next what to expect. This bird has been discussed more or less at length in other published notes, and I will not tax the reader with further discussion of it here as an individual at least, though there are many points well worth discussing. These will be taken up in speaking of the two birds secured the following year.

After the period of nesting which according to my observations seems to end normally about the last of June, the birds are less in evidence than ever. It is extremely doubtful if they migrate at all, even for very short distances (comparatively), as it would be absolutely impossible for them to fly anywhere; and yet my notes show a marked decrease in the number of individuals observed during the winter months. Of course, my captive bird seemed to suffer no great hardship, since he was regularly attended, and for the most part had plenty to eat, but the apparent absence of the wild birds through the winter could not but make me wonder what took place. Of course occasional individuals were seen from time to time throughout the year but such is sometimes the case with Meadow-larks, and other species in the north — birds which are regularly migrants. This point, it seems to me, is open for settlement.

At any rate, in April of 1914 the birds once more became evident and even more so than in the previous year, perhaps partly because I was better acquainted with their habits. On April 29, after searching the surrounding territory for about two weeks, I found a nest containing five young and one egg in a small clump of trees which I had passed regularly for several days. The nest was a well-made one for this species, and was placed in a thick tangle of wild grape vines, above a brush-pile thickly overgrown with weeds, grass, and a patch of cactus. From this nest I took the two oldest birds, intent upon raising them, since I had succeeded so well with last year's bird. One of them looked a trifle sick, and refused to squeal for food, so I naturally wondered what was the matter. The problem was solved, how-

ever, when I found his neck to be literally packed with a striped race-runner, whose broken off tail was now forming part of the lining of the nest. Thanks to the assistance of kind friends, I was able that season to raise the two young birds, attend school, and also make observations on Road-runners in the field—which, taken altogether was rather a full program.

On May 2 I observed two birds at a distance which may have been going through courtship antics, though I shall possibly never be sure of this. At any rate, early in the morning, just as the sun was bringing things into sharp contrast, golden yellow, against deep shadows, I came upon an adult Road-runner in the very top of a dead tree, a perch I had never before seen used. His wings were spread, and he may have been preening and taking a sun bath, but circumstances have led me to think otherwise. Now and then he bowed, and affected a close examination of his feet, only to raise his head again, drop his wings, lift them again, and spread his tail. I was so interested in him that I forgot myself, approached a bit too close, and before I knew it was discovered. He looked at me a brief instant, and then, without wings spread, leaped from the dead branch to the next lower one, whence on outstretched wings he sailed to the ground. I rushed up to where he had been, and was surprised to see two birds scuffling rather noisily off through the vines, and up to the higher portions of the hill. I firmly believe that I missed what would have been a rare sight—courtship antics of the male Road-runner before the female. And now I have never seen them! The sun bath is a common practice with this bird, however, if one may judge from their actions in confinement. With the young birds scarcely a day passed that they did not open their wings, lift their scapulars, and give their backs a sun bath. The attitude is rather ridiculous.

Upon going again to the nest from which I had taken the oldest young, I found the three remaining birds in good condition, and the egg still unhatched. From a nearby vantage-ground I patiently waited for over two hours for the coming of the adult birds, and though I am sure that one or both returned to the vicinity, I never saw either, and fearing that the welfare of the young birds might be endangered, I retired quickly. Shortly thereafter I returned to find one adult stealing rapidly up to the nest along a horizontal branch. Upon seeing me again it swallowed what it had in its mouth, and dashed away. The young birds were certainly hungry when I

went up to them and they looked as though they would readily have devoured me had they been large enough to do so. Eventually I hit upon a plan whereby I was enabled to watch these birds, though at considerable discomfort to myself. By striking the creek about half a mile above the nest, I crept down its banks to a little shaded bend, where from an overhanging bank I could look up through the brush to the nest, not very far distant. The Road-runner in repose is a different creature from what one would imagine from the fleeting glimpse one gets of it on the run. The bird is dignified, and the face takes on an almost meditative expression, especially when it is directly at the nest. Upon one occasion I was delighted to see one of the adults capture one of the brown scaled swifts, (*Sceloporus*) which, as I attest, are very difficult indeed to catch. The chase up the trunk of the tree was exciting and speedy. But the capture of the lizard, actually in mid-air, where it had leaped rather than face its pursuer, was almost thrilling. An observer now and then gets some such dramatic glimpse if he be patient enough. These scaly lizards are, of course, always swallowed whole, and perforce head first. But where the birds secured all the food for their young remains a mystery, and it will always remain a mystery how they accomplish so much without being observed more. Never, while I was watching, did both birds come to the nest at once, though visits were quite frequent most of the time, and with widely irregular intervals between. The large excrements from the young birds, which were discharged after each feeding, were removed regularly by the adult birds, in the bill. This excrement was covered with a rather firm jelly-like substance which kept the mass intact, and allowed the parent to take it some distance in the mandibles without its breaking. There was no sign of any pellet composed of fur, feathers, scales or bones disgorged, and all such substances must have been digested by the powerful gastric juices of the young birds. Possibly this matter will bear a good deal of further investigation, however, since a very large amount of utter waste matter is taken with each animal swallowed whole. It will always be a source of regret that I did not see the young in the family under discussion as they were leaving the nest; and particularly interesting would it be to watch their first lessons in capturing prey, but since I have assumed the role of a parent Road-runner to a degree, I know a little about the intelligence of the average baby "Ground Cuckoo."

On May 6 I found yet another nest, with a strange company of occupants: one bird, which left the nest the next day; one very young bird, possibly hatched the day before; and two infertile eggs. Here is another case where I might have discovered something, had I had the time. How interesting it would have been to see one set of parents attending the youth as he left the nest, and another set of parents attending the baby left in the nest! For I firmly believe, that if more than one pair of Road-runners ever use the same nest, such was the case here. During the week following the finding of this nest I saw many adult Road-runners, but my time was largely taken up with the young birds at home, now fast growing into adults, and so interesting and so eternally hungry that it was only natural that they claimed major attention.

On May 31 I found another nest with three fresh eggs (my latest date for fresh eggs) in a stretchberry vine growing about a dead tree at the brow of a small bluff, less than a block from a small creek. This nest was not supported by any limb of a tree, being loosely swung — if such could be — in the tangle of vines. The nest and sitting bird were quite easy to see from the creek, and it is surprising that someone had not molested her. I was able to approach her closely, and the accompanying sketch will give some idea of the interesting face that looked out at me through the lattice-work of the thorny vines. That this nest contained but three eggs as a complete set caused me to wonder considerably, especially when I remembered the huge set in my first nest. However, this last set of eggs probably represented the set of only one bird, and it is also possible that it was the second and therefore smaller set for the season. This set and nest I collected for I feared the open situation would only invite its destruction from other sources.

A short history of the development of two young birds secured on April 29 will not be out of place here, though it repeats to a certain degree former published notes. The nestling bird, be it ever so young, has an unmistakable cuckoo-like expression in its face, though its eyes, upon which a good portion of the facial expression depends, are quite different from those of the adult, being of a deep dull brown with a bluish pupil, as in the case of the young of many other species. The eyelashes are small, in fact scarcely apparent. Its whole external appearance is very sombre, and rather dirty-looking, as though the creature had been bathed in some unrefined oil, which had not

been properly administered. The white hairs, each of which marks a coming feather, all lie in rows and look as if they had been rudely combed into place. The rather large, pale blue-gray feet are strong in the toes, but very weak at the heel, so that the birds cling to the fingers or the twigs of their nest with some power, but are quite unable to rise. Whenever there were many young birds in the nest they presented a peculiarly scrambled appearance, due, I believe, to the constant disturbance at feeding time more than to restlessness, for they usually lie quite still. By May 1 feathers were appearing rapidly on my young birds, first on the top of the head, back, and wings, and then on the belly, tail, and throat. Once the blood-quills had started to burst, development was very rapid. On May 4 the birds were quite well feathered, the tails being one and one-half inches long, and they were able to walk about unsteadily. It is at this period, or a little before, that the young leave the nest, though there must be innumerable dangers for the rather weak-legged creatures. Several times I have come across young birds able to run well, but still in trees, which leads me to believe that the young may, like young Green Herons, spend a portion of their early active life climbing about from branch to branch. This opinion seems the more plausible when it is known that my notes show no record of a young Road-runner encountered on the ground, though they certainly spend some of their time there, as they gradually become accustomed to it. On May 5th I took careful note of the young birds' plumage. The white hair-tips of the feathers had left the flanks, tail, primaries, and most of the scapulars, in succession. These tips apparently leave the region of the head last of all, and a well developed bird, with tail seven and one-half inches long, taken on May 26 (10395, Col. Carnegie Mus.) still has the little white tips on a large percentage of the crest feathers, though these tips in this case are much worn and are disappearing rapidly. My notes, written on May 5, state that the tibiae were quite bare of feathers, but since none of my sketches show this to be the case, I am inclined to doubt the accuracy of the written observation; but the tibiae are not well feathered in the younger birds. When the immature bird's tail becomes fairly long the bird assumes almost every aspect and habit of the adult. Strength comes to the legs; the rolling of the mandibles takes on the sharp, clacking quality; the eyes become brilliant and more serpentine than ever; and the wings are able to be used somewhat in sailing

from a perch to the ground. By this time the bird is able to run rapidly, though not with the grace and certainty of the full adult. In July, 1913, while hunting lizards in a small group of trees near Forest Park, I was surprised to find two young Road-runners, at about this stage of development, resting in the lower branches of a hackberry tree. They saw me, but were not much frightened, and having sailed to the ground started to run down the valley at a temptingly loitering gait. I, with my collecting box in my hand, started the chase. The birds kept close together, and increased their speed, just as I did. They ran about two hundred yards, sailed across a small brook, which I waded, ran on another space, and probably would have got away, had they not suddenly had to climb the steep grade of a car-track, where, after several futile attempts, I finally captured both of them and took them home. The birds were exceedingly wild when put in the cage, and dashed themselves against the wires frantically. During the night, or possibly early next morning, they both got away, probably through the rather coarse meshes of the wire. They were not to my knowledge ever seen again. By the recital of this apparently easy capture I do not wish to give the impression that one may run down Road-runners when he will! Very many utter failures to catch them I have left untold!

Changes come over the fleshy parts also in the development of the young bird, notably in the color of the mouth, and of the bare portion around and back of the eyes. The mouth of the nestling is quite brilliant, even somewhat poisonous-looking, being spotted and mottled in an odd design with reddish and dusky. These spots lose their brilliance of color as the bird ages, until in the adult there are only very faint indications of them remaining. The bare space around the eyes, however, becomes gradually brighter as the bird develops, from the dull blackish of the nestling, through the bluish of the fledgling, to the brilliant blue and orange of the adult. The color of the feet remains approximately the same, though there is gradual upturning of the outermost bone of the outer hind toe, which takes place shortly after the bird leaves the nest. This peculiar circumstance I cannot in any way account for.

By May 16 the birds were small editions of the adults, and were ever active and hungry. From now on their hunting instincts came to the fore rapidly, and frequently one would be seen sneaking along stealthily behind a stone wall, or through

the weeds, stalking grasshoppers, their most formidable quarry thus far. I should judge, from the quantities of grasshoppers I saw the birds eat, that these insects form a large part of the food of the adult in the wild state in this part of the State of Texas. They ate them literally from morning to night, and even after swallowing such food as mice and lizards till they should have been full, there was apparently always room for one more grasshopper. The birds first captured the nymph grasshoppers and the large wingless forms (*Tenaocerus*) which were very common in the yard, and especially in the road in front of the house. From the very first the clicking noise of a large, green cave cricket (*Stipator*) attracted the attention of the birds, and whenever they heard the noise they at once lowered their heads, and sneaked toward it. It was some time before they succeeded in capturing this variety, and a still longer time till they caught the large, showy, yellow- and coral-winged fellows (*Pseudotrimerotropis* and *Pardalophora*) along the road. Usually the small grasshoppers were merely picked up and swallowed, without so much as a second pinch from the mandibles, but the larger long-winged varieties were beaten on a stone or on the ground considerably before being swallowed. It was interesting to watch them stalking the big flyers. Having watched a grasshopper settle on the ground after a flight, the bird sneaked up usually from the rear, and rushing in with wings and tail spread, startled the grasshopper, which was thereupon captured by the bird in the air, sometimes as much as four or five feet from the ground. I have seen the birds pass by many perfectly obvious wingless grasshoppers, intent upon the larger flying ones, apparently for the pure fun of catching them; and it is no wonder, in a way, for the bird is very graceful about it. A widely ranging species of black-winged grasshopper (*Dissosteira carolina*), which sometimes made a rather loud noise in its courtship flight, was always difficult to capture for some reason, and many of them got away entirely. Sometimes a big grasshopper, frightened by the bird, flew so high that the Road-runner refused to leap for him, in which case the bird ran nimbly along under him, merely waiting for him to descend. Thus have I seen a Road-runner pursue a grasshopper for a hundred yards or more. How different from the tactics of a hawk; in fact quite the reverse.

The teeming prairies offered abundant food for the pet birds, which spent most of the day running at large about the house,

and by the time they were a month old they were capturing really worthy quarry, such as the swift striped race-runners, horned-lizards, or "Horny Frogs" (*Phrynosoma cornutum*), and tarantula spiders. Once one of them chased a striped lizard a great distance only to have the intended victim dive into a hole. When I came up the bird was standing behind a bull-nettle, watching that hole like a hawk, and panting almost audibly. I felt so sorry for the unsuccessful bird that I began digging a little about the hole, during which process the intelligent bird leaped about with all the enthusiasm of a fox-terrier, rushing in for an instant, and then begging me for food by scuttling along the ground with fluttering wings, and urgent hissing cries, just as baby Road-runners always do. When finally the lizard was forced out, he was captured in an instant, beat upon a rock until quiet, and then swallowed whole. As the Road-runner and I went back to the house he had such a dignified, self-satisfied air, that it was really humorous. The smaller gray lizards (*Callisaurus draconoides*), were usually captured more easily, unless they reached a hole; but the large scaled swifts often had the best of the situation, and got away. I remember especially one old lizard of this variety which lived in a large wood-pile. He could be found out sunning himself almost any time, and the Road-runners, though they made a hundred attempts to get him, were never, so far as I know, successful. He was always too quick, and dived between the logs just as his pursuer dashed past. It was often, however, a very close call for the lizard.

One day I was surprised that one of the birds had stopped behind me, and refused to come further. He seemed interested in something on the ground near him, so I returned and found him standing near a Grasshopper Sparrow, lying on its back and panting, apparently unable to move. It is still a question whether this bird was wounded by the Road-runner or not, but it is noteworthy that the Road-runner had not eaten his victim, and also that when I picked up the sparrow, the Road-runner did not beg for it. Occasionally, however, the birds would make a rush for some bird on the ground, though while in Texas I never saw them actually capture one. Also, though we were at many nests of ground birds, they never ate any eggs. They ate young English Sparrows one day which were washed out of an eave-pipe, and still alive; and, of course, when fed by me, they never refused a bird.

Near our home there were not a great many snakes, though

one was occasionally captured by the birds. One rather large one, a little under three feet long, was harassed and pecked at for over fifteen minutes, before becoming so nearly dead that he could be swallowed. The incidents following this were amusing. Naturally both Road-runners could not begin swallowing the same snake, head foremost. There was a long period of fighting during which time both birds swallowed the snake part way. Finally, strange to say, they left the snake in apparent disgust, and went after grasshoppers. Later in the evening, I cut the snake in two. One bird, with the tail-end, got his portion down pretty well, and went about for some time with a snake tail protruding from his mouth. The other one, after several attempts to swallow the snake, left it, and because I was too lazy to hunt further food, I cut it up, and fed part of it to a Sparrow Hawk, part to two Screech Owls, and the rest to the Road-runner. I never had the opportunity to test the truth of the tales concerning this bird in its attacks on the Rattlesnake. The only time we knowingly had a rattlesnake near the birds were unable to find him in the mass of wild gourd vines. Probably the snake went into some hole.

Seemingly painful but apparently easy enough, was the swallowing of horned lizards. These are not difficult to capture, and though they are hard to kill, when once discovered, they never get away. Very small ones, the same as young grasshoppers, are merely nibbled at and swallowed alive; older ones are beaten until quite numb, and the tough adults are often hit upon a stone a long time before being swallowed. These lizards always flattened out, raised up on their legs, and swayed backward and forward in a threatening attitude when confronted by their enemy, but the Road-runners never paid any attention. Once a horned frog was swallowed in a manner unsatisfactory to the bird, and, with a violent toss of the bird's head, thrown up. It was still quite alive; perhaps the bird had felt it moving. In a short time he was swallowed again, however, and this time he remained. Similarly, a crippled English Sparrow which was swallowed alive was tossed up, thoroughly killed and then swallowed again in a short time. Again, a young chick, dead presumably from some disease, was fed to one of the birds which was still too young to run about much. Though the chick went down fairly easily, the Road-runner was somehow dissatisfied with it, tossed it up, and did not swallow it again. These incidents tend to show the following facts or probabilities:

First, that though the bird often swallows food alive, it is in such state uncomfortable. Second, that though a spiny horned frog is swallowed head first, he may nevertheless be coughed up in such a manner as not to hurt the lining of the throat. Third, in the case of the chick, while the Road-runner was still quite undeveloped, it may be that the sense of choosing proper food is located in the crop or gullet, rather than in the mandibles, as it undoubtedly is in the older birds, if indeed, the young have power of choosing their food under abnormal circumstances.

Rarely did I ever see a Road-runner refuse to eat anything in the insect line. Whenever I overturned a flat rock, everything in sight was eaten, save the ants, which I believe were passed by on account of their small size. Scorpions, after their tails and bodies had been thoroughly bitten, were swallowed with a peculiar hollow gulp, as though the bird were merely swallowing air. Centipedes were always thoroughly killed before being swallowed, and tarantula spiders had all the legs snipped off before the body went down. Snails were often eaten, shells and all, though the shell was sometimes crushed. These snails were often very common on the prairie vegetation, and were ordinarily passed by, on account of abundance of other food. Never did I see a Road-runner eat cactus fruit, or in fact any vegetable matter save once some bread soaked in milk, and once a piece of grass—swallowed apparently in play. Wasps, however, were not sought at all, nor were bees. Though one was eaten when fed to the bird, it was not swallowed until after a prolonged beating, mauling, and inspection.

One day one of the birds captured a cotton rat (*Sigmodon*), as it ran between some stones in a cactus clump. The rat, probably bitten severely, was tossed some feet by one bird, picked up by the other bird and whacked with a sullen thud on the ground, before he knew what had happened. Every action of the birds was so quick that there was no time for escape. This rat, when finally killed, was swallowed entire by the smaller bird, and the hind feet and tail stuck out of the bird's mouth for some time, before finally disappearing. At such a time the bird assumed a very erect and stilted attitude, no doubt to maintain its balance.

The fact that these birds occasionally indulged in orgies of mud eating has caused considerable speculation. Mrs. Alice Hall Walters (*Bird-Lore*, Vol. XVII, No. 1, p. 61) states that this may be due to the bird's need for gravel, but I am inclined to doubt this, since, as she states, it is not customary for carni-

vorous birds to need gravel in their digestive processes. It seems to me more likely that the mud had an attractive odor, possibly of snakes and lizards, since near this particular puddle of water many reptiles of various sorts had been killed to feed the birds. I realize that this opinion involves a discussion of the birds' olfactory powers, and probably I should not offer it at all; but it is the safest venture I can make at present.

The young birds did not apparently often drink water, but a large amount was consumed at each drinking. During the act the bill was held parallel with the surface of the water, and was opened only slightly. The throat and breast feathers were nearly always dampened because the bird stooped so low. The large swallows of water were visible going down the neck as in the familiar barn-yard cases of the horse and cow. Dust baths were frequent; baths in water, however, were not. During slight showers the birds usually sought no shelter whatsoever, but during the heaviest of the shower lifted their wings and straightened the body out so that the water ran off easily. The plumage of the bird (especially of the young) is not at all oily, and the birds often become soaking wet. Immature birds spent part of the hottest portions of the day lying about in the shade, during which time they did not eat much. Then, apparently without warning, they were apt to saunter out to the road, begin capturing grasshoppers in a leisurely fashion, and possibly return shortly for another rest.

Adults in a wild state roosted high up in wild grape vines and tangles of other vegetation. It would be interesting to know whether they roost in similar places in the desert, for if such is the case large numbers might be found roosting together. From my experience, however, I should say the birds never roost in flocks. The young birds always selected the highest point possible for roosting in their cage, and stuck their heads under their scapulars as is the case with most birds, I believe. On rare occasions the birds became causelessly frantic, and dashed about from one side of the cage to the floor, merely touching their feet, and bounding backward and forward as though crazy. On such occasions I let them out quickly. They always stepped out in a gingerly fashion, walked to the back porch stone steps, and lay down in a cool spot. If they needed exercise why did they not now take their chance?

If, for any reason, a bird was not hungry, and was offered food, his actions were always laughable. He shook his head

slowly as though saying, "Much as I'd like to, I dare not," accompanied by a half-hearted beating of the wings, and a penitent creeping about on the ground, like a whipped dog. Such occasions were rare, however, for the birds were nearly always hungry.

Being very keen of sight, they were able to pick out the most distant vultures sailing in the sky, and I was amused one day at their concern over several bunches of milkweed-down floating by. The birds were distrustful of these new birds of prey, and seemingly could not judge how far away they were.

But of all the characteristics of the Road-runner, famed through every region where the bird abounds, nothing so excites comment as his wonderful ability to run. The immature bird has an easy loping gait when passing through grass or weeds; when on the road it is much more regular, and the body swings from side to side a trifle. When the bird attains its greatest speed the tail is much lowered, and the bird seems rather to be treading air than pushing its body along, for the feet seem to be always ahead of the body of the runner. I have seen a dog of the neighborhood chase one of my Road-runners; and apparently both enjoyed the sport. There was nothing particularly strained about the Road-runner's actions, and he seemed to be keeping merely a safe distance. Occasionally he would dive under a large weed, to mislead the dog, or perhaps dash under the porch through a hole the dog could not enter.

One bird (apparently an individual trait) was rather pugnacious. My small sister kicked at him one day, while wearing a pair of brown sandals. Whenever after that she wore these shoes, the bird flew at her in a rage, pecked at the sandals savagely, and occasionally jumped on her person, and pulled at parts of her clothing or the lobe of her ear, so that she learned to respect and rather hold at a distance the formidable pet.

On the whole, what I have learned of this interesting species has so whetted my desire to know it more thoroughly that I look forward eagerly to further acquaintance with it in regions similar and otherwise.

FLORIDA BURROWING OWL
(*Scotyto floridana floridana*, Ridgway)

C. J. PENNOCK
KENNETT SQUARE, PA.

Never having been in Southern Florida until the past winter, 1921-22, I was unacquainted with the prairie region of that section of the state. During a recent stay at Punta Gorda at the head of the great sheet of salt water Charlotte Harbor, with headquarters there from February 4th to April 18th, 1921, several excursions were made to two of these low, treeless plains. The nearest is north-east about eight miles; the other 20 miles east. Both tracts are of small area; the former containing perhaps three square miles of irregular contour and traversed by at least two public roads; the other is three or four miles long and varies from one-half to two miles or more in width and has a railroad and a much traveled highway traversing it for most of its length. The soil is quite sandy and except for occasional tracts of a harsh, fine grass little vegetation is sustained except the abundant crop of Scrub Palmetto (*Sabal serrulata*). So far as the public roads may have influence on the presence of these interesting birds it was found that most of the birds under observation seemed to prefer a close proximity thereto. No explanation is evident. The roads were not appreciably higher than the surrounding district, all of which was lower than the adjacent timbered tracts and by the testimony of numerous residents, during the rainy season — June, July, and August — these "prairies" are subject to being, and usually are, flooded for a considerable time, so that the Owls must rear their young before the rains prevail. In this connection it may be stated that a small and rather scattered colony of the Owls was discovered in an open tract that had formerly been timbered but from which the trees had been cut a good many years and barring a very few scattered, stunted, pine saplings no growth appeared higher than the low scrub Palmetto so abundant all over this portion of Florida.

It is the general opinion among the limited number of resident people who are at all acquainted with this owl that they either *hibernate* or move away somewhere during the winter season. The only evidence found bearing on the point was fresh excavating of earth in February and early March which was suggested as following their period of rest and that during

the rainy season the owls could not maintain themselves where the young are reared. That some new burrows are made in the Spring I have positive evidence but this would naturally follow any increase in the population of a colony. Fresh digging at an old burrow might indicate house-cleaning which I believe was usually the case but I was not on hand early enough in the season to determine as to their place of residence in the early winter nor where they put up during the rainy season. It is declared by a few people that Steotyto does not excavate a home for himself but makes use of the burrow of the so-called Gopher (*Testudo carolina*), the rather common highland Tortoise. This is without foundation in fact so far as my experience went. The two animals do not frequent the same sort of environment and the character and form of their burrows differ materially. Of course the "Happy Family" myth is sometimes advanced and warnings given of the probable presence of rattlesnakes as well as of the turtles. Needless to state neither of these co-partners was ever seen at or in the same sort of surroundings as were sought by the owls.

The most striking characteristic of these birds was extreme, gentle fearlessness. With the first pair under intimate inspection the bird believed to be the female usually permitted my approach within four paces. Not infrequently I walked rapidly within five or six steps of the entrance to the burrow, where this bird sat staring at me with her large clear-yellow rings, then by slowly moving I could frequently stand within six feet of the bird and carry on a somewhat one-sided conversation, but which at times was responded to with a rather musical, throaty, rippling trill that resembled the mellow "cuh - cuh - cuh - cuh" spring call of the Flicker when heard at a considerable distance. The mandibles were not seen to move when this call was made but a flutter of the feathers of the throat was visible. The mate of this friendly bird would fly off when I came within about 30 yards of the mound whereon the pair were usually to be found. In most of the burrows observed both birds were seen at the entrance, and generally within a foot or two of each other.

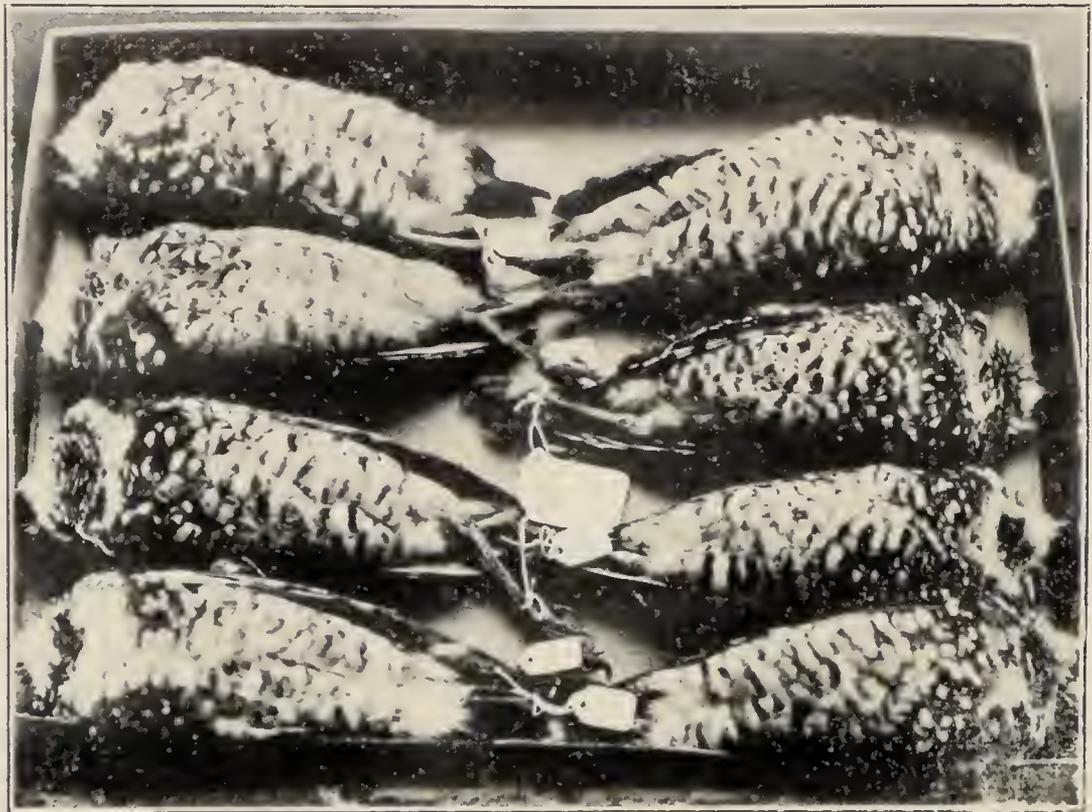
The first birds were seen February 19th and at their burrow no fresh earth had then been thrown out. On February 23rd a colony of six or eight pairs was visited and here was evidence of spring housecleaning. The old mounds were well packed down by rains and fresh earth thrown out. At this time and

until I suspected egg-laying had commenced nearly all of the birds continued to be gentle and permitted of rather close approach. After about the 12th of March both birds of the pairs became more wild, flying when the intruder came within 30 to 40 yards of where they were standing.

Not nearly all of the birds when closely approached would extend their quaint courtesy made by a sudden bending of the tarsal joints, but with some individuals this was repeated frequently — at times several bows in a minute, more often once or twice only or singly with considerable intervals. When alarmed by our approach, as they stood by the burrows, with a single exception they sought safety by flight. In the one instance referred to the male(?) had flown earlier and on coming within five or six paces the female(?) retired into the burrow but reappeared within two or three minutes and this performance was repeated three or four times and finally she remained outside the burrow. One bird shot on the mound fell or struggled into the burrow and was found dead within arms-length of the entrance. The only other instance of a bird being found in a burrow was discovered in digging out for eggs when an old bird was trapped at the nest cavity, where there were three chicks but a few hours old and two eggs pipped for hatching. The flight of the birds is of a part with their other quaint and unusual manners: a rapid get-away, barely skimming the ground or low vegetation—scrub Palmetto frequently, rarely any bushes—no rapid wing-beats after the start but as if timed to slow music for a short distance, 15, 20, or 30 yards perhaps, then an abrupt rise of 8 to 10 or 12 feet followed by a gentle coasting downward to gain the former low flight level and if the course is protracted this straightaway — rise — coasting may be repeated several times and at times, rarely I think, the mellow throat chuckle may be heard while the bird is in flight. Frequently the more gentle bird of a pair, and there was usually a decided difference, would make a short flight—30 to 50 yards—when first alarmed and soon return in close proximity to the nest and the intruder. This occurred before we suspected them of having eggs as well as when on later visits the burrow was dug out and eggs were found.

The pair under most constant observation were located in an open lot about 30 yards from a used street and two dwellings were within less than 200 yards of the burrow. My visits to this pair were at various hours of the day from a half hour before

sunrise to early twilight and probably ten calls were made. Both birds were at or near the entrance on every occasion. The one bird—male (?)—always flew by the time we were within 30 or 40 yards of them and never returned during the call and always the mate remained until we came within five or six yards; then if she (?) was in amiable mood she would greet the caller with a cheery twitter or a winsome courtesy and with exceeding modesty turn her head aside, not with the appearance of fear, for the next moment she would gaze placidly



SKINS OF BURROWING OWL

directly at the caller without moving foot or wing. Repeatedly I have stood within ten feet of her for five minutes and on one visit with Mrs. Pennock we talked of and to the bird and walked about her at a distance not exceeding twelve feet for at least ten minutes. At another time I took twelve snap-shots of her in glaring mid-day sunlight and none was at a distance exceeding nine feet while at times the camera was held within six feet of the standing bird. If she took flight it was for only a few yards and on walking back of her she returned at once to the entrance mound and except for one time earlier referred to she never retreated to the burrow. In moving a short distance and but little alarmed this bird would sometimes *walk*, at other times a few

hops were resorted to or a combination *flying-hop* would sometimes hasten the departure when but a short distance was sought.

On my second visit to this pair a slender green snake, recently killed, was found lying extended on the inclined entrance to the burrow with neck and head crushed. This was the only evidence I ever detected of any food other than beetles being eaten by these owls.

It may be worth recording that the feathers of two birds taken were strongly scented with the odor of skunk and the little "Civet Cat" Spotted Skunk (*Spilogale putorius*) is said to be numerous throughout the region.

Their stomachs were found to be filled with the softer parts of four beetles and the wings were to be seen discarded about the entrance to the burrows and *no pellets* were ever found. I was not able to determine whether or not they fed at night. The birds have keen vision in the brightest sunlight and a "wild" bird when once alarmed will sometimes take flight when approached at a distance of 40 or 50 yards.

The nesting sites as stated were always in the open—entirely removed from any trees or bushes, grass and palmetto roots serving as an aid to prevent the very sandy soil from caving in on the burrows. The burrows descended quickly in an abrupt incline, usually from the summit of the mound which in most instances was six to eight inches higher than the surrounding ground and frequently two feet or more across the base. The opening was rather oval in form, seven to eight inches in the perpendicular and four to five inches across contracting towards the lower end of the incline and becoming more circular with a diameter of from four to five inches, the exact size being difficult to determine on account of the crumbling nature of the soil. From entrance to nesting chamber the burrows we excavated varied in length from five and one-half to nine feet and the length was usually carried in a rather direct line but two at least had decided angles in their courses while another had two turns, one of which was almost a right angle.

The depth of a burrow was greatest so far as could be determined at or near the foot of the entrance incline, then with but little variation until near the nesting chamber when there was an appreciable rise. The cavity for the nest was a rather spherically formed chamber making the end of the burrow and eight to nine inches in diameter. The *nest* was a bed composed (a) of dry cow-dung broken into small pieces or (b) dry grass or

Palmetto roots or grass stems broken into short pieces or shreds or (c) a combination of these different materials. The bulk varied considerably from about a pint to more than double that amount. The top of the nest cavity in one instance was but eight inches below the surface of the ground and they varied from that depth to not exceeding sixteen inches. One burrow in the preceding season had been dug out for its entire length, was nine feet long, 12 to 15 inches deep and a burrow that we opened was dug at right angles to and passed under this former burrow.

A pair of owls were seen standing at their doorway on April 8th and on digging we found an unfinished tunnel four feet long which was within 20 yards of where we had dug out a burrow four days earlier. In neither instance were eggs found. This was the only information obtained regarding the speed of the birds at their excavating and is of course indefinite as to actual time engaged at the work. At an isolated occupied burrow a second excavation was found about 15 yards from the home site and was evidently being used when found, as fresh earth was at the entrance and rejected parts of beetles were about the opening. I believed it to be freshly dug but after two weeks observation it was found to be but three feet long with no nest chamber. I was unable to determine whether it had been abandoned earlier as a nesting site or if it might have been an extra resort for one of the birds when not brooding although no other such arrangement was seen elsewhere.

On April 1st at the burrow most often visited a broken egg shell was found on the ground a few feet outside the entrance and I concluded the chicks had hatched.

On April 15th this burrow was dug out and found to contain three eggs, two of which were about two-thirds incubated and the other much fresher.

Under date of April 15th the following is an extract from my note book: "Both birds were at the entrance when I approached. The male (?) flew as usual at 50 yards or so; the female stood her ground while I photographed her at about five steps. On digging found the tunnel not over six feet long, nearly straight, nest entirely of cow-dung, about twelve inches from surface of ground to bottom (of nest cavity). . . . Contents, three eggs . . . took photos of these eggs *in situ*. The female seemed less shy than when I saw them on April first and I photographed her from three places at about 15 feet distance. Several times as she flew she 'twittered' plaintively and always

made short flights. Twice she alighted on a low, broken pine sapling about four feet high and this I had seen her use but once previously—on April first.” Having constantly found both birds at their respective entrances where the nests contained eggs, whether they were fresh or advanced in incubation together with finding the nest cavities so near the surface of the ground at a time when the ground was extremely dry and the thermometer above 80° in the shade—100° or more in the open where the nests were located, it might appear probable that the heat of the ground was sufficient during a considerable part of the day to continue incubation without the aid of the bird. No other explanation seems reasonable to account for the constant appearance of both birds outside the burrows.

So far as I am aware all authors have held or inferred that the plumage of the sexes is alike. Some speak of the individual variations which are not constant. The birds as I found them were notably different in shade of color and this could frequently be detected as they flew. By placing the birds on their backs, a series of each sex opposite, the difference is marked and constant; the cross-bars of the female being the darker, those of the male almost fading away towards the tail. With the female the cross-bars ranged from Bister on upper breast to Dresden Brown on lower belly while corresponding bands on the male ranged from Prout's brown to tawny olive. The backs of the two sexes show slight differences and are not constant so far as I could determine. In several cases faint cross-bars were detected on the under tail coverts or spots that may be grouped to form a bar.

Measurements of the birds varied considerably especially as to length, but this could be accounted for at least in part by the wearing of the tail, the tip of which was frequently much frayed, doubtless due to wear in the burrows.

MEASUREMENTS

	L.	W.	T.	Trs.
♂ Average	9.08	6.61	3.38	1.94
♀ Average	9.09	6.6	3.31	1.91
♂ Extremes	} 8:50	6.50	3.25	1.88
		9:50	6.88	3.50
♀ Extremes	} 8.63	6.43	3.06	1.88
		9.50	6.88	3.50

All specimens were adults, taken between February 19 and April 16.

The eggs were of course pure white when blown. The usual

number appeared to be four with five in a few instances. The first eggs were taken April 2d, at which time one burrow had nesting cavity completed but no eggs laid. One nest contained three fresh eggs, probably incomplete. Two nests held four eggs each, one of these clutches being several days advanced in incubation. The fourth clutch—five eggs—was complete and incubation begun. On April 11th four burrows were examined. Two contained four eggs and one held five eggs; all of these were from a third to one-half advanced in time of incubation, while the fourth nest has already been referred to as holding three chicks just hatched and two pipped eggs.

By information gained from older residents I infer this owl is disappearing, in some sections at least, quite rapidly. The country is being settled; many small truckers are already scattered over the district and doubtless before many years these most interesting birds will be classed with the rarer of the Eastern species.

The following titles embraced much of interest pertaining to the Life History of this little Owl:

Scott, W. E. D. *The Auk*, Vol. VI, 1889, p. 249.

Hoxie, Walter. *Ornithologist and Oologist*, XIV, 3, p. 33.

Rhoads, S. N. *The Auk*, IX, p. 892.

Bendire, Maj. C. E. *Life Histories North Am. Birds*, I.

Palmer, Wm. *The Auk*, XIII, p. 99, 1896.

* Kennard, F. H.—*The Auk*, XXXII, April, 1915, p. 154.

THE BIRDS OF THE CAPE FEAR REGION OF THE NORTH CAROLINA COAST

Z. P. METCALF

NORTH CAROLINA STATE COLLEGE
AND EXPERIMENT STATION

For two weeks this past summer I had the pleasure of camping in company with some other biologists on the ocean front a few miles above Cape Fear, and while my main interest was tracing out some of the relations of the animal life to the tidal zones I spent some time studying birds and always had an open ear and eye for our feathered friends. The region in which we were located is one that has not been much visited by biologists and a brief description of the locality may not be amiss. Starting with the Cape Fear River at Wilmington we find that we are some nine miles, as the crow flies, from the ocean, but the ocean

front and the river gradually converge until they meet at Cape Fear, some twenty-six miles southeast of Wilmington. It is this narrow peninsula that we were surveying and on which we were located. The area is principally light sand and not very suitable for cultivation, therefore, the southern half of the peninsula is practically without inhabitants and has grown up to a mixed growth of pines and oaks chiefly. The northern half is more thickly populated and supports some good truck farms and one or two summer colonies on the beach. A typical cross section of the southern half, starting at the river, would be as follows: a narrow river beach rising abruptly to a higher level, which continues for about three-fourths of the width of the peninsula, then a sudden drop to a broad salt meadow flanked by sand dunes just back of the broad ocean beach. These details are given that one may better understand our local situation. Further north the broad salt meadow is replaced by the sound, which is a favorite haunt for certain water birds.

Along the river front the most frequent birds were the Rough-winged Swallows and the Egrets. In the woods the Blue Jay, Carolina Chickadee, Tufted Titmouse, Carolina Wren, Yellow-throated and Parula Warblers held sway. In the salt marsh Clapper Rails and Chuck-will's-widow. Along the ocean beach Fish Crows, Least Sandpipers, Brown Pelicans, Gulls and Terns were most frequently observed.

From the standpoint of the birds observed the two weeks were most enjoyable, and what more pleasant memories could remain after half a year than that in spite of hard work and a blistering sun, in spite of mosquitoes in our tents and ants in our beds there remains the steady roar of the ocean on one side and the call of the Chuck-will's-widow and the plaintive frog-like clatter of the Clapper Rail on our land side to sing us to sleep.

In this connection a comparison of the list of birds by Fleisher, made between April 13 and April 20, on the land side of the river, is interesting (*Auk*, Oct. 1920, 565 - 572). Professor Fleisher saw ninety-eight species in April. I saw eighty-eight species in May and June, and sixty of the species are common to both lists.

From the standpoint of interest the chief records are of the Scarlet Tanager and the Redstart. This is the first record of the Scarlet Tanager and the Redstart along the coast in the breeding season. The Barn Swallow has been recorded only

occasionally. Thus we perhaps add another species to the list of birds that breed along the coast and in the mountains of North Carolina, but not in the intervening territory.

The following list of birds "seen" is appended, the records being taken from the field note book. No mere list with dry notes can convey any idea of the pleasure in the sight of the first Painted Bunting or Blue Grosbeak or the joy in getting acquainted with their songs and the songs of the Chuck-will's-widow. Nothing of the majesty of the Egrets and the relief that one feels when he knows that these beautiful birds have not been banished from the earth.

Herring Gull *Larus argentatus*.

Two were seen on Cape Fear River May 29. Five on the ocean beach June 3.

Laughing Gull *Larus atricilla*.

Seen occasionally on the ocean front.

Royal Tern *Sterna maxima*.

An occasional solitary individual was seen along the coast practically every day of our stay, May 29 to June 10.

Common Tern *Sterna hirundo*.

A few seen on several occasions; no definite dates kept.

Black Skimmer *Rynchops nigra*.

One seen on Cape Fear River May 29. None seen on the ocean front during the remainder of our stay.

Water Turkey *Anhinga anhinga*.

One seen on Cape Fear River May 29, near Orton Plantation.

Cormorant *Phalacrocorax auritus (floridanus)*.

One seen on Cape Fear River June 4.

Brown Pelican *Pelecanus occidentalis*.

One on ocean beach June 5.

Wood Duck *Aix sponsa*.

One male observed just beyond inner breakers June 3. Other ducks, thought to be the female of this species, were observed on several occasions.

Great Blue Heron *Ardea herodias herodias*.

Nine or ten on Cape Fear River May 29. Two on ocean beach June 4.

Egret *Herodias egretta*.

One on the river June 3, fishing from a net stake.

Snowy Egret *Egretta candidissima candidissima*.

Two on the sound June 4.

Little Blue Heron *Florida caerulea caerulea*.

Three on the river June 3.

Clapper Rail *Rallus crepitans crepitans*.

Common in the salt meadow behind the sand dunes.

Coot *Fulica americana*.

Five swimming just beyond the inner breakers on the ocean June 5.

Wilson's Snipe *Gallinago delicata*.

One seen on Myrtle Sound on an oyster flat June 5.

Least Sandpiper *Pisobia minutilla*.

Very common on the beach, apparently feeding on the beach flea and following the rising and receding waves, but always keeping its feet dry.

Spotted Sandpiper *Aetitis macularia*.

Along the river, usually solitary. One or more seen practically every time we visited the river.

Killdeer *Oxyechus vociferus vociferus*.

Along the river May 29.

Oyster-catcher *Haematopus palliatus*.

One on the sound June 4.

Bob-white *Colinus virginianus virginianus*.

In woods along the river May 29 to June 5.

Mourning Dove *Zenaidura macroura carolinensis*.

In woods along river May 29 to June 3.

Turkey Vulture *Cathartes aura septentrionalis*.

Not very common.

Black Vulture *Cathartes urubu urubu*.

Not as common as the Turkey Vulture.

Bald Eagle *Haliaeetus leucocephalus leucocephalus*.

Full plumage adult on ocean front June 3.

Sparrow Hawk *Falco sparverius sparverius*.

One hunting above salt meadow June 2.

Osprey *Pandion haliaeetus carolinensis*.

One seen fishing on ocean front June 2.

Screech Owl *Otus asio asio*.

One heard June 4.

Great Horned Owl *Bubo virginianus virginianus*.

One heard in woods May 30.

Yellow-billed Cuckoo *Coccyzus americanus americanus*.

One in woods near river June 2.

Belted Kingfisher *Ceryle alcyon alcyon*.

Along the river May 30. on the ocean June 2.

Southern Hairy Woodpecker *Dryobates villosus auduboni*.

In woods near river June 2.

Southern Downy Woodpecker *Dryobates pubescens pubescens*.

In old orchard near the river, June 2.

Pileated Woodpecker *Phlocotomus pileatus*.

In woods near the river May 30. Only one seen.

Red-headed Woodpecker *Melanerpes erythrocephalus*.

Only one seen, May 29.

Flicker *Colaptes auratus*.

Only one pair seen, June 3.

Chuck-Will's-Widow *Antrostomus carolinensis*.

One singing in salt meadow on several different nights, May 30 to June 10.

Whip-poor-will *Antrostomus vociferus vociferus*.

One flushed in woods near the river June 2.

Nighthawk *Chordeiles virginianus virginianus*.

One on the river May 29.

Chimney Swift *Chætura pelagica*.

About two dozen at Carolina Beach June 4.

Ruby-throated Hummingbird *Archilochus colubris*.

One in the woods, June 6.

Kingbird *Tyrannus tyrannus*.

Wilmington Beach, June 4.

Crested Flycatcher *Myiarchus crinitus*.

Common in the woods.

Phœbe *Sayornis phœbe*.

One at Wilmington Beach June 4.

Wood Pewee *Myiochanes virens virens*.

Common in the woods.

Blue Jay *Cyanocitta cristata cristata*.

Common in the woods.

Fish Crow *Corvus ossifragus*.

Solitary individuals rather common along the beach. A small nest in a small oak, about thirty feet from the ground, may have belonged to this species or to the common crow. I only know that the flushed bird was a crow.

Red-winged Blackbird *Agelaius phœniceus phœniceus*.

Common in the salt marsh along the sound June 4.

Meadowlark *Sturnella magna magna*.

A pair in an old abandoned field, overgrown by broom sedge, June 6.

Orchard Oriole *Icterus spurius*.

One seen at an abandoned farm house June 1.

Boat-tailed Grackle *Megaquiscalus major major*.

Common at Fort Fisher, in the tidal marshes, June 1.

Goldfinch *Astragalinus tristis tristis*.

Full plumaged male and a female observed in the salt meadow back of camp on several occasions, May 30 to June 5.

English Sparrow *Passer domesticus domesticus*.

Abundant about an abandoned farm house.

Chipping Sparrow *Spizella passerina passerina*.

With the preceding.

Field Sparrow *Spizella pusilla pusilla*.

Only one seen, June 6.

White-eyed Towhee *Pipilo erythrophthalmus (alleni)*.

"Towhees" were abundant in the woods. They undoubtedly represent the subspecies *alleni*.

Cardinal *Cardinalis cardinalis cardinalis*.

One male at an abandoned farm house, seen and heard on several occasions.

Blue Grosbeak *Guiraca carutea carutea*.

One singing in the bush on old beach June 1.

Indigo Bunting *Passerina cyanea*.

Five or six seen.

Painted Bunting *Passerina ciris*.

One sang in a small oak near our trail to the well every evening during our stay. It was not heard during the day.

Scarlet Tanager *Piranga erythrometis*.

One full plumage male seen by one of our party at Fort Fisher June 10.

Summer Tanager *Piranga rubra rubra*.

Not uncommon in the woods. One nest found.

Purple Martin *Progne subis subis*.

Five or six at "fish factory" May 29.

Barn Swallow *Hirundo erythrogastra*.

At Wilmington Beach. A single nest in dancing pavilion June 4.

Rough-winged Swallow *Stelgidopteryx serripennis*.

Carolina Beach, June 4, seven or eight; others along the river at various times.

Cedar Waxwing *Bombycilla cedrorum*.

Small flock in open cut over woods June 1.

Red-eyed Vireo *Vireosylva olivacea*.

Several in the woods.

White-eyed Vireo *Vireo griseus griseus*.

Abundant about swampy places in the woods along river.

Parula Warbler *Comptolypis americana americana*.

Fairly common in the woods. A nest with two eggs found in hanging Spanish moss, about six feet from the ground, June 2.

Black-and-White Warbler *Mniotilta varia*.

One seen June 7.

Prothonotary Warbler *Protonotaria citrea*.

One in cypress swamp along the river June 10.

Yellow-throated Warbler *Dendroica dominica dominica*.

Common in the woods.

Pine Warbler *Dendroica vigorsi vigorsi*.

Common in the higher pine woods.

Maryland Yellow-throat *Geothlypis trichas trichas*.

One singing in dense brush along old beach on several occasions.

Yellow-breasted Chat *Icteria virens virens*.

One in the garden of an abandoned farm house June 6.

Hooded Warbler *Wilsonia citrina*.

In woods along river, two or three.

Redstart *Setophaga ruticilla*.

Full plumage male in full song, seen June 5 in dry woods.

Mockingbird *Mimus polyglottos polyglottos*.

Several seen about houses. One nest at Fort Fisher, three young.

Catbird *Dumetella carolinensis*.

One seen on several occasions at old farm house.

Brown Thrasher *Toxostoma rufum*.

Frequently seen at abandoned farm house.

Carolina Wren *Thryothorus ludovicianus ludovicianus*.

Common about farm houses and in the woods.

White-breasted Nuthatch *Sitta carolinensis carolinensis*.

One in dry pine woods June 2.

Brown-headed Nuthatch *Sitta pusilla*.

A pair in oak woods June 7.

Tufted Titmouse *Baeolophus bicolor*.

Common in the woods.

Carolina Chickadee *Penthestes carolinensis carolinensis*.

Common in the woods.

Blue-gray Gnatcatcher *Polioptila caerulea caerulea*.

Two nests found. Common in the woods.

Wood Thrush *Hylocichla mustelina*.

One nest found June 7, near river, in abandoned garden.

Southern Robin *Planesticus migratorius achrusterus*.

Only one seen, near a country school house.

Bluebird *Sialia sialis sialis*.

Several seen on different occasions.

BIRD BANDING AS AN OPPORTUNITY TO STUDY CHARACTER AND DISPOSITION

WM. I. LYON, WAUKEGAN, ILL.

Birds and animals have as much character and disposition as people, and bird banding offers an excellent chance to study individuality in birds when they are actually in your hands where you may make a close-up examination and note their actions.

The Waukegan, Ill., Bird Banding Station has studied the action of the birds handled for the last five years and have enjoyed watching some very interesting characters in the different birds handled.

The White-throated Sparrows arrived at our station about October 4th, 1921, and kept coming until October 25th, when the last new bird was banded, and from then on only a few repeating birds were trapped. These seemed to like our restaurant and became regular boarders. Early in November we noticed that a certain five were always together in some of the traps at night. We handled them so often that it was noticeable that each had a different disposition. There was The Fighter, a female that always fought as long as it was held in the hand and when released it invariably would turn back and take one last peck at the fingers before flying. The next was The Squealer and it squealed continually throughout the entire time it was held in the hand. Then there was The Quiet One; she was just as gentle and quiet and as good a little bird as could be. Sometimes she would take a little hold of your finger but never pinch. We were sure by her actions that she would be the kindest little bird-mother that ever lived and we could not resist stroking her little head before releasing her. The Kicker

never stopped wiggling and kicking as long as we held him. The last, The Common Person, was just ordinary bird; he tried a little of all the actions of the other four.

The Fighter, The Squealer, The Quiet One, The Kicker, and The Common Person will long be remembered as the birds of distinct character that were always together and we were relieved when it turned cold on November 20th and they moved on to the Southland.

A Golden-crowned Kinglet was trapped and seemed so surprised that it just lay perfectly quiet and looked us over while we put the band on its leg, and when released it just stood up, straightened out its feathers, and then calmly looked us over for a full minute before flying to the nearest limb.

A female Downy Woodpecker trapped last year squealed all the time it was held and when trapped again this year it squealed louder and longer than before. Other Downys would fight but were quiet.

In explaining the work to people not versed in Bird Banding the general question asked is, "Are the birds frightened by being handled?" In order to answer this question in an intelligent manner we have kept a careful record of the First Flights of birds after being trapped and banded, and the observation is made by allowing the bird to become quiet in the hand, then releasing as quietly as possible and carefully judging the distance it would fly before alighting. This study brought out the fact that when the same bird was caught the second time it would fly about twice as far as the first time, but if caught the third time the flight would equal about the same as the first flight; and if caught the fourth time the flight would be less than the first, and if the bird still continued to be trapped the flight became less and less until some of the birds that were placed on the ground just hopped away while others were always just as wild as at first.

For the study of those interested in this subject we are giving the following table of First Flights recorded during the last few years.

Name	Distance	Action while Handled
Downy Woodpecker	200 feet.....	Fight and squeal
White-crowned Sparrow.....	100 feet.....	Quiet
White-throated Sparrow.....	50 feet.....	Majority fight
Song Sparrow	100 feet.....	Generally quiet

Lincoln Sparrow	125 feet	Quiet
Fox Sparrow	125 feet	Generally quiet
Harris' Sparrow	100 feet	Generally quiet
Tree Sparrow	100 feet	Very quiet
Field Sparrow	100 feet	Quiet
Swamp Sparrow	100 feet	Quiet
Savannah Sparrow	100 feet	Quiet
House Sparrow	released	Fighters
Junco	75 feet	Quiet
Towhee	100 feet	Kick and squirm
Myrtle Warbler	100 feet	Quiet
Catbird	100 feet	Quiet
Brown Thrasher	75 feet	Fight and squeal
House Wren	50 feet	Squirm
Nuthatch, White-breasted	100 feet	Half squeal
Brown Creeper	100 feet	Quiet
Chickadee	40 feet	ALL FIGHT
Blue Jay	200 feet	Generally quiet
Kinglet, Golden-crowned	20 feet	Very quiet
Wood, and Hermit Thrushes	200 feet	Quiet
Water-Thrush	200 feet	Quiet
Grackle, Bronzed	100 feet	Fighters
Flickers	100 feet	Generally quiet
Mourning Dove	Flew out of sight	Quiet
Robin	150 feet	Generally quiet

THE WILSON BULLETIN

Published at Oberlin, Ohio, by the Wilson Ornithological Club.

Official Organ of the Wilson Ornithological Club and the Nebraska Ornithological Union (in affiliation).

Price in the United States, Canada and Mexico, \$1.50 a year, 50c a number, post paid. Price in all countries in the International Union, \$2.00 a year, 60c a number. Subscriptions should be sent to Geo. L. Fordyce, Youngstown, Ohio.

EDITORIAL

The Wilson Bulletin enters upon its thirty-fourth year with a larger page than it has ever had, with the assurance that it will be better illustrated than ever, and with a return to a sixty-four page issue. These advances are made possible by the modest increase of membership dues that were voted at the last annual meeting, and by a somewhat lessened expense in its manufacture. For this increase in membership dues there will be more than a corresponding increase in the amount of printed matter during the year. We feel confident that the wisdom of making this forward step will commend itself to every member.

The new Department of Bird Banding, which begins with this issue, is evidence of a rapid growth of the banding movement. We are glad that it has grown to the point where it can fill a department, because we believe that in this movement there is greater promise of the solution of many of the problems of migration and habits than in any other field. Of course we have not yet reached the end of taxonomy, even in North America, but this field now properly belongs more to the specialist in taxonomy than to the great mass of students of birds. Trapping for the purpose of banding is open to the most of us, and when conducted in the spirit of coöperation, the principle upon which this organization was founded, there are sure to be gratifying results. Let us get into this movement for the sake of the cause itself. There is no field that gives promise of greater results.

On another page of this issue will be found a plea made by the U. S. Biological Survey for volunteers who will resume the bird counts which were interrupted by the war. The importance of the continuance of these bird counts will become clear to anyone who stops to think that it is only by such careful work that we can arrive at anything like a correct estimate of the variations in the number of birds that inhabit any given region, and through the various regions, the whole country. Various efforts have been made, from time to time, and by various persons, to determine what effect the settlement of the country, hunting, general shooting, collecting, and various other agencies, have had upon the birds and mammal population of our country. The reports have not been convincing for the reason that they were largely based upon the impressions of men and women who are somewhat advanced in years, and are probably not now as actively engaged in outdoor pursuits as they used to be. But with a mass of material which is the result of accurate counts of the birds during the nesting season, made from time to time in the same area, there will be reliable material from which to make the estimates. We earnestly urge those who can to do this work this year.

BIRD BANDING DEPARTMENT

Under the Direction of Wm. I. Lyon, Waukegan, Ill.

In the opening of a Bird Banding Department in this Bulletin let us make these few statements about the origin of bird banding, which will be followed by a more detailed explanation of the early work in later editions.

Bird banding originated in North America early in the nineteenth century when Audubon placed some silver wire rings on the legs of young Phœbes in their nests and was rewarded the next season by seeing them in the same district.

Experimental work began in United States in 1901; then followed the work of P. A. Travenner, Dr. J. B. Watson, New Haven Bird Club, Dr. Leon J. Cole as President of the American Bird Banding Association, and from 1914 to date the work of S. P. Baldwin in establishing systematic trapping as a far better means of getting returns.

In 1920 the United States Bureau of the Biological Survey formally took over all the work of recording and issuing all bands to the present workers.

The following are notes from The Bird Banders, from whom we have been able to get reports in the Great Lakes Migration District:

SAULT STE. MARIE, MICHIGAN, STATION

We welcome Mr. M. J. Magee as a new member in the Wilson Club and in the Bird Banding work and we expect to have some very interesting reports of Evening Grosbeaks that have been regular visitors with him for some time. When he gets this flock all banded we expect he will have many future returns. During the summer Mr. Magee was successful in placing bands on a Robin, Long-eared Owl, American Bittern, Pine Siskin, Hermit Thrush, Junco, four White-throats and two Song Sparrows and nine Purple Finches. Sault Ste. Marie is a choice location for migratory birds and we hope for many interesting returns from this point.

LAKE FOREST, ILLINOIS, STATION

(28 miles north of Chicago.)

Rev. George Roberts, Jr., is an old member of the American Bird Banding Association and placed several bands in 1917, 1919 and 1920. He was rewarded by having a Rose-breasted Grosbeak that was banded on May 25, 1919, return to be retaken and released on May 2, 1920. He has a lot of bands and a trap all set awaiting the spring migration and he has our best wishes for success during the coming season.

HIGHLAND PARK, ILLINOIS, STATION

(23 miles north of Chicago.)

Professor Jesse Lowe Smith, one of our most reliable bird workers and editor of the Illinois Audubon Bulletin, has two new traps made on the pattern of the two most successful traps used at the Waukegan station. We expect many returns from his work, and we also hope he will

be able to induce some of the many good bird people in Highland Park to join him in his work.

WHITING, INDIANA, STATION
(18 miles south of Chicago.)

Mr. Fred C. Hadley and Dr. C. P. McNeil are working together in the bird banding work, and from other sources of information we learn that they have been successful in placing about one hundred bands, which is a very good beginning. Whiting is located just at the southeast corner of Lake Michigan, right where they should have a real chance to get an extra record of the birds from the other stations as they leave the lake. We hope to have a more detailed report of their work in next issue.

Mr. Hadley reports the success of his first season's work as follows:

Bands placed, 86, on twelve species: Catbird 39, Black-billed Cuckoo 10, Yellow-billed Cuckoo 2, Robin 6, Mourning Dove 6, Brown Thrasher 5, Red-winged Blackbird 4, House Wren 1, Long-billed Marsh Wren 4, Green Heron 3, Yellow Warbler 2, Dickcissel 2, Song Sparrow 1.

HOBART, INDIANA, TRAPPING STATION

(Five miles south of the center of the south end of Lake Michigan.)

We wish to welcome our new member in the Wilson Club and in Bird Banding, Mr. Donald H. Boyd, of Hobart, Indiana. Mr. Boyd's location just south of the center of Lake Michigan gives him a wonderful opportunity to trap many of the birds that have followed the shores in their migration and passed the other trapping stations, so he has the best chance for records on account of position. Mr. Boyd writes that he has made some traps and will be ready for the spring migration. During the nesting season he was able to place twenty-eight bands on birds in the nest, including Robins, House Wrens, Mourning Doves, Kingbirds, Martin, Warbling Vireo, and Cowbird. The traps are working now and we expect to have a fine report in the next Bulletin from Mr. Boyd.

We envy the above three workers in Indiana because they are good friends so close together that they can compare notes on their work. For eight years the Waukegan station has been all alone, with no one to go to in our joys and sorrows.

WANTED—MORE BIRD BANDERS

The Central District needs more workers, can YOU join? If not able, will YOU make it your duty to induce some one to undertake the work. We should not say work, because if you use a flat trap with a stick under one side and string to your window, keep feed under it at all times as a feeding station, then pull the string only when convenient, in this way you can do much good work with little effort.

MILWAUKEE, WISCONSIN, STATION

Mr. H. L. Stoddard is planning to take up trapping and banding at Milwaukee, thus extending the stations to the northward.

WAUKEGAN, ILLINOIS, STATION
(56 miles north of Chicago.)

The Waukegan Bird Banding Station has been at work since 1914 and we can only give a small part of their work at this time.

In 1914, 10 bands were placed; in 1915, 29; in 1916, 51; in 1917, 118; in 1918, 32; in 1919, 17; in 1920, 360; in 1921, 1100.

The past year was by far the busiest and the Biological Survey reports that they have the largest record of the year in the United States.

Including House Sparrows and the number of times birds repeat, the total number of birds handled at the station was 2678.

To the first of the year the station has had twenty returns, five of them were recovered away from the district and fifteen recovered locally, and one of those returned for the third time.

DETAIL OF TRAPPINGS IN 1921.

	Former Total	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Robin	188			4	13	29	12	8		1				245
Junco	55	3	5	55	30						78	70	9	306
Downy Woodpecker		1	1		1		4						5	15
Chickadee			1										22	23
White-throated Sparrow	163				10	32					169	2		366
White-crowned Sparrow	4					28					1			33
Fox Sparrow	1			1	3						10	5		20
Song Sparrow	8			1	12		3	11			1			36
Field Sparrow				1	3									4
House Sparrow			2	2	6	72	78	217	131	14	17	17	18	503
Vesper Sparrow						4								4
Tree Sparrow												8	3	11
Towhee	19				1	6	1				6			33
Brown Thrasher	44				2	6	4	3	2	1	1			63
Northern Flicker	25				1	5	5							36
Red-winged Blackbird	21						4	1						26
Bronzed Grackle	25			3	21	27	12	8	1					97
Mourning Dove	16						4	3	1	1				25
Catbird	20					3	6							29
Barn Swallow	8						3	5						16
House Wren	3						16	1						20
Blue Jay	1				1	1					2	2	1	8
Hermit Thrush					2						2			4
Northern Shrike					1						2	2		4
White-breasted Nuthatch											2	2		4

Less than 4: Savannah Sparrow 2, Swamp Sparrow 1, Harris Sparrow 1, Chipping Sparrow 2, Red-headed Woodpecker 3, Bluebird 3, Oven-bird 3, Kingbird 3, Screech Owl 2, Black-poll Warbler 1, Yellow Warbler 1, Bittern 1, Rose-breasted Grosbeak 1, Indigo Bunting 1, Crow 1, Olive-backed Thrush 1, Water-Thrush 1, Cowbird 2, Spotted Sandpiper 3, Baltimore Oriole 3, Crested Flycatcher 2, Wood Thrush 1, Myrtle Warbler 2.

THE NEW ENGLAND BIRD BANDING ASSOCIATION

On the seventeenth day of January, 1922, in response to an invitation from Mr. L. B. Fletcher and others interested in the banding of birds, over a hundred ornithologists, licensed bird-banders and candidates for licenses, met at the Boston Society of Natural History Building in Boston and organized a new ornithological society to be known as the New England Bird Banding Association. The meeting was addressed by S. Prentiss Baldwin of Cleveland, Ohio, who, during the last six years, by introducing bird-trapping as a means of banding birds, has done so much to show the scientific possibilities of the work. The Bureau of

Biological Survey in Washington was represented by Major E. A. Goldman, who spoke of the Bureau's plans in connection with the movement, strongly endorsing the organization of the new association and recommending the formation of other organizations of the same character at appropriate localities in the United States and Canada.

Members of Audubon Societies and Bird Clubs in several states, the Nuttall and Essex County Ornithological Clubs and State ornithologists were present at the meeting, as well as representatives of the Canadian game warden service.

At this writing, January 24th, 1922, the association has an enrollment of about three hundred members, who are scattered over all parts of the territory covered by the organization, namely, New England, Quebec and the Maritime Provinces.

The following officers and councillors were elected:

President—Edward H. Forbush, Westboro, Mass.

First Vice-President—Dr. Charles W. Townsend, Boston, Mass.

Second Vice-President—James Mackaye, Cambridge, Mass.

Corresponding Secretary and Treasurer—Laurence B. Fletcher, Brookline, Mass.

Recording Secretary—Miss Alice B. Harrington, Lincoln, Mass.

COUNCILLORS

A. Cleveland Bent, Tauton, Miss.

Dr. John C. Phillips, Wenham, Mass.

John E. Thayer, Lancaster, Mass.

William P. Wharton, Groton, Mass.

Aaron C. Bagg, Holyoke, Mass.

Charles L. Whittle, Cambridge, Mass.

It may be of interest to ornithologists generally to read an outline of the purposes and plans of the new association, which has been formed under the stimuli furnished by the national movement administered by the Bureau of Biological Survey; by the more general appreciation of the scientific aspects of bird banding as shown, in particular, by Mr. Baldwin's recent work; and by the interesting and valuable data already obtained by previous bird-banding operations.

In the beginning it was felt that the somewhat disappointing results secured from banding in the United States to date were due to the workers being too scattered and uncoordinated; to a lack of national support of the plan, and the too general character of the ornithological problems bird-banding operations were expected to solve.

From a study of the situation we came to believe that we could obtain the best results

- (1) By organizing a regional association of bird banders, meaning by this, bringing together a membership from an area possessing one or more migration highways, along which trapping stations may be established to furnish, by intensive attack, fairly speedy answers to certain specific migration problems, thus early demonstrating to members the scientific value of bird banding with the consequent stimulus to continue the work which it is expected will ultimately solve more ornithological riddles, aid

in the solution of others and create new problems not now anticipated;

- (2) By having the members meet together as often as possible to discuss results, methods and future plans and to gather inspiration from their fellows after the manner of scientific societies generally, in this way using the combined knowledge of the Association to advance the work;
- (3) By appealing for the support of Audubon Societies all over the country on the ground that bird banding is a bird-protection movement, since to an important extent, it will be possible in the future to substitute an examination of a live bird for the study of a dead one;
- (4) By ensuring as far as possible the *permanence* of the movement by means of institutional trapping stations operated by or in connection with Audubon Societies, Natural History Societies, Bird Clubs, Departments of Ornithology or Zoölogy at colleges and universities, Bird Sanctuaries, State and National Parks, etc., in addition to stations operated by individuals; and
- (5) By establishing a convenient local depository of all bird-banding records made by members (an exact copy of the same of course being sent to the Biological Survey) in appropriate quarters where they may be studied by members of the Association and others.

CHARLES L. WHIPPLE.

Cambridge, Mass.

FIELD NOTES

NOTES ON SOME NEBRASKA BIRDS OF THE WINTER OF 1921-22

Subsequent to the several records already published of the occurrence of the Magpie in unusual numbers in southeastern Nebraska during the fall of 1921, Mr. H. Ohler of Lincoln, reported seeing several of these birds at Pleasant Dale on November 20, and during December there were other additional records. The flock of Magpies near Fairbury were yet there on January 8, 1922, associating with crows and apparently on the best of terms with them, according to Mrs. H. F. Hole of that city.

Along with the Magpie has come an invasion, to a less marked degree, by the Pinyon Jay. Dr. R. H. Wolcott had reported to him, and personally verified it, the occurrence of one of these birds north of Lincoln, on November 24, 1921. Under date of January 22, 1922, Mrs. Ralph Pembroke of Harvard, Nebraska, writes that one of these birds has been present about the town of Harvard since late in November, 1921, and that on January 15, 1922, a flock of ten or twelve of these birds was seen there.

Three individuals of the Bohemian Waxwing were noted by R. W. Dawson at Lincoln on November 6, 1921, but the species was not subsequently noted. On January 28, 1922, however, C. A. Black reported them as present in abundance at Kearney, Buffalo county.

A Mockingbird is now wintering in the city of Lincoln, in the yard

of Dr. F. B. Hollenbeck at 1836 South 20th Street. This or another Mockingbird wintered at the same place from October, 1920, to April, 1921. This is the first definite wintering record of the species for this locality.

A Townsend Solitaire, also, is wintering at Lincoln, in Wyuka cemetery.

Lincoln, Nebraska.

MYRON H. SWENK.

SOME BIRD NOTES FROM CENTRAL AND WESTERN NEBRASKA

Since the publication of the records of the Whooping Crane in Nebraska by M. H. Swenk, in the March, 1921, number of the Wilson Bulletin, I saw a pair of these birds on April 2, 1921, and a lone one a few days later. One bird was also seen in the fall of 1921, about October 20.

On May 18, 1921, a fine male Cape May Warbler was collected at Kearney, Buffalo county, which is the westernmost record for the species in the state.

In August, 1921, two Broad-tailed Hummingbirds were killed by flying against a plate glass show window on the principal street of Kearney during the night. Probably there was a migration through the locality and the birds were deceived by the glare of the electric lights.

My friend, Miles Maryott of Oshkosh, Garden county, reports to me that a Saw-whet Owl was chased out of a coal house and knocked off a post with a lump of coal by a resident of that place in the fall of 1921, constituting a new locality record for the species. He also reports the Gray-crowned Rosy Finch as present at Oshkosh on January 22, 1922.

C. A. BLACK.

Kearney, Nebraska.

WINTER BIRDS OF SOUTHERN WISCONSIN

The winter of 1920-21, noted for its mildness, noticeably affected the bird life of that period. There was a great scarcity of northern visitors and an increase in the number of summer residents, which remained through the winter. The bird list is of interest because it is rather unusual. It was compiled from the December, January and February records of the writer and the following observers: Warner Taylor, Clarence S. Jung and A. W. Schorger, Madison; Herbert L. Stoddard, Milwaukee; W. E. Snyder, Beaver Dam; Ed. Oschner, Prairie du Sac; Miss Lulu M. Lunn, Racine; Miss Susie L. Simonds, Hartland; Arthur Gare, Camp Douglas; H. E. Andrews, Portage.

Herring Gull, Ring-billed Gull, Bonaparte's Gull, Merganser, Mallard, Black Duck, Shoveller, Pintail, Canvas-back, Lesser Scaup Duck, Ring-necked Duck, Golden-eye, Buffle-head, Old-squaw, White-winged Scoter, Canada Goose, Coot, Wilson's Snipe, Killdeer, Bob-white, Ruffed Grouse, Prairie Chicken, Mourning Dove, Marsh Hawk, Red-tailed Hawk, Kreider's Hawk, Sparrow Hawk, Long-eared Owl, Short-eared Owl, Barred Owl, Saw-whet Owl, Screech Owl, Great Horned Owl, Snowy Owl, Belted Kingfisher, Hairy Woodpecker, Downy Woodpecker, Arctic Three-toed Woodpecker, Northern Pileated Woodpecker, Red-headed Woodpecker, Red-bellied Woodpecker, Northern Flicker, Horned Lark, Prairie Horned Lark, Blue Jay, Crow, Cowbird, Red-winged Blackbird, Meadowlark,

Bronzed Grackle. Purple Finch, Redpoll, Goldfinch, Pine Siskin, Snow Bunting, Lapland Longspur, Tree Sparrow, Slate-colored Junco, Song Sparrow, Cardinal, Cedar Waxwing, Northern Shrike, Myrtle Warbler, Maryland Yellow-throat, Brown Creeper, White-breasted Nuthatch, Tufted Titmouse, Chickadee, Golden-crowned Kinglet, Robin, Bluebird.

S. PAUL JONES.

Waukesha, Wis.

ON THE EASTWARD MOVEMENT OF MAGPIES

The recent note of Professors Swenk and Dawson of Lincoln, Nebraska, in *The Wilson Bulletin* (XXXIII, No. 4, 1921, 196-197) concerning "An Unusual Eastward Movement of the Magpie in Nebraska," prompts me to add some additional notes regarding the further eastward distribution of this species and to record its incursion eastward into Iowa as far as the ninety-second meridian.

So far as I am aware this species has not been recorded from Iowa for many years, the most recent published note of its occurrence having been made by Anderson (*Proc. Dav. Acad. Sci.*, XI, 1907, 294), where he lists a specimen taken near Keokuk in Lee county "about 1893."

The first Iowa specimen which came to my hands was received from Mr. A. Goshorn, editor of the *Winterset News*. This bird, a male, was caught in a steel trap at Winterset, Madison county, Iowa, about thirty-five miles southwest of Des Moines on December 1, 1921. My correspondent states that numerous persons throughout that county have observed magpies singly or in small flocks of from three to five or seven during the early winter. Mr. C. Taylor reported one individual of a flock of three riding on a cow's back.

Professor C. R. Keyes of Mt. Vernon, Iowa, informs me that a correspondent of his, Dr. Weeks of Emmetsburg, had seen several magpies at that place during November, 1921.

A second specimen now in the University of Iowa Museum was taken about December 1, 1921, near Cedar Rapids. It was one of a flock of three.

From Charles City in Floyd county comes another report of the occurrence of this bird in that vicinity, a single individual having appeared about November 13.

Mr. J. A. Spurrell of Wall Lake, Sac county, writes me under date of December 18 that on October 18, 1921, he "saw two magpies in a grove, without any house in it, about five and one-half miles west of Wall Lake, Iowa. I saw them about three o'clock in the afternoon, and their black and white colors and extremely long tails were very conspicuous as they flew from low willows along the roadside to the top of tall maples in the grove. This is the first time that I have ever seen magpies in Sac county." Mr. Spurrell mentions three other persons who have seen magpies in the vicinity of Wall Lake, the largest number together being a flock of seven. Old residents report that the species has not been seen in the county for about thirty years.

A former student of mine, Mr. H. Moen of Onawa, in Monroe county, informs me that at various times during recent years he has seen magpies near the place and that they sometimes alight on the backs of cat-

the infested with grubs and pick the larvae from the backs of stock as well as pecking at any open sores thereon.

These scattered records—and no doubt others from the state could be added—indicate that the movement of magpies into southeastern Nebraska did not end there, but has continued pretty well across Iowa, a greater number of individuals having been reported during the fall and winter of 1921 than the sum total heretofore taken in or recorded from the state.

DAYTON STONER.

University of Iowa, Iowa City, Iowa.

NOTES—HERE AND THERE

Conducted by the Secretary

The Southern Manufacturers' Association of New Orleans is distributing an attractive "Bird Book," in which working plans are given for the making of nest boxes, food shelters, etc., out of cypress wood.

The American Association for the Advancement of Science will hold a summer meeting at Salt Lake City June 22 and 24. It is expected that a large number of its Pacific coast section will attend.

Prof. Thos. D. Burleigh, formerly of Pittsburgh, Pa., is now located at Athens, Ga., where he is Associate Professor of the Division of Forestry, University of Georgia.

The state of Texas has recently leased to the National Association of Audubon Societies, for a period of 50 years, without cost, the six most important bird breeding islands along its coast. Here are represented extensive colonies of more than a dozen species of water birds. The 100,000 or more birds breeding on these islands will be protected as far as feasible against the raids of commercial eggers and plumers.

Mr. Edward R. Ford, formerly of Chicago, and at one time business manager of The Wilson Bulletin, is now located at Grand Rapids, Mich.

Readers will note that the area covered by type on The Bulletin's new page has been perceptibly increased, being made wider and three lines longer. Last year's 48-page Bulletin contained 5,200 square inches of typed surface, while the new 64-page magazine will show 8,200, or an increase of 60 per cent of reading matter.

The Secretary has recently been the recipient of pleasant visits from Messrs. H. A. La Prade of Atlanta, Ga., and H. E. Wheeler of Conway, Ark. Both of these gentlemen are enthusiastic and accurate ornithologists and each is a prime mover in the establishment of a museum of natural history in his home city for the benefit of the public.

Our membership teams of last year did splendid work and the result of their efforts did much toward encouraging the officers of The Club in their plans for expansion. The total number of new names added during the year was 162, which is nearly double that of the preceding year. The "team" captained by Dr. Geo. R. Mayfield brought in 63 new members, while that of Dr. T. C. Stephens tallied 59. The Secretary

played neutral and tried with a lone hand to at least land second place: he scored a poor third with 40 names. H. L. Stoddard used a rabbit's foot—or perhaps a lucky duck hawk's claw—and led with a total of 22 new members. Dr. Stephens is responsible for 14 names, Brasher C. Bacon put Kentucky on the map with 12, Eric A. Doolittle showed that there's nothing in a name when he sent in a total of 8, Editor Jones and Treasurer Fordyce, from their points of vantage, stamped 11 and 6 applications respectively with their approval. Others sending in 5 or more were Miss Sherman and Messrs. Eifrig, Bales, Hunt, Stoner, LaPrade and Mayfield. The current year should show even better results since our workers are getting into practice and have given some thought to "lining up" prospective membership material. All members who wish to assist in extending the membership should write to the Secretary for application blanks, etc.

The Museum of Comparative Oology of Santa Barbara, Cal., announces plans for the construction of an attractive building for its collections and expects to be in its new quarters by summer. The building will be of the mission type, fireproof, and will provide 5,000 square feet of floor space.

Hon. R. M. Barnes of Lacon, Ill., publisher of *The Oologist*, announces that the new Standard Catalog of North American Birds' Eggs will be off the press by spring. It is expected that the catalog will become the universally used medium of exchange for oological specimens.

The practice of planting windbrakes of pine, cedar and other evergreens about the farmsteads in the northwest is said to be becoming more and more widespread and incidentally the birds are being thus afforded a haven in time of blizzards.

Mr. Harold H. Bailey of Miami Beach, Fla., is preparing the manuscript for a book on the breeding birds of Florida, similar to his work on Virginia birds. Mr. Bailey is anxious that unpublished breeding records of Florida birds be furnished him.

The late annual meeting, minutes of which are printed elsewhere, was one of the most successful in the history of The Club.

The Okefenokee Swamp in Southern Georgia is one of the great natural curiosities of the country and a "last stand" for a number of species of birds. Recently the heavy inroads of lumbermen into its wonderful moss-clad forests of cypress has brought forth organized effort to acquire the swamp for a National Monument. As such it would serve as a bird sanctuary, game preserve and mecca for the naturalist for all future time. The Okefenokee is 22 miles wide and 30 miles long.

The California Nature Study League, under the guidance of its president, Mr. G. M. Goethe, of Sacramento, is carrying on a worth while campaign with a view of interesting the public in the study of nature and the great outdoors. One feature of the work is the issuing of an illustrated monthly leaflet, most interestingly written, each issue calling attention to some interesting species which may be found near at hand. The circulation of the leaflet is said to reach a quarter million readers.

Filling as it does the need for a clearing house of ornithological observations, the Biological Survey at Washington has evolved a system of indexing and cross-indexing its records and notes which is very effective. The writer, on a recent visit to Washington, was initiated into the well worked out scheme of card indexing by Dr. Oberholser, whom he suspects had a good deal to do with the development of the plan. A room 12 x 16 is fitted with card index cases on three sides. One section of these cases contains records by species, another shows records by states, and each in turn is subdivided as between the observations of members of The Survey and the records of other observers. Published records are included as well as those gleaned from manuscript sent in by correspondents. Another feature is the map case. In this, a lithographed map sheet of the United States is assigned to each species and subspecies and graphically thereon is shown, by means of symbols, the recorded occurrence of the bird in question as a breeder, transient, winter visitor, etc. The system is susceptible of unlimited expansion and deserves a more extended description than can be given here.

PUBLICATIONS REVIEWED

Notes on the Birds of Carroll, Monroe, and Vigo Counties, Indiana. By Barton Warren Evermann. Proceedings of the Indiana Academy of Science, 1920, pp. 315-401.

A feature of exceptional interest in this paper is the length of the period over which the records extend, for few local lists are published with observations by the same observer dating from the present time as far back as 1877. The loss, by fire, deplored by the author, of most of his notebooks prior to 1888, was indeed a serious one, but the data remaining were certainly worthy of permanent record.

The three counties covered are all in west-central Indiana, though not adjoining one another. Two hundred and thirty-seven species of birds are listed. The treatment is mainly with regard to the manner of occurrence of the species concerned, but scattered through the accounts there are also notes descriptive of habits and mode of life, or, as under the Red-headed Woodpecker, of some original manner of securing specimens or abating a nuisance.

It is a matter of some wonder that the author, amid engrossing interests and far removed from the scene of his earlier bird studies, could find the time and the enthusiasm to place on record these valuable observations.—H. S. Swarth.

COMMUNICATIONS

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

Washington, D. C., February 1, 1922.

To the Editor of the "Wilson Bulletin."

DEAR SIR:—The Biological Survey began in 1914 to collect data on the numerical distribution of bird life in the United States. By such information, which is gained through counts made by volunteer collaborators, of the birds breeding on selected areas, it is possible to gain some knowledge of the yearly fluctuations in bird life and of the effect the present State and Federal laws may have on the increase of game and insectivorous birds. During the earlier years we received a very gratifying response to our request for assistance, but during the war many persons were unable to continue the work and interest in it has seemed to wane. It is desirable that these counts should be repeated on a large scale through a period of years in order that adequate data may be accumulated to make possible definite conclusions. Any one thoroughly familiar with the breeding birds of his vicinity can do this work, and will find it growing in interest from year to year. We are therefore again appealing to the readers of the "Wilson Bulletin" in the hope that all who are able to do so will make one or more bird counts this summer.

The general plan of this work is to select a tract of land containing from 40 to 80 acres and representing as nearly as possible the average conditions for the vicinity. Some day during the height of the breeding season, this land should be carefully gone over in the early morning and the male birds counted, which at that season are usually in full song and may be considered each to represent a breeding pair. The result of this count should be checked subsequently to be sure that all birds counted nest within the selected area, and that none have been missed. The count should not be made until the spring migration is over and the birds are settled on their nesting grounds. In the latitude of Washington, D. C., the best time for the first count is about the first of June, in New England and the northern states probably about June 10, and south of Washington during the latter part of May.

Anyone who is willing to do this work is requested to send his name and address to the Biological Survey, Washington, D. C. Full directions for making a count and report blanks will be sent in time for plans to be made before the actual time for the field work. Since the Bureau has no funds with which to pay for this work, it must depend on the services of voluntary observers.

An added impetus should be given to this work at the present time by the report that the British ornithologists are contemplating a census of the birds of the British Isles, planned along the same lines as our own.

Very truly yours,

E. W. NELSON,
Chief, Biological Survey.



THE ANNUAL MEETING

The eighth annual meeting of the Wilson Ornithological Club was held at Chicago, Ill., December 26th and 27th, 1921. The Lecture Hall of the new Field Museum of Natural History had been placed at the disposal of The Club by the directors, through the courtesy of Dr. Wilfred H. Osgood, the Curator of Zoölogy.

The first session was called to order by the President, Dr. R. M. Strong, and business was announced for the morning's program. At the request of Secretary Ganier, Dr. G. Eifrig was appointed and kindly consented to act as recording secretary. The first matter was to take from the table the motion to increase the annual dues. The Secretary presented a tabulation of the answers received from the questionnaire mailed to all members. Of the 136 replies received, 93 per cent voted to increase the dues to \$2.00 and \$3.00 for Associates and Actives respectively. Two of the votes favored retaining the present dues and the balance advocated raising the fee in various amounts. Dr. Jones, Editor of *The Bulletin*, brought out the fact that last year's publication was only made possible by the Special Fund raised by the Ways and Means Committee. He stated that a larger revenue was imperative to meet existing conditions and that it should be enough to make possible an increase to 64 pages per number. Other speakers followed advocating the procedure and a letter was read from Dr. Myron H. Swenk of the Nebraska Ornithologists' Union pledging the support of that organization and stating that the matter of the proposed increase in dues would not likely interfere with their present affiliation. Dr. Jones stated, that by actively increasing the membership and with the aid of a small surplus of last year's Fund he felt that a 50 cent increase per member would suffice, and made motion to that effect. Seconded by Dr. Stephens. Mr. Coffin, stating that he felt too small a margin would be afforded, offered an amendment making the dues \$3.00 and \$1.50. After further discussion the amendment was withdrawn and the original motion, providing for dues of \$2.50 for Active and \$1.50 for Associate, was passed. The Council was instructed by the Chair to take up with the Nebraska Ornithologists' Union the revisions made necessary in the existing agreement by the change in dues. The Secretary spoke of the advisability of creating paid up Life Memberships and making provisions for taking care of such funds for investment. A motion in favor of the consummation of the plan passed and a committee, composed of Messrs. Stephens, Swenk, Whitney and Jones was instructed to make arrangements and to can-

was for such memberships. The Special Committee on Ways and Means, through its Treasurer, Dr. Stephens, reported that the members had been circularized during the year and invited to contribute to a fund to meet the current deficit. His detailed report was read, giving the amounts and names of contributors, and showed that nearly \$400 had been made available and turned over to the Treasurer. Mr. Stoddard called attention to the fact that the Constitution and By-Laws were in need of revision and the Chair appointed a committee to report back the needed changes at a later session.

A committee on Resolutions, Messrs. Eifrig, Hunt and Coale, were next appointed.

The committee on Nomination of Officers, composed of Messrs. Stephens, Jones and Whitney, was appointed to report back after lunch hour. The report of Treasurer Fordyce was read and showed a balance on hand of \$115, with no indebtedness at the end of the fiscal year.

An Auditing Committee, composed of Messrs. Coffin, Stoddard and Lyon, was appointed.

The Secretary was called upon to report on his work for the year. He stated that he had received about six hundred Club communications and sent out about twice as many. The membership campaign, with which he had been entrusted at the last meeting, had been mapped out and put through with measurable success. Messrs. Mayfield and Stephens had kindly consented to act as Captains of two "teams" to make a systematic canvas with the aid of a form letter of invitation and the necessary blanks. The work resulted in the addition of 162 new members. A circular letter and questionnaire was sent out in November and a tabulation made of the replies. Work was done from time to time in keeping the mailing and membership lists up to date, thus coöperating with the Treasurer in this task. The work of suffixing to the names in the membership list the year of each member joining was carried on. The list was reported as partially complete in this respect. A special canvas was made during the year for increasing the membership in the South. Reports had been received and filed in reference to the number of complete sets of *The Wilson Bulletin* in existence.

President Strong spoke next, reviewing the work of the year and expressing optimism with reference to the future of The Club. He outlined the desirability of coöperation between students of bird life, of accurate and intensive field studies and the taking of comprehensive notes on the habits and home life of birds.

Editor Jones of *The Bulletin* said that there was much excellent manuscript on hand and that he would welcome the enlargement of the publication. He made a plea for more short articles suitable for the Field Notes Department and expressed thanks to the Editorial Board for assistance given him during the year.

The hour for luncheon having arrived the members adjourned to the Museum Lunch Room for the meal and informalities.

The afternoon session was opened with the report of the Nominating Committee. The following officers for 1922 were nominated and duly elected:

President—Thos. L. Hankinson, Ypsilanti, Mich.

Vice-President—Dayton Stoner, Iowa City, Iowa.

Secretary—Albert F. Ganier, Nashville, Tenn.

Treasurer—George L. Fordyce, Youngstown, Ohio.

Dr. Lynds Jones was unanimously reelected as Editor of The Wilson Bulletin.

The program began with an address of welcome by Dr. Wilfred H. Osgood, Curator of Zoölogy of the Field Museum. The papers scheduled for the afternoon were then read, and discussed more or less extensively. Attention was brought to the fact that many hundreds of people who are banding birds would welcome a department in The Bulletin devoted to this subject. It was decided to inaugurate such a feature, and at the request of Dr. Jones Mr. Wm. I. Lyon of Waukegan, Ill., consented to look after such a department.

The Annual Banquet was held in the evening at the Fort Dearborn Hotel, there being about 25 members in attendance. At the suggestion of President Strong the various members were called on for a "personal experience" story. Reminiscences of arduous trips afield were given with warmth and candor, some dating back to the days of bare-foot boyhood. In concluding his remarks each speaker acted as toastmaster in introducing the member at his right. The entire informality throughout the meeting was notably in keeping with the tastes of lovers of nature.

The morning session of Tuesday was begun with the election of 162 new members. This was followed by a report from the Committee on Resolutions, as follows:

(a) That a vote of thanks be extended to the authorities of the Field Museum, and especially to Dr. Osgood, to the committee in charge of the program (Messrs. Coffin, Sanborn and Steele), to the Committee on Ways and Means for the result of their efforts, to the personnel of the Membership Teams, to the Editor of The Wilson Bulletin, and to the other officers of The Club for their work of the past year; (b) that hereafter the annual meetings be at least one day removed from Christmas Day; (c) that all members be urged to assist in extending the membership of The Club, and (d) that the Secretary be instructed to address a petition on behalf of The Club to the proper authorities in Indiana, pointing out the disastrous results to the Dune Region of the lake shore in the event the proposed automobile highway is built through them. The report was adopted. The Committee on Revision of Constitution reported their recommendations, and after discussion the Constitution was amended as needed. The papers of the morning session were next taken up and continued until 12:30.

After luncheon the members were shown through the halls of ornithology and mamology by Dr. Osgood. Much interest was expressed in the attractiveness of the exhibits and favorable comment was general on the arrangements as compared with the way the collections were displayed in the old building. Dr. Osgood explained that he was just getting things "ironed out" and that plans for new features and exhibits would follow in due time. The meeting was re-convened for the last session at 2:30 p. m., there being about 40 members in attendance. Professor Stoner, the incoming Vice-President, in the absence of the President-elect, was invited to take the Chair. Five papers concluded the

afternoon's program, which included a number of slides of W. D. Richardson's splendidly executed photographs of wild birds and nests. A feature of the day was an exhibit of water color drawings by George M. Sutton of Pittsburgh, Pa., loaned for the occasion. The technique of Mr. Sutton's work elicited much favorable comment.

Space prohibits a more detailed account of the meeting, which was one of the best in The Club's history. Those who attended left with a feeling of good will, time profitably spent and stimulus acquired for more and better ornithological work the coming year.

ALBERT F. GANIER.

Secretary W. O. C.

THE LIST OF PAPERS FOLLOWS:

Reminiscences of Early Ornithologists of the Chicago Area. Henry K. Coale, Highland Park, Ill.

Hitherto Unrecognized Facts in Bird Migration. G. Eifrig, Oak Park, Ill.

Nesting of the Sharp-shinned Hawk in Tennessee. Albert F. Ganier, Nashville, Tenn.

Notes on Twenty-five Years of Migration Data from Oberlin, Ohio. Illustrated with charts. Lynds Jones, Oberlin, Ohio.

On the Breeding Grounds of Texas Gulf Coast Birds. Slides. Alvin R. Kahn, College Station, Texas.

Methods of Bird Banding and Results from Illinois. Slides. W. I. Lyon, Waukegan, Ill.

Sketch of the Field Museum and its Plans for the Future. Wilfred H. Osgood, Chicago, Ill.

Notes on the Hatching of the Ruffed Grouse and Woodcock. Slides. Wm. D. Richardson, Chicago, Ill.

The Joys of the Campaign. Miss Althea R. Sherman, McGregor, Iowa. (Read by Mr. P. B. Coffin.)

An Unusual Eastern Movement of the Magpie. Dr. T. C. Stephens, Sioux City, Iowa.

The Lake Okoboji (Iowa) Biological Laboratory. Slides. Dr. T. C. Stephens, Sioux City, Iowa.

Notes on the Birds of Sauk County, Wis. Herbert L. Stoddard, Milwaukee, Wis.

Habits of Terns on Woepecket and Muskeget Islands. R. M. Strong, Chicago, Ill.

Observations on the Facial Expressions of Birds. Illustrated with sketches. George M. Sutton, Pittsburgh, Pa.

Notes on the Hatching of the Ruffed Grouse and Woodcock. Wm. D. Richardson, Chicago, Ill.

MEMBERSHIP ROLL OF THE WILSON ORNITHOLOGICAL CLUB

OFFICERS—1922

President—Thos. L. Hankinson
 Vice-President—Dayton Stoner
 Treasurer—George L. Fordyce
 Secretary—Albert F. Ganier
 Editor of The Wilson Bulletin—Lynds Jones

HONORARY MEMBERS

Ballard, Harlan H., Pittsfield, Mass.
 Nehrling, Henry, Gotha, Fla.
 Ridgway, Prof. Robert, U. S. Nat. Museum, Washington, D. C.
 Widmann, Otto, 5105 Enright Ave., St. Louis, Mo.

SUSTAINING MEMBERS

Bacon, Brasher C., Madisonville, Ky.
 Baldwin, S. Prentiss, Williamson Bldg., Cleveland, Ohio.
 Bales, Dr. Blenn R., 149 W Main St., Circleville, Ohio.
 Barnes, Hon. R. M., Lacon, Ill.
 Bent, Arthur C., 140 High St., Taunton, Mass.
 Burns, James Randolph, 645 44th St. Des Moines, Iowa.
 Cannon, Gabriel, 140 Otis Blvd., Spartanburg, S. C.
 Coffin, Percival Brooks, Room 624-39 S. LaSalle St., Chicago, Ill.
 Dawson, R. W., 1105 N. 83rd St., Lincoln, Neb.
 Dodson, Joseph H., Kankakee, Ill.
 Fordyce, George L., 40 Lincoln Ave., Youngstown, Ohio.
 Ganier, Albert F., 2507 Ashwood Ave., Nashville, Tenn.
 Goodrich, Mrs. Calvin, 631 Merrick St., Detroit, Mich.
 Gray, D. R., Rockdale, Maury Co., Tenn.
 Lyon, William I., 124 Washington St., Waukegan, Ill.
 McIlhenny, Edw. Avery, Avery Island, La.
 Magee, Michael J., 603 South St., Saulte St. Marie, Mich.
 Mershon, Wm. B., Saginaw, Mich.
 Metcalf, Zeno P., State College, West Raleigh, N. C.
 Mills, Wier R., Pierson, Iowa.
 Norris, Roy C., 725 North 10th St., Richmond, Ind.
 Raymond, Mrs. C. M., 21 Third St., Hinsdale, Ill.
 Rice, James Henry, Brick-House Plantation, Wiggins, S. C.
 Ryder, Mrs. R. O., 1041 Franklin Ave., Columbus, Ohio.
 Saunders, Wm. E., 352 Clarence St., London, Ontario, Canada.
 Sherman, Miss Althea R., National, via McGregor, Iowa.
 Stevens, Dr. J. F., Box 1546 Lincoln, Neb.
 Thayer, Hon. John E., Box 98 Lancaster, Mass.
 Whitney, Thomas H., Atlantic, Iowa.
 Young, Maj. John P., No. 1 Grove Place, Ithaca, N. Y.

ACTIVE MEMBERS

- Abbott, Cyril, 24 S. Liberty St., Elgin, Ill.
 Ainsworth, Mrs. A. A., Daytona Beach, Fla.
 Ainsworth, Mrs. H. A., Moline, Ill.
 Ankeney, Miss Helen, R. F. D. No. 10, Xenia, Ohio.
 Armstrong, Edward E., 2249 Calumet Ave., Chicago, Ill.
 Badger, Lester R., 2401 Lake Place, Minneapolis, Minn.
 Bailey, Mrs. Florence M., 1834 Kalorama Road, Washington, D. C.
 Bailey, Mrs. Mary, 2109 Nebraska St., Sioux City, Iowa.
 Bailey, H. B., Box 112, Newport News, Va.
 Bailey, Harold H., P. O. Box 5, Miami Beach, Fla.
 Baird, Robert L., 279 Oak St., Oberlin, Ohio.
 Barrows, Prof. W. B., Box 1047, East Lansing, Mich.
 Bartsch, Paul, Smithsonian Inst., Washington, D. C.
 Bennett, Walter W., Geddes, S. Dak.
 Bergtold, Dr. W. H., 1159 Race St., Denver, Colo.
 Bishop, Dr. Louis B., 356 Orange St., New Haven, Conn.
 Blain, Dr. Alexander W., 727 Jefferson Ave. E., Detroit, Mich.
 Bowen, Norman C., Broadwater, Va. (Northampton Co.)
 Bradbury, W. C., 1440 Race St., Denver, Colo.
 Brandt, H. W., 2025 E. 88th St., Cleveland, Ohio.
 Bruen, Frank, 29 High St., Bristol, Conn.
 Bruening, Joe, Carrington, N. Dak.
 Bull, Daniel Bernard, Box 158, Route A, San Jose, Calif.
 Burns, Frank L., Berwyn, Pa.
 Burdick, Dr. Geo. Merton, P. O. Box 267, Milton, Wis.
 Burnett, Miss Bertha, 1201 E. 3rd St., Mishawaka, Ind.
 Butler, Amos W., 404 State House, Indianapolis, Ind.
 Butler, Edward, Bains, La.
- Cahn, A. R., Agricultural College, College Station, Texas.
 Chamberlain, Chauncey W., Hotel Hemenway, Boston, Mass.
 Chambers, W. Lee, Eagle Rock, Los Angeles Co., Calif.
 Chapman, Frank M., Am. Mus. Nat. History, New York, N. Y.
 Chapman, Lee J., Rising Park, North, Lancaster, Ohio.
 Coffin, Mrs. Lucy Baxter, 3232 Ellis Ave., Chicago, Ill.
 Cook, Orange, Chardon, Ohio.
 Coryell, Sherman, 1500 Hood Ave., Chicago, Ill.
 Crosby, Maunsell S., Grasmere, Rhinebeck, N. Y.
- Danner, Mrs. Mary S., 1646 Cleveland Ave. N. W., Canton, Ohio.
 Deane, Ruthven, 1222 N. State St., Chicago, Ill.
 Deane, Walter, 29 Brewster St., Cambridge, Mass.
 DeLury, Ralph E., Dominion Observatory, Ottawa, Canada.
 Dickey, Donald R., 514 Lester Ave., Pasadena, Calif.
 Donnagho, Walter, 2528 Murdock Ave., Parkersburg, W. Va.
 Dunkelberger, Harry W., P. O. Box 6, Flourtown, Montgomery Co.,
 Penn.
 Dustman, Geo. A., R. F. D. No. 2, Youngstown, Ohio.
 Dwight, Dr. Jonathan, 43 W. 70th St., New York, N. Y.

- Earl, Thos. M., 258 Lexington Ave., Columbus, Ohio.
Eastman, Major Francis B., G.G.S., Fort Leavenworth, Kans.
Eifrig, Prof. C. W. G., 504 Monroe Ave., River Forest, Oak Park, Ill.
Erickson, W. J., 2311 Barnard St., Savannah, Ga.
Evans, Frank C., Care Frank Evans Co., Crowfordsville, Ind.
Evins, Samuel N., 38 E. 14th St., Atlanta, Ga.
- Fisher, Dr. G. Clyde, Am. Mus. Nat. History, New York, N. Y.
Fleming, J. H., 267 Rusholme Road, Toronto, Canada.
Floyd, Joseph L., 508 New Harter Bank Bldg., Canton, Ohio.
Ford, Edw. R., 126 Madison Ave. S. E., Grand Rapids, Mich.
Fuchs, Edward H., 6043 Drexel Blvd., Chicago, Ill.
Fuertes, Louis Agassiz, Cornell Heights, Ithaca, N. Y.
- Gabrielson, Ira N., 515 Post Office Bldg., Portland, Ore.
Gage, Arthur, Camp Douglas, Wis.
Gault, Benj. T., 2313 Washington Blvd., Chicago, Ill.
Gill, Geoffrey, Am. Museum Nat. Hist., New York, N. Y.
Gleason, Mrs. C. H., 700 Madison Ave. S. E., Grand Rapids, Mich.
Goetlitz, Walter A., 11 Carthage Rd., Rochester, N. Y.
Green, Lonzo S., Freeport, Ohio.
Gregory, Stephen S., Jr., 345 Barry Ave., Chicago, Ill.
Grinnell, Dr. Joseph, Museum Vertebrate Zoology, Berkeley, Calif.
Guthrie, Mrs. Tracy W., Beaver Road, Edgewater, Sewickley, Pa.
- Hamner, Harold, Seabring, Fla.
Hankinson, Prof. Thos. L., State Normal School, Ypsilanti, Mich.
Hardy, Leonard D., Care Col. J. C. Hardy, Gulfport, Miss.
Harris, Harry, 18 W. 52nd St., Kansas City, Mo.
Hathaway, Harry S., Box 1466, Providence, R. I.
Hayward, W. J., 2919 Jackson St., Sioux City, Iowa.
Hempel, Kathleen M., Box 147, Elkader, Iowa.
Henderson, Hon. Junius, 627 Pine St., Boulder, Colo.
Henninger, Rev. W. F., New Bremen, Ohio.
Herrick, Prof. F. H., Western Reserve Univ., Cleveland, Ohio.
Himmel, Prof. Walter J., Radcliffe, Iowa.
Hine, Prof. James S., Ohio State Univ., Columbus, Ohio.
Hopkins, Dr. A. W., M.D., 47 McGovern Ave., Ashtabula, Ohio.
Howland, R. H., Upper Montclair, N. J.
Hunt, Chreswell J., 5847 West Superior St., Chicago, Ill.
Huntington, H. G., Onawa, Iowa.
- Irving, Frank N., 927 Harrison St., Kansas City, Mo.
- Johns, Erwin W., Carleton College, Northfield, Minn.
Jones, Lynds, Spear Laboratory, Oberlin, Ohio.
- Kahmann, K. W., 2513-15 Lincoln Ave., Chicago, Ill.
Kee, Hunter, Marlinton, W. Va.
Kelso, Dr. J. E. H., Edgewood, Arrow Lake, B. C., Canada.
Kenworthy, E. M., 33 Richardson St., Bridgeport, Conn.
King, Miss Mary, 709 McKinley Ave. S. W., Canton, Ohio.
Kirby-Smith, Dr. R. M., Univ. of the South, Sewanee, Tenn.

- Kim, Albert J., Box 657, Orange, Texas.
 Knickerbocker, C. K., 1214 McCormick Bldg., Chicago, Ill.
 Kretzmann, Prof. P. E., 3705 Texas Ave., St. Louis, Mo.
 Kuser, John Dryden, Faircourt, Bernardsville, N. J.
 Ladd, Harry S., 4354 McPherson Ave., St. Louis, Mo.
 Larrabee, Prof. A. P., Yankton College, Yankton, S. Dak.
 Laubenfels, Max W. de, 620 19th St., Huntington Beach, Cal.
 Laughlin, Miss Emma E., 127 Walnut St., Barnesville, Ohio.
 McAtee, Waldo Lee, Biological Survey, Washington, D. C.
 Main, John S., 610 Main St., Madison, Wis.
 Marshall, Mrs. F. W., 3405 Garretson Ave., Sioux City, Iowa.
 Mayfield, Mrs. Geo. R., Vanderbilt Univ., Nashville, Tenn.
 Mayfield, Dr. Geo. R., Vanderbilt Univ., Nashville, Tenn.
 McConnell, Harry B., Cadiz, Ohio.
 McGregor, Richard C., Bureau of Science, Manila, P. I.
 McNair, George G., 200 Nevada Ave., Northfield, Minn.
 Metcalf, Franklin P., U. S. Biological Survey, Washington, D. C.
 Middleton, Raymond Jones, Marshall St. and Whitehall Rd., Jeffersonville, Pa.
 Mitchell, Catharine A., Box 436, Riverside, Ill.
 Mitchell, Dr. Walton I., Paonia, Delta Co., Colo.
 Monk, Harry Crawford, Avoca Apts., Nashville, Tenn.
 More, R. L., 205 W. Welbarger St., Vernon, Texas.
 Morris, C. H., McConnelsville, Ohio.
 Morris, Geo. Spencer, Olney, Philadelphia, Pa.
 Morse, Harry G., Huron, Ohio.
 Moseley, Edward L., State Normal School, Bowling Green, Ohio.
 Mounts, Mrs. Lewis H., 1744 D Ave., Cedar Rapids, Iowa.
 Nice, Mrs. Margaret M., Norman, Okla.
 Norris, Joseph Parker, Jr., 2122 Pine St., Philadelphia, Pa.
 Northrup, Miss Elizabeth, 147 Regent St., Youngstown, Ohio.
 Oberholser, Harry C., 2805 18th St., N. W., Washington, D. C.
 Ohern, D. W., 515 W. 14th St., Oklahoma City, Okla.
 Omer, Richard V., R. F. D. No. 3, Madisonville, Ky.
 Osgood, Dr. Wilfred H., Field Mus. Nat. Hist., Chicago, Ill.
 Owen, Miss Juliette A., 306 N. 9th St., St. Joseph, Mo.
 Pearson, T. Gilbert, 1974 Broadway, New York, N. Y.
 Pennington, Leigh H., N. Y. State Col. of Forestry, Syracuse, N. Y.
 Pennock, C. J., Kennett Square, Pa.
 Phelps, Frank M., 338 E. Bridge St., Elyria, Ohio.
 Pindar, Dr. L. Ottley, Kentucky Inst. for F. M. Children, Frankfort, Ky.
 Praeger, W. E., 421 Douglass Ave., Kalamazoo, Mich.
 Prill, Dr. A. C., Scio, Ore.
 Rader, S. G., Ashville, Ohio.
 Ramsden, Chas. T., Apartado 146, Guantanamo, Cuba.
 Reid, Russell, Bismark, N. Dak.
 Reid, R. P., 201 W. Ohio St., Circleville, Ohio.

- Reid, Mrs. Bruce, Care Gulf Refinery, Port Arthur, Texas.
Reid, W. M., 375 Mount St., Circleville, Ohio.
Richardson, Wm. D., 4215 Prairie Ave., Chicago, Ill.
Richmond, Chas. W., 1929 Park Road, Washington, D. C.
Riis, Donald T., 401 Thurston Ave., Ithaca, N. Y.
Riley, Joseph H., U. S. Nat. Museum, Washington, D. C.
Roads, Miss Katie M., 463 Vine St., Hillsboro, Ohio.
Robinson, Miss Mary L., Central High School, Kansas City, Mo.
Roberts, Dr. Thos. S., Animal Biol. Bldg., Univ. of Minn., Minneapolis, Minn.
Rogers, Chas. H., Care Nassau Inn, Princeton, N. J.
Rogers, Rev. Wallace, Rome, Ga.
Ross, Miss Julia E., 1907 West St., Sioux City, Iowa.
Rust, Henry J., Box 683, Coeur d'Alene, Idaho.
- Sage, John H., Portland, Conn.
Saunders, W. E., 352 Clarence St., London, Ont.
Schaefer, Oscar Frederick, 669 Genesee St., Rochester, N. Y.
Schantz, Orpheus M., 5215 West 24th St., Cicero, Ill.
Schantz, Mrs. O. M., 5215 West 24th St., Cicero, Ill.
Schwab, Dr. Em, 2732 Woodburn Ave., Cincinnati, Ohio.
Scott, Mrs. R. T., 603 North Seventh St., Cambridge, Ohio.
Shearer, Dr. Amon R., Mont Belvieu, Chambers Co., Texas.
Sheldon, Miss S. G. F., 704 Brady St., Davenport, Iowa.
Shrosbee, George, Milwaukee Public Mus., Milwaukee, Wis.
Smith, Prof. Frank M., 1005 W. California Ave., Urbana, Ill.
Smith, Jesse Lowe, 141 S. 2d St., Highland Park, Ill.
Stephens, T. C., Morningside College, Sioux City, Iowa.
Stoddard, Herbert L., Public Museum, Milwaukee, Wis.
Stoner, Dayton, 603 Summit St., Iowa City, Iowa.
Strong, Dr. R. M., Loyola Univ. School of Medicine, Chicago, Ill.
Strong, William Abner, 41 Grand Ave., San Jose, Calif.
Sutton, George M., Carnegie Museum, Pittsburgh, Pa.
Swales, Bradshaw H., U. S. Nat. Museum, Washington, D. C.
Swope, Dr. Eugene, College Hill, Cincinnati, Ohio.
Taylor, Mrs. H. J., 1711 Douglas St., Sioux City, Iowa.
Taylor, Warner, 219 Clifford Court, Madison, Wis.
Terrill, Lewis MacI., 44 Stanley Ave., St. Lambert, Quebec, Canada.
Tinker, A. D., 519 Oswego St., Ann Arbor, Mich.
Todd, W. E. Clyde, Carnegie Museum, Pittsburgh, Pa.
Tyler, Dr. Winsor M., 522 Massachusetts Ave., Lexington, Mass.
- Walker, Chas. F., 53 Latta Ave., Columbus, Ohio.
Wallace, Chas. R., 69 Columbus Ave., Delaware, Ohio.
Walter, Dr. Herbert E., Brown University, Providence, R. I.
Warren, Edward R., 1511 Wood Ave., Colorado Springs, Colo.
Weatherill, Charlotte, 258 S. Los Rables, Pasadena, Cal.
Weeks, Dr. Leroy Titus, Emmetsburg, Iowa.
Wellek, Arthur A., 407 E. 5th St., Northfield, Minn.
West, H. J., Perry, Ohio.

- Wetmore, Alex., U. S. Biological Survey, Washington, D. C.
 Wharram, L. V., Austinburg, Ohio.
 Wheadon, Prof. Arthur D., 525 South High St., West Chester, Pa.
 Wheeler, Earl A., East Randolph, N. Y.
 Wilson, Burtis H., 214½ Grover St., Joliet, Ill.
 Winter, Nevin O., The Belvedere, Toledo, Ohio.
 Woodruff, Frank M., Acad. of Sciences, Lincoln Park, Chicago, Ill.
 Wright, Albert Hazen, 113 E. Upland Road, Ithaca, N. Y.
 Zuercher, Clarence F., R. F. D. No. 1, Sugarcreek, Ohio.

ASSOCIATE MEMBERS

- Adams, Benjamin, Wethersfield, Conn.
 Aiken, Miss Beula E., Carroll, Iowa.
 Alexander, E. Gordon, 1603 South St., Lexington, Mo.
 Allen, Prof. A. A., McGraw Hall, Cornell Univ., Ithaca, N. Y.
 Allerton, Mrs. Agnes, Lake Geneva, Wis.
 Anderson, Edwin C., Dell Rapids, S. Dak.
 Andrews, Henry E., Portage, Wis.
 Ankeny, Miss Helen, R. F. D. No. 10, Xenia, Ohio.
 Arthur, Stanley Clisby, 1109 Henry Clay Ave., New Orleans, La.
 Baker, Archie, Route No 1, Marysville, Ohio.
 Beach, Sarah W., 285 Alpine St., Dubuque, Iowa.
 Bennett, Rev. Geo., Geddes, S. Dak.
 Blincoe, Ben J., P. O. Box 127, Bardstown, Ky.
 Bolt, Benj., 1421 Prospect Ave., Kansas City, Mo.
 Bowdish, Beecher S., Demarest, N. J.
 Boyd, Donald H., Box 466, Hobart, Ind.
 Brainerd, Dr. John B., 419 Boylston St., Boston, Mass.
 Braislin, Dr. Wm. C., 425 Clinton Ave., Brooklyn, N. Y.
 Brown, Howard Clark, 701 Iowa St., Charles City, Iowa.
 Brunn, Chas. A., 314 Reliance Bldg., Kansas City, Mo.
 Euehner, Mrs. E. M., 3637 Fullerton Ave., Chicago, Ill.
 Buck, Henry R., 60 Prospect St., Hartford, Conn.
 Burkhard, Fred, Accident, Md.
 Burnham, John C., 217 Timkin Bldg., San Diego, Cal.
 Burton, Rev. W. W., 1952 S. Cherry Ave., Alliance, Ohio.
 Calvert, E. W., Care Fred Wright, Ontario, Essex Co., Canada.
 Carhart, Miss Nina B., 6017 Woodlawn Ave., Chicago, Ill.
 Carryl, Frank M., 1 Princeton St., Nutley, N. J.
 Chesterman, Miss Ethel, 1706 George St., Sioux City, Iowa.
 Clements, Robert, 217 Church St., Dickson, Tenn.
 Coale, Henry K., Highland Park, Ill.
 Cole, John Lloyd, R. F. D. No. 5, Nevada, Iowa.
 Cole, Mrs. Ansel O., 314 S. 6th St., Lyons Sta., Clinton, Iowa.
 Cole, Leon J., Agricultural Chemistry Bldg., Madison, Wis.
 Cook, Franklin P., 12 S. Brighton Ave., Atlantic City, N. J.
 Cooney, Robert E., Care Dr. Robt. Currey, Medical Director, Graystone Park, N. J.

- Cersan, Geo. H., 513 Christie St., Toronto, Ont.
Corwin, Mrs. Emma R., 636½ Murray Ave., Milwaukee, Wis.
Corwin, Roy S., 636½ Murray Ave., Milwaukee, Wis.
Coulter, Stanley G., Purdue Univ., Lafayette, Ind.
Craig, Wallace, Orono, Maine.
Crawford, Otis O., 150 Pinckney St., Circleville, Ohio.
Cumings, Miss Mary, 305 Washington St., Painesville, Ohio.
Curtis, Harold F., Towaco, N. J.
- Danforth, Stuart T., Mayaguez, Porto Rico.
Daniels, Edw. S., 7th and Elm Sts., St. Louis, Mo.
Davis, Henry W., Seaside Hotel, Atlantic City, N. J.
Dean, R. H., 720 Quintard Ave., Anniston, Ala.
Dille, Fred M., Valentine, Neb.
Dingle, Edw. von Siebold, Summerton, S. C.
Dinsmore, E. Howe, Reedsburg, Wis.
Doolittle, E. A., P. O. Box 44, Painesville, Ohio.
Doyle, H. B., R. F. D., Poland, Ohio.
Duncan, Mrs. Sanford, 207 Union St., Nashville, Tenn.
- Eadie, Guy Livingstone, Berwyn, Pa.
Ekblaw, Geo. E., 233 W. Orleans St., Rantoul, Ill.
Ekblaw, W. Elmer, 601 N. Willis Ave., Champaign, Ill.
Ekdahl, Conrad H., 124 N. Stone Ave., LaGrange, Ill.
Elliot, Miss Sarah J., Union Hospital, Terry Haute, Ind.
Emerson, Otto W., Palm Cottage, Haywards, Cal.
- Fisher, Miss E. W., 2222 Spruce St., Philadelphia, Pa.
Fitzpatrick, Fred L., Route 1, Iowa City, Iowa.
Foft, Samuel F., Waukee, Iowa.
Forbush, Edw. H., Room 136 State House, Boston, Mass.
Ford, F. E., Charlon, Ohio.
Ford, Miss Louise P., Barnwell Ave., Aiken, S. C.
Fortenbury, D. D., Oakvale, Miss.
Fortner, Harry C., Univ. of Tennessee, Nashville, Tenn.
Friedrich, Geo. W., 3029 Belmont Ave., Chicago, Ill.
Fulton, John A., 23 Baltimore St., Cumberland, Md.
Funkhouser, W. D., Univ. of Kentucky, Lexington, Ky.
- Gano, Miss Laura, Box 55, Thonotosassa, Fla.
Gardiner, Aston Colebrook, 1805 Market St., Wilmington, Del.
Gardiner, Mrs. Edwin P., Canandaigua, N. Y.
Gastrow, Albert J., Lodi, Wis.
Gifford, Paul C., 73 Whittier Ave., Olneyville, R. I.
Gill, Geoffrey, Box 457, Sea Cliff, Long Island, N. Y.
Glenk, Robert, La. State Museum, New Orleans, La.
Glenn, Mrs. Edwin, Wyalusing, Wis.
Green, Horace O., 114 North Ave., Wakefield, Mass.
Griffee, Willet E., R. F. D. 3, Box 68, Corvallis, Ore.
Griffin, Bertram S., 22 Currier Ave., Haverhill, Mass.
Groenwoud, Jennie K., 1339 E. 47th St., Chicago, Ill.
Gunthrop, Horace, Care Univ. of Washington, Seattle, Wash.

- Guthrie, Joseph Edward, 319 Lynn Ave., Ames, Iowa.
- Hallinen, J. E., Coopertown, Okla.
- Hadeler, E. W., Painesville, Ohio.
- Hamilton, Dr. B. A., Lock Box 423, Highland Park, Ill.
- Hardin, Miss May, 162 Sinclair Ave., Atlanta, Ga.
- Harlow, Richard C., Penn. State College, State College, Pa.
- Harris, Lucien, Jr., P. O. Box 2281, DeSota Sta., Memphis, Tenn.
- Hart, Cecil, Box 432, Los Angeles, Calif.
- Hayden, F. J., Nokomis, Manatee County, Fla.
- Henderson, H. N., Wilmington, Ohio.
- Henderson, Martin H., Jr., Hawkeye, Iowa.
- Herrick, G. F., 118 Spring St., Youngstown, Ohio.
- Holland, H. M., Box 515, Galesburg, Ill.
- Hollinen, J. E., Cooperton, Okla.
- Honywill, A. W., Jr., 211 Ridgefield St., Hartford, Conn.
- Hornbeck, John Wesley, 617 E. 2nd St., Northfield, Minn.
- Houghton, Clarence, 353 Washington Ave., Albany, N. Y.
- Howell, A. Brazier, 770 S. Pasadena Ave., Pasadena, Calif.
- Howland, Mrs. Harman, 17 Washington Ave., Warren, Ohio.
- Hulsberg, E. F., 340 S. Catherine Ave., LaGrange, Ill.
- Ingersoll, Albert M., 908 "F" St., San Diego, Calif.
- Jackson, Ralph W., R. D. No. 1, Cambridge, Md.
- Jenney, C. F., Court House, Boston, Mass.
- Johnson Frank Edgar, 16 Amackassin Terrace, Yonkers, N. Y.
- Jones, S. Paul, 207 W. Washington St., Madison, Wis.
- Jung, Clarence S., 1609 Monroe St., Milwaukee, Wis.
- Kean, Miss Laura, Stockport, Ohio.
- Keim, Thomas Daniel, Glendale, Prince George Co., Md.
- Kelly, George B., Newton, Iowa.
- Kelly, Harry M., 610 Fifth Ave. N., Mount Vernon, Iowa.
- Kennard, Frederick H., Dudley Road, Newton Center, Mass.
- Klemme, Mrs. W. H., Ridgeway, Iowa.
- Knapp, Mrs. H. P., 830 Mentor St., Painesville, Ohio.
- Knapp, Mrs. Nell Davis, 105 Fowler Ave., West Lafayette, Ind.
- Koerner, Mrs. Theo., 815 27th St., Milwaukee, Wis.
- Kohler, Louis S., R. F. D. No. 2, Paterson, N. J.
- Kutchin, Dr Victor, Green Lake, Wis.
- LaPrade, W. H., Jr., 404 Wesley Memorial Bldg., Atlanta, Ga.
- Law, J. Eugene, Box 181, Altadena, Calif.
- Lawson, Ralph, 88 Washington Sq., Salem, Mass.
- Leopold, Nathan J., 4754 Greenwood Ave., Chicago, Ill.
- Lewy, Dr. Alfred, 6016 Stony Island Ave., Chicago, Ill.
- Lightner, D. H., Citizens Trust and Savings Bank, Aberdeen, S. Dak.
- Lincoln, Frederick C., U. S. Biological Survey, Washington, D. C.
- Link, Henry A., Waterloo, Ind.
- Little, Luther, 1403 Garfield Ave., S. Pasadena, Calif.
- Lobdell, Richard N., Agricultural College, Miss

Lomax, Dr. Claud, Holland, Ind.
Lorrilliere, Paul, Rolling Road, Relay, Md.
Love, Guy, R. F. D. No. 5, Oberlin, Kans.
McConnell, Thos., 151 Center St., Emsworth, Pa.
McDonald, Angus, 1322 Fremont St., Knoxville, Tenn.
McNeil, Claude Perkins, 431 Oliver St., Whiting, Ind.
McNeil, Dr. Chas. A., 111 West 4th St., Sedalia, Mo.
McNish, Edward L., P. O. Box 480, Nashville, Tenn.
Mahood, Miss Etta, R. D. No. 1, Rapid City, Mich.
Malin, Mrs. Joda, Wylusing, Wis.
Massey, Hobart V., Mid. Tenn. Normal School, Murfreesburg, Tenn.
Miller, Mrs. Ellen Howard, 504 Keeler Ave., Bartlesville, Okla.
Miller, Mrs. Frank J., 1222 E. 56th St., Chicago, Ill.
Miller, H. C., 1126 Barr St., Ft. Wayne, Ind.
Moe, H. H., 524 W. Wisconsin St., Monroe, Wis.
Moen, H. R. Onawa, Iowa.
Morse, Miss Margaret E., 3513 Bloomington Ave., Minneapolis, Minn.
Morton, Wm. C., Jr., 214 S. Main St., Madisonville, Ky.
Murie, Olans J., 219 7th Ave. S., Moorhead, Minn.

Neal, Hendree, College Park, Ga.
Neff, Johnson, Marionville, Mo.
Newcomb, C. A., Jr., Newcomb Endicott Co., Woodward Ave., De-
troit, Mich.
Newton, Thos. D., 5624 Prairie Ave., Chicago, Ill.
Norton, Arthur Herbert, 22 Elm St., Portland, Maine.
Omer, Richard V., R. F. D. No. 3, Madisonville, Ky.
Over, Wm. H., 720 E. Clark St., Vermilion, S. Dak.

Palmer, E. Laurence, N. Y. State College of Forestry, Ithaca, N. Y.
Palmer, Prof. Robt. Hastings, Science Hall, Univ. of Wash., Seattle,
Wash.
Palmer, T. S., 1939 Biltmore St., Washington, D. C.
Paulson, Martin C., Route No. 3, Nevada, Iowa.
Peabody, Rev. P. B., Blue Rapids, Kans.
Pellett, Frank C., Hamilton, Ill.
Pellew, Miss Marion J., 1637 Massachusetts Ave., Washington, D. C.
Pemberton, John Ray, P. O. Box 1112, Tulsa, Okla.
Pfeiffer, W. F., Fayette, Iowa.
Phillipp, P. B., St. Paul Bldg., 220 Broadway, New York, N. Y.
Phillips, Dr. John H., 2117 Blair Blvd., Nashville, Tenn.
Pierce, Fred J., Winthrop, Iowa.
Plath, Karl, 2847 Giddings St., Ravenswood Sta., Chicago, Ill.
Potter, Julian K., 563 Bailey St., Camden, N. J.
Price, Arthur E., Grant Park, Ill.
Prince, Mrs. W. V., 536 Montrose St., Vineland, N. J.

Reed, E. E., Monticello, Iowa.
Rich., Dr. Guy C., 1820 El Cerrito Place, Hollywood, Calif.
Rich, Waldo L., 15 Rock St., Saratoga Springs, N. Y.
Riis, Paul B., 301 Shaw St., Rockford, Ill.

- Robertson, Carl T., 1626 Hollywood Road N. E., Cleveland, Ohio.
 Ross, Miss Julia E., 1907 West St., Sioux City, Iowa.
 Ross, Miss Marjorie Ruth, 8 Kenton Apts., Nashville, Tenn.
 Sarver, Rex A., R. F. D. No. 3, Sidney, Ohio.
 Schwartz, Max D., 1813 Lafayette Ave., St. Louis, Mo
 Scott, David H., 911 Broadway, Emmetsburg, Iowa.
 Scudder, Dr. Walter H., Litchfield, Ohio.
 Shafer, J. J., Route No. 2, Port Byron, Ill.
 Shambaugh, Mrs. Bertha M. H., 219 N. Clinton St., Iowa City, Iowa.
 Shankland, F. N., Willoughby, Ohio.
 Shannon, Charles Wm., Okla. Geol. Survey, Norman, Okla.
 Shaver, Prof. Jesse M., 1804 Grand Ave., Nashville, Tenn.
 Shupee, George C., Box 964, San Antonio, Texas.
 Silliman, O. P., Care Salinas Valley Grain & Prod. Co., Salinas, Calif.,
 and Box No. 6, Castroville, Calif.
 Silloway, P. M., 404 Fredonia Ave., Peoria, Ill.
 Simonds, Miss Susie L., Hartland, Wis.
 Small, Mrs. W. B., 206 Iowa St., Waterloo, Iowa.
 Smith, Wendell P., Wells River, Vt.
 Sparks, Miss Marion, 1207 West Oregon St., Urbana, Ill.
 Spiker, Chas. J., R. R. No. 1, Williams, Iowa.
 Spurrell, John A., R. D. No. 1, Wall Lake, Iowa.
 Steele, Henry B., Jr., 4530 Drexel Blvd., Chicago, Ill.
 Stevens, Dr. J. F., Box 1546, Lincoln, Neb.
 Stockbridge, Chas. A., 2323 Webster St., Fort Wayne, Ind.
 Stoner, Emerson A., Box 444, Benicia, Calif.
 Strode, Dr. W. S., Lewiston, Ill.
 Stuart, Frank A., 118 Green St., Marshall, Mich.
 Swarth, Harry S., Mus. Vert. Zoöl., Berkeley, Calif.
 Sweeney, Joseph A., Care Forest Service, Nenzel, Neb.
 Taylor, L., McDermott, Ohio.
 Taylor, Warner, 219 Clifford Ct., Madison, Wis.
 Temple, Adelbert, R. F. D. No. 2, Hopkinton, Mass.
 Terrill, Clyde B., 240 Winnebago St., Oshkosh, Wis.
 Thomas, Edward S., 1116 Madison Ave., Columbus, Ohio.
 Thomas, W. S., 316 Frick Bldg., Pittsburgh, Pa.
 Towns, Mrs. H. E., 429 Eastwood Place, Milwaukee, Wis.
 Townsend, Dr. C. W., 98 Pinckney St., Boston, Mass.
 Townsend, Rev. Manley B., 188 County St., Attleboro, Mass.
 Travis, Miss Florence G., 1458 Maro Ave., Lakewood, Ohio.
 Tripp, N., Forest, Ontario, Canada.
 Turner, Neeley, Neosho, Mo.
 Vaughn, Dr. Harry S., Hillsboro Road, Nashville, Tenn.
 Vent, Miss Dorothy E., 4531 Greenview Ave., Chicago, Ill.
 Vesey, W. G., 120 High St., Painesville, Ohio.
 Visher, S. S., 817 E. 2nd St., Bloomington, Ind.
 Wake, William, New Tazewell, Tenn.
 Warner, Willis H., Box 434, Youngstown, Ohio.

Warthin, Aldred Scott, Jr., 1020 Ferndoy Road, Ann Arbor, Mich.
 Wayne, Arthur T., Mt. Pleasant, S. C.
 Webb, A. C., 215 Cleveland St., Nashville, Tenn.
 West, Chas. Slade, Marianna, Fla.
 Wheeler, Mearl B., R. F. D. No. 2, Randolph, N. Y.
 Wilbur, Miss Ruth, 1235 Maple Ave., Chicago, Ill.
 Wilbur, Miss Virginia, 1235 Maple Ave., Chicago, Ill.
 Willard, Oscar T., Jr., 1444 E. 34th St., Chicago, Ill.
 Williams, Noel J., Milford, Iowa.
 Wilson, Gordon, 1434 Chestnut St., Bowling Green, Ky.
 Wolfe, Lieut L. R., 64th Infantry, Camp Meade, Md.
 Wolle, William C., Box 53, M. S. Station, Sioux City, Iowa.
 Wright, Miss Harriet H., 1637 Gratiot Ave., Saginaw, W. S., Mich.

DECEASED MEMBERS

Andrews, Calista	Holmes, La Rue Klinge.
Bailey, B. H.	Holmes, Fred W.
Barnes, W. E.	Jewell, Susan G.
Beers, Henry	Judd, Spencer
Bendire, Maj. Charles E.	King, Rev. J. W.
Benners, Archie	Knight, Ora Willis
Betts, Norman De Witt	McKechnie, Frederick B
Blain, Merrill W.	Marble, Charles C.
Brewster, William	Newbury, F. C.
Childs, John Lewis	Peck, H. E.
Chipperfield, Paul C.	Purdie, Henry A.
Clark, John W.	Reinecke, Ottomar
Cooke, Dr. Wells W.	Roper, Kenyon
Daggett, Frank S.	Sammons, B. C.
Eddy, Newell A.	Sand, Isabelle L.
Ferry, John Farwell	Smith, Elbert E.
Farquhar, Arthur	Trowbridge, Chas.
Field, Irving A.	Wilson, Sidney S.
Flanagan, John H.	Wood, J. Claire
Ginther, H. J.	Wright, Horace W.

Corrections or changes in these lists should be promptly reported to the Secretary.

MEMBERS OF NEBRASKA ORNITHOLOGISTS' UNION

- Rev. J. M. Bates, Red Cloud, Nebraska.
Mrs. W. F. Baxter, 123 S. 37th Ave., Omaha, Nebraska.
Mrs. George Blinco, Sec'y Chadron Audubon Society, Chadron, Neb.
Mr. A. M. Brooking, Inland, Nebraska.
Mr. H. F. Bruner, Kola, Nebraska.
Mrs. Lily Ruegg Button, 616 W. 8th St., Fremont, Nebraska.
Mrs. Margaret M. Carey, 2410 Park Ave., Lincoln, Nebraska.
Mr. Ralph W. Dawson, 1105 N. 33rd St., Lincoln, Nebraska.
Miss Lena Deweese, Dawson, Nebraska.
Miss Blanche Garten, 1213 H St., Lincoln, Nebraska.
Mr. LeRoy M. Gates, Chadron, Nebraska.
Dr. H. Hapeman, Minden, Nebraska.
Mrs. Mona C. Hapeman, Minden, Nebraska.
C. K. Hart, Prosser, Nebraska.
Mr. L. O. Horsky, Mailing Division, P. O., Omaha, Nebraska.
Mrs. Lulu Kortz Hudson, Simeon, Nebraska.
Mrs. H. C. Johnston, Superior, Nebraska.
Miss Jessie M. Kellogg, Red Cloud, Nebraska.
Mrs. G. A. Loveland, 1130 S. 20th St., Lincoln, Nebraska.
Dr. H. B. Lowry, 843 So. 10th St., Lincoln, Nebraska.
Mr. Charles S. Ludlow, Box 137, R. R. No. 4, Red Cloud, Nebraska.
Mrs. Charles W. McCaskill, 1802 P St., University Place, Lincoln, Nebraska.
Mrs. L. H. McKillip, Seward, Nebraska.
Miles Maryott, Oskosh, Nebraska.
Mr. Clarence E. Mickel, Colorado Springs, Colo.
Mrs. George H. Payne, W. Dodge St., Omaha, Nebraska.
Mrs. E. H. Polley, 1506 E. St., Lincoln, Nebraska.
Miss Elizabeth Rooney, 2802 Dodge St., Omaha, Nebraska.
Mrs. A. E. Sheldon, 1319 S. 23rd St., Lincoln, Nebraska.
Miss Mary St. Martin, 136 E. 5th St., Wahoo, Nebraska.
Miss Anne Stuart, 1905 D St., Lincoln, Nebraska.
Prof. M. H. Swenk, 1410 North 37th St., Lincoln, Nebraska.
Miss Edith Tobitt, Omaha Public Library, Omaha, Nebraska.
Mr. Lucius H. Watson, Post Office, Lincoln, Nebraska.
Mr. Ewald Witt, Box 3, R. R. No. 1, Scribner, Nebraska.
Dr. Albert H. Wolcott, 2100 B St., Lincoln, Nebraska.
Mrs. Jennie Woodworth, Ayr, Nebraska.

The "Blue Bird"

Is now published monthly, the year 'round, with new and interesting departments, features and contests, and AT NO ADDITIONAL COST TO SUBSCRIBERS.

Official organ of The Cleveland Bird Lovers' Association.

SEND 20c FOR SAMPLE COPY

Annual Subscription \$2.00

Agents Wanted Everywhere

THE BLUE BIRD

1010 Euclid Ave., Cleveland, Ohio

The Oologist

Birds - Eggs - Nests - Taxidermy

The Oologist is the only magazine published in America devoted to the interests of those making collections of Birds, their Nests and Eggs. For thirty-seven years it has been the recognized medium for the exchange of ideas along these lines and its columns teem with advertisements of this character, solely for exchange. It is the second oldest bird journal in America and indispensable to those engaged in either the amateur or scientific study of birds.

Subscription, fifty cents per year, with a free exchange notice. Sample copy free. Address The Oologist, Lacon, Ill.

13,814

JAN 23 1924

Vol. XXXIV. No. 2

June, 1922

LIBRARY
UNIVERSITY OF CALIFORNIA

THE WILSON BULLETIN



OFFICIAL ORGAN OF
The Wilson Ornithological Club and The
Nebraska Ornithologists Union

Entered as Second-class Matter, July 13, 1916, at the Post Office at Oberlin, Ohio, under Act of March 3, 1879.

CONTENTS

BIRD NOTES FROM SOUTHERN WISCONSIN	By H. L. Stoddard	65-79
BREEDING WARBLERS AROUND ATLANTA, GA.	By William L. La Prade, Jr.	80-83
BIRDS OF CUMBERLAND ISLAND, GA.	By T. Gilbert Pearson	84-90
EFFECTS OF A MILD WINTER	By C. W. G. Eifrig	90-94
BIRDS AT THE MOUTH OF OHIO RIVER	By Gordon Wilson	94-100
PRAIRIE CHICKEN IN EAST CENTRAL IOWA	By Fred J. Pierce	100-106
EDITORIAL		107
BIRD BANDING DEPARTMENT		108-114
FIELD NOTES		115-120
NEBRASKA ORNITHOLOGISTS UNION		121-123
NOTES—HERE AND THERE		124-125

THE WILSON BULLETIN

Published quarterly, March, June, September and December, as the official organ of the Wilson Ornithological Club and the Nebraska Ornithologists' Union, and edited by Dr. Lynds Jones, assisted by a board of five members.

All articles and communications intended for publication and all books and publications for notice, should be sent to Dr. Lynds Jones, Spear Laboratory, Oberlin, Ohio.

The subscription price is \$1.50 a year, including postage, strictly in advance. Single numbers, 50 cents. Free to all members not in arrears for dues.

Subscriptions should be addressed to the Treasurer, and applications for membership to the Secretary.

The officers of the Wilson Club for the year 1921 are:

President—Dr. R. M. Strong, Loyola University, Chicago, Ill.

Vice-President—Dr. H. C. Oberholser, Washington, D. C.

Secretary—Albert F. Ganier, 2507 Ashwood Ave., Nashville, Tenn.

Treasurer—George L. Fordyce, Youngstown, Ohio.

EDITORIAL BOARD

Lynds Jones, Editor-in-Chief
Oberlin, Ohio

G. L. Fordyce, Youngstown, Ohio; A. F. Ganier, Nashville, Tenn.; T. C. Stephens, Sioux City, Iowa; Dayton Stoner, Iowa City, Iowa
M. H. Swenk, Lincoln, Neb.

Published Quarterly at Oberlin, Ohio



DOUBLE-CRESTED CORMORANT NESTS



YOUNG DOUBLE-CRESTED CORMORANTS

THE WILSON BULLETIN

A QUARTERLY JOURNAL OF ORNITHOLOGY

VOL. XXXIV

JUNE, 1922

NO. 2

OLD SERIES VOL. XXXIV. NEW SERIES VOL. XXIX

BIRD NOTES FROM SOUTHERN WISCONSIN

BY H. L. STODDARD

PUBLIC MUSEUM, MILWAUKEE, WIS.

Any restricted area in our latitude that combines rugged, heavily wooded bluffs, large marshes, sandy prairies and other waste lands, with lakes, creeks, rivers, sloughs, and wooded bottoms, is certain to have a varied and abundant bird population. Such a place is found in south-central Wisconsin, within a radius of fifteen miles of the villages of Prairie du Sac and Sauk City, where Sauk, Columbia, and Dane Counties border on the Wisconsin River.

A residence of five years and various collecting trips prior to 1913 had made me familiar with the region and awake to its bird study possibilities. Therefore the opportunity of revisiting this favorite section—and renewing acquaintances both human and avian, was welcomed. Here the greater part of the time was spent from April 9 to June 13, 1921, collecting material for several large bird groups for the Milwaukee Public Museum, and all specimens mentioned as taken on this trip are in the collection of that institution.

One side trip was made to Fox Lake, Dodge County, where I joined Mr. George Shrosbree, Chief Taxidermist of the Museum, on May 17 for ten days in a Great Blue Heron colony, making the necessary collections and studies for a large group of these picturesque birds, and another to a Black-crowned Night Heron colony, near Darlington, Lafayette County, June 3 and 4, on a similar errand. The latter trip was made in company of Messrs. Shrosbree and E. D. Ochsner in the latter's automobile, a fine cross-country drive totalling about one hundred and forty miles.

The remainder of our stay at Prairie du Sac was spent visiting favorable localities in all directions by auto, motor boat, and on foot. We made our headquarters while here at the home of Mr. Ochsner, taxidermist, who has a collection of local birds containing many rarities.

The village is located on the banks of the Wisconsin River, a mile below the huge power dam, completed about 1915. The water is backed up from here for fifteen miles or more, forming Lake Wisconsin, one of the most interesting bodies of water, from an ornithological standpoint, that it was ever my good fortune to visit. Hundreds of acres of heavy bottom timber was flooded, now standing in twelve to twenty or more feet of water, a wierd gray forest, the gaunt skeletons of the larger trees alone remaining. This body of water, a mile and a half to two miles across in some places, must be navigated with caution in stormy weather, being full of snags, and stumps of trees cut off in winter at ice level. This unique lake supports much interesting bird life, being alive at times in spring and fall with migrating water fowl. Here in summer Kingbird nests are to be found over a half mile from shore, in crotches as low as two feet above the water, while Purple Martins and Tree Swallows share the hundreds of natural cavities and old woodpecker holes with Great Crested Flycatchers and even a few English Sparrows! Flickers, Red-headed, Hairy and Downy Woodpeckers also nest here as well as the Great Blue Herons and Double-crested Cormorants, to be described later.

West and northwest of Prairie du Sac lies slightly rolling Sauk Prairie. The southern half is a sandy region, with many uncultivated fields, and knolls covered with coarse bunch grass, natural home of Prairie Hens, Western Meadowlarks, Migrant Shrikes, and in spring, swarms of Lapland Longspurs. This region borders the Wisconsin River valley on the south, with its heavy bottom land timber and backwater sloughs, where Pileated Woodpeckers, Barred Owls, and such southern species as Prothonotary Warblers, Blue-winged Warblers, Yellow-breasted Chat, Red-bellied Woodpeckers and others partial to such environment breed. Here also the rare Kentucky Warbler was taken in 1913 (see Auk, Jan. 1917, p. 67). Back from the river on both sides are extensive savannas or marshes as well as sandy oak ridges.

The north half of Sauk Prairie is a fertile farming section, bordered on the west by wooded sandstone bluffs, inhabited by hawks, owls, Ruffed Grouse and others. North of the prairie is the rugged quartzite range known as the Baraboo Bluffs, which includes the beautiful Devil's Lake region.

This unspoiled range, so rocky and rugged that it still retains much heavy timber, is the source of Otter Creek and

other spring-fed streams, along which such rare Wisconsin-species as Acadian Flycatcher and Louisiana Water-Thrushes breed. Blackburnian, Black-throated Green and other warblers usually breeding farther north are occasionally seen in summer, while Oven-birds, Nashville, Cerulean, Chestnut-sided, and Black and White Warblers breed more or less commonly, and Blue-winged and Golden-winged Warblers may occasionally be seen in mid-summer with their broods. Least Flycatchers, Veeries and Wood Thrushes, and a host of others are common breeders. This range is also a natural stronghold of the birds of prey. Virginia Deer and Banded Rattlesnakes are abundant.

East of the Wisconsin River the rolling hills and fertile valleys of Columbia County are attractive to many species.

The following notes are selected, either for the rarity of the species listed, or for some points of special interest:

Phalacrocorax a. auritus (Double-crested Cormorant).—These "nigger geese," as they are sometimes called, were common on the Wisconsin River when I first arrived, April 9, and reached their greatest abundance near the last of the month. They frequented certain overhanging trees growing from the river bank below Sauk City that were literally "white-washed," and a dozen to twenty birds were to be seen here at almost any hour. But by far the greater number frequented Lake Wisconsin near Merrimac and Okee, where as many as seventy-five were seen in one tree. In this dead, partly submerged forest, Great Blue Herons had established a colony of about thirty nests, and in the same trees, but invariably a few feet lower, we counted thirteen cormorant nests on our first visit, April 10. Although on each nest sat a cormorant, with others on the limbs nearby, none of the nests contained eggs at this time, though those of the herons mostly contained incomplete sets. The greater number of nests were bunched in a few trees, one containing seven heron nests and three of the cormorants, and another five of heron and three of cormorant. A severe storm later destroyed a few heron nests and all but six of those of the cormorants. Curiously, though adults were constantly on the nests, it was not till May 1 that we found a complete set of the cormorant eggs, a set of four being collected and others incomplete, seen. Young, just hatched, were found May 26, three being collected, and a "pipped" egg hatched in an incubator. Newly hatched young were winey black above and slightly pinkish below, and polished all over as if with stove

blackening. When first hatched they could open their eyes, though the aperture was little larger than a pinhead. Stomachs of three one-day-old young were found to contain coarse scales and other fish remains. One had the back spine of a fair-sized bullhead in the stomach. By the first week in June most of the migrating cormorants had passed on, leaving those that were nesting and many non-breeding birds around the colony.

Most of the cormorants did their fishing in the shallow bays that extended a considerable distance into what was formerly marsh and tamarack swamp. Here it was a common sight to see fifteen or twenty of these black fellows sitting on some favorite snag or dead tree sunning themselves with partly extended wings, as they digested their last meal.

When they commenced nesting all the adults had full crests and intense bluish-green dottings around their emerald eyes. By the time the young were hatched the adults collected were found to have lost their crests, and the eye ornaments had dimmed somewhat.

Some other interesting facts were brought to light by collecting this material. One fine large individual that had been sitting on four addled eggs for a long time, proved to be a male when collected, the smaller, equally glossy bird that usually sat nearby being presumably his mate. But very often he was seen to have a light breasted companion, this bird proving to be a non-breeding male. There were a number of these non-breeders, all more or less mottled on their breasts and necks with lighter feathers.

The stomachs of seven adults shot April 10 all contained fish. Five each held one large bullhead of nearly a pound weight, swallowed spines and all, while each of the others held a pike that would weigh over a pound. Others examined from time to time contained partly digested bullheads or more rarely other fish.

Breathing entirely through their mouths, these birds kept them open wide while flying excitedly around their nests.

Double-crested Cormorants had nested in this region the two preceding years but not before that, according to information I later was able to obtain. Mr. Laurence Keller of Prairie du Sac saw many of these birds, mostly in immature plumage, near three distinct nesting areas in mid-summer of 1920. Others mentioned seeing half grown young sitting on the shore of the lake opposite the colonies in summer. The cormorant nests are

deep and solidly built of good sized sticks, well lined with soft inner bark strips, and were completely "lined" before the eggs were laid. The heron nests in this colony were of very unusual size, due perhaps to the ease with which brittle dead sticks could be obtained nearby.

Branta c. canadensis (Canada Goose).—I was informed that these geese wintered in much larger numbers than is usual on Sauk Prairie, due perhaps to the open winter and lack of deep snows. Many thousands were seen by Ochsner, Albert Gastrow, and me on a row-boat trip April 10, through the flooded woods of Lake Wisconsin. At times flock after flock would rise from different parts of the timber and mill around until the air seemed full of geese. Many hundreds still present on April 20. Three or four small flocks frequented Sauk Prairie until the first week in May. They were extremely regular in their habits in fair weather. Flying to the rye fields from the river bars where they had spent the day, a few minutes before sundown, they would remain until dark. Appearing again in the morning just before sunrise, they would remain and feed until the farmers started to work in the fields. In rainy weather when no teams were out, they remained in the rye most of the day.

Wishing to collect a few fine specimens for a group, Mr. Ochsner and I concealed ourselves in rebuilt corn shocks in a field that they frequented regularly. Soon after daylight a flock of about twenty alighted a few rods in front of my location, followed in a few minutes by about forty that came in with much argument and flapping directly behind. My part of the field, which included a considerable rise in the ground, seemed to be favored by the birds this morning, and I could hear them talking in hoarse undertones as they fed my way. Soon they commenced trooping by in twos and threes, pulling corn off the shocks or standing erect looking for danger. Occasionally they would quarrel a little and none dared to approach one cranky old gauder with a lame leg. I scarcely breathed as they commenced to pull at the rear of the shock that concealed me, one finally coming around and peering in, then shying off like a spirited horse from a paper in the road. Though two fine specimens were collected, it was the presence of these wary creatures all about, almost within arms reach, that will linger in the memory. So shy are they that they never returned to this field before leaving for the north, though no other corn was out on the entire prairie.

Ardea herodias (Great Blue Heron).—A flourishing, well-

protected colony of about one hundred and fifty pairs occupy the tallest timber in a large piece of woodland near the shores of Fox Lake, Dodge County. This colony is partly on the property of Mr. Matt. Baird, who is interested in the birds and has protected them. Most of the nests are in living oaks, elms, and maples, from seventy to eighty-five feet above the ground. At the time of our visit, May 17 to 23, the majority held young, from little fellows just hatched, to lusty youngsters a couple of weeks old, while a few contained eggs. Swarms of mosquitoes made Mr. Shrosbree's life miserable below, as he collected the selected specimens of adult herons with his twenty-two rifle, I, meanwhile enjoying (?) the fishy stench among the nests above. We were greatly assisted in the difficult task of securing and lowering the necessary nests and tree sections by Mr. Baird, who is very expert in the tree tops.

The adults of this colony were exceptionally tame, though the great height of the nests and the density of the foliage made intimate studies of the nest life impracticable. Here at least they cannot be considered a menace to the game fish, as all evidence in their nests and in the stomachs of fourteen adults examined, showed that they were subsisting almost exclusively on carp. One large fellow had two perfectly fresh ones nine inches in length in his neck, and another of over eleven inches in his stomach.

Nycticorax nycticorax naevius (Black-crowned Night Heron).—A colony with about fifty occupied nests, three miles from Darlington, Lafayette County, was visited May 2. At this time it was in a thriving condition, most of the nests containing incomplete sets of eggs. On our last visit, June 3 and 4, we were informed that the colony had been "shot up" by boys. The twelve to fifteen remaining nests mostly held young, from little fellows just hatched to large ones climbing on the edges of their nests and on nearby limbs, while a few still held eggs. The adults were now extremely wild and wary.

This colony was located in second growth timber on a side hill a short distance from a small creek and a half mile from the Pecatonica River, on the farm of Mr. Charles Miller, who endeavors to protect them.

Tympanuchus a. americanus (Prairie Chicken).—The morning and evening gatherings of cock Prairie Chickens on some favorite knoll where countless generations before them gathered, fought, "boomed," and strutted, and where their own descendants

will instinctively gather if allowed to live, is an extremely interesting habit, the exact nature of which is imperfectly understood. The "cooing ground" on the sandy west end of Sauk Prairie has been used each Spring for over thirty years to his own knowledge, Mr. Ochsner says, the birds always using the same knoll, whether in rye, stubble, or grown to grass. The following observations were made from a shallow pit dug twenty-five yards from the knoll, while making the necessary studies and collecting the specimens and accessories for a group.

The "cooing" starts sometime the last of March and continues well into June, each day that the weather is suitable. Ochsner and I made about twenty trips mornings and evenings. The birds usually arrive very early, some were on the grounds before daylight two mornings that we tried to beat them, but on other occasions the bulk of them came in shortly after daylight. A few jumps high in the air as if to take the stiffness out of his legs and the bird was ready to perform. In "booming" the head was lowered and well out, wings drooped till their tips touched the ground, tail spread and cocked slightly forward, long neck tufts vertically erected till their tips were close together, and the ornamental eye patches of bright yellow skin extended to the utmost. The wings were quickly shaken, producing a slight rattling sound, the lavender bordered orange neck sacks inflated to the size of small oranges, then comes the resonant C-A-O-O-O-O-O, H-O-O, H-O-O, rising and in the same tones as do, ra, me, of the musical scale. This note carries a long distance on the still morning air. I have heard it over water where the nearest land was nearly two miles away. Two cackling calls, much like those of domestic roosters, were frequently heard when the excitement was high, one a loud ka-ka-ka-ka-ka-a-a-a, and the other a long drawn out q-u-a-h. Sometimes two cocks would "boom" and approach one another sideways in a threatening manner. When actually fighting the tufts were down and neck sacks collapsed. They jump up and down, sometimes completely over one another, dislodging many feathers. When they back away each seems glad that it is over.

In the excitement of their rapid rushes, cooing and combat, others may gather till seven or eight are close together. Then may come a lull, the birds returning to their well trodden stands, each a few feet from his nearest rival, till another fight occurs, and the excitement again runs high. The center of the

knoll, nearly bare of rye, seems to be occupied by the more powerful birds. On two different mornings these birds were seen to leave in a body after about two hours' performance, the vacated center being immediately taken by a half dozen others who had been standing here and there on the outskirts. These presumably weaker roosters kept the ball rolling for another full hour!

Specimens collected were in excellent condition in spite of their strenuous life at this season. Four of the largest weighed exactly two and a half pounds each, and the smallest two and a quarter. As Chapman mentions in "Camps and Cruises" only the cocks gather to perform, at least we saw no hens, though twelve to sixteen roosters were usually present. Late in the season two cocks went through the performance on bunch grass knolls less than a half mile distant, and nearby a lone hen was flushed and collected. Almost every morning the performing birds were harried by a large female Marsh Hawk, apparently only for mischief, as she never came anywhere near making a capture. All the brilliant markings on the assembled roosters instantly vanished on the hawk's appearance, and they would fly only if forced to do so.

The region including this "cooing ground" is full of sand burrs and weeds, some of the fields resting for years between crops. Western Meadowlarks fill the air with their music, and the restless swarms of Lapland Longspurs constantly circle their favorite fields. To complete the picture of a western prairie, I one morning jumped two Jack Rabbits, survivors or descendants of some introduced many years before and supposed to have been long since exterminated.

Falco peregrinus anatum (Duck Hawk).—Some of the most interesting of our season's experience were with these spectacular falcons, one eyrie being located in Sauk County and another in Columbia. For an extended account of these "finds" see Wilson Bulletin for December, 1921.

Falco c. columbarius (Pigeon Hawk).—This little understudy of the Duck Hawk is quite rare in this section. The only one seen was an adult in worn plumage collected near Mazomanie, Dane County, on May 2, 1921. The stomach contained the remains of some kind of sparrow.

Asio wilsonianus (Long-eared Owl).—A nest containing five eggs was found five miles northwest of Prairie du Sac on May 15, in a cedar thicket. As usual they were in an old crow nest,

fifteen feet up a small cedar. The Long-eared Owl is a regular but by no means common breeder in this section. The behavior of this particular female was so unusual that a short description may prove of interest.

When first discovered this bird paid no attention to kicks or shakings at the tree's base and only left her nest when I reached her level in another sapling a yard away, then reluctantly, with ruffled feathers and snapping beak. She was now completely carried away with wrath and excitement, attempting to return to her nest, then alighting momentarily on the dead limbs of a nearby oak, swelling to twice her natural size, and her eyes fairly blazing. All the time she was uttering the loud "yows" and low, throaty growls such as precede a fight between angry tom cats. The similarity of tone was so great that it seemed impossible that the sounds issued from the throat of a bird. This performance was kept up for fifteen or twenty minutes, the bird frequently approaching within three feet. Finally I retired and studied her from a distance with binoculars. Her fury gradually subsided, though she trembled and shook and jumped at imaginary sounds, being evidently in a highly nervous state.

Friends with a camera the following day found her less excitable, and not so inclined to approach closely. Later in the week, when Dr. W. D. Richardson made a special trip to interview her, thoroughly equipped for taking pictures, she absolutely refused to perform, though using her remarkable vocal powers to the fullest. Unfortunately this nest was broken up, presumably by boys, so we had no further opportunities to study her interesting behavior. The male was shy at all times, giving cat calls from a safe distance.

Phlœotomus pileatus abieticola (Northern Pileated Woodpecker).—Certainly has not decreased and has probably increased slightly in the river timber in the last eight years. On the fine bright evening of April 17, with the last of the snow on the ground from the terrible blizzard of the previous twenty-four hours, the rolling tattoos of these fine birds and their smaller kin, and the calls of the Red-bellied Woodpeckers particularly, were the predominating sounds of the river timber, followed as darkness fell, by the equally characteristic notes of the numerous Barred Owls.

A nest of the pileated was found April 11, the female appearing at her door about twenty feet up a dead soft maple

as I knocked, and flying immediately she recognized her caller. Fresh chips on the ground first attracted my attention. The contents of this nest was never ascertained, as to do so would have necessitated destroying the site. On the evening of May 15, over a month later, the Richardsons, Mr. Laws, and I visited the nest again, Dr. Richardson hoping to secure Graflex pictures of the woodpecker leaving the hole. This time the male was in the cavity, and pounded the tree as we would at the base, we could not drive him out. At every hard knock his head would bob out an inch or so, as if driven by the force of the blow. He was only induced to leave when I climbed half way up and drove him out an inch at a time by repeated hammering! I firmly believe that the scarcity of these fine birds over a large part of their former range that is still suited to their requirements, is directly due to the shooting of every one that shows his red head, by so-called sportsmen. No true sportsman would wantonly kill such a picturesque and beneficial creature.

Empidonax virescens (Acadian Flycatcher).—Hardly as plentiful in the Baraboo Bluffs as in 1913, when many pairs nested near the headwaters of Otter Creek. Two examples were collected here, however, and a number seen and heard. A typical nest and four heavily incubated eggs were found June 12. This species is probably not as rare in southern Wisconsin as formerly supposed. Two or three pair were noted in a tamarack swamp at Calhoun, Waukesha Comty, on June 26.

Corvus b. brachyrhynchos (Crow).—This abundant rascal is only included because of a point of special interest. Winter roosts of the Crow are well known and have been frequently described, but I have been unable to find any records of summer roosts. Approximately five hundred Crows roosted in the Sank City cemetery and across the road in evergreens surrounding an unused house. This daily gathering was first noticed by me on April 20, the first time I happened to be in the vicinity in the evening, and the birds still frequented the roost in undiminished numbers up to the time of our departure, June 13. They straggled in from all points of the compass about sundown, sometimes alighting in a mass in neighboring fields, or perhaps sitting around in the trees having a good time generally till roosting time. Soon after daylight they vacated the roost and left the vicinity with much cawing and general crows-racket. At first I had assumed that these were non-breeding

birds, but one shot and examined proved to be a breeding male. From the glossiness and sleek appearance of the others it seems likely that they were all males. At some future time I hope to study this roost carefully and examine a considerable number of the birds. This time was of course the height of the Crows' breeding season, and it would be interesting to know whether the females spend the nights alone at the nests, temporarily deserted by their irresponsible mates. Their relatives, the Bronzed Grackles, also have similar roosts, though the habit may be exceptional in both cases.

Sturnella neglecta (Western Meadowlark).—This fine songster is abundant on the sandy parts of Sauk Prairie. On all the low lands and in rich farming sections the eastern variety only is found, while throughout the sandy wastes the western bird holds forth in legions. The line of demarkation between these two varieties of Meadowlark as between the rich and poor land is quite sharply defined in this region. Nearby, in Dane County, in a sandy loam region, both varieties were noticed in close proximity. A nest of the Western Meadowlark with three eggs was found April 28, and another with four May 11, both in long dead grass in the sand prairie. Four males of each variety taken for comparison, show that the western bird is sufficiently lighter in coloration to make field identification easy and certain in favorable light.

Calcarius l. lapponicus (Lapland Longspur).—These longspurs gather by thousands on the sandy, weed-grown knolls in the southwestern part of Sauk Prairie during the latter part of April. They may increase day by day till the fields are alive with them, then some morning we find them gone, with the exception of a few scattering flocks. April 28 thousands were present, while next day not over fifty were seen. A few large flocks were noted in the fields near Fox Lake, Dodge County, as late as May 18. Specimens collected the last week in April were in almost complete summer plumage.

Calcarius pictus (Smith's Longspur).—These birds, ordinarily rare in Wisconsin, were seen in small numbers among the Laplands April 27 and 28, and two females and one male were collected, in almost complete summer dress. On the latter date between twenty and thirty were seen.

Chondestes g. grammacus (Lark Sparrows).—Small colonies of these handsome sparrows were noted at various places in Sauk County, and to a lesser extent in Columbia and Dane.

Rather common locally in Sauk County, around the sandy, grassy fields at the foot and part way up the sides of bluffs. Small colonies were seen on the bald tops of certain high bluffs in Columbia County, in grass and weed patches, near the gravelly spots where the Nighthawks lay their eggs. In the township of Mazomanie, Dane County, a small colony has been located for years on a bit of waste land a short distance from the river. In a general way it may be said to be partial to sandy or barren spots grown up to short grass or weeds in places that are seldom plowed.

Zonotrichia l. leucophris (White-crowned Sparrow).—An adult female taken in the Baraboo Bluffs, Sauk County, June 6, suggests the possibility of their breeding here.

Spiza americana (Dickcissel).—A great Dickcissel year in all parts of southern Wisconsin visited. Riding along the country roads, singing males were noted as averaging six to ten to the mile. In many of the hay fields they were the commonest birds, at least three or four pair per acre.

Sciurus motacilla (Louisiana Water-Thrush).—These shy, elusive creatures are regular migrants in small numbers along the Wisconsin River valley, and a few pairs breed near the source of Otter Creek, a rushing trout brook in the Baraboo Bluffs. June 27, 1913, a nest with one egg was found, in a pocket in the bank of the brook. A few days later, finding it deserted, it was collected, as well as an adult of this species that frequented the vicinity. This spring (1921) I made a special effort to get a satisfactory breeding record, but the nearest I came to it was finding a pair June 6 feeding a big lubberly Cowbird. The female parent was collected for identification.

An early record is a specimen collected in the river bottoms in Sauk County April 17, the day after the blizzard. The bird was in the snow by a slushy pool. Although there were four or five inches of snow on the ground, S. Paul Jones and the writer listed fifty species of birds in these sheltered bottoms. This disastrous storm must have destroyed every Woodcock and Prairie Horned Lark nest in the southern counties of Wisconsin.

Thryomanes b. bewickii (Bewicks Wren).—At least two pairs of these wrens appeared in the vicinity of Prairie du Sac this last spring (1921) and I tried without success to collect a specimen to establish a clear record for the State. My friend, Mr. Albert Gastrow, told me of a species of wren new to him

that had been singing around his farm in Columbia County for a number of days. On going here on the evening of May 26 the bird was immediately located and satisfactorily studied at close range with binoculars. The white edging to the long tail and line over eye are unmistakable. The specimen fell in a tangled mass of weeds and other debris on being shot, and the best efforts of three of us hunting for half an hour failed to locate it.

Another pair took up quarters a mile away, near the east end of the Prairie du Sac bridge, just across the line in Dane County. Mr. Gastrow was also the first to find this second location, one of the birds singing off and on all day near where he happened to be working. My friends, Warner Taylor and S. Paul Jones, later studied the bird to good advantage at different times and satisfied themselves as to its identity.

Baeolophus bicolor (Tufted Titmouse).—This is another species that is extending its range northward, following the Cardinal. While the latter were entirely unknown here previous to 1916, they are now one of the abundant residents of the river bottoms and adjacent regions. Therefore I was not surprised to hear the loud whistle of the Tufted Tit in the village of Prairie du Sac where the male of a pair was collected April 13, 1921. Two were heard calling in the river timber below Sauk City April 23. They have been reported and at least one taken at other points in southern Wisconsin recently also. Kunlien and Hollister (Birds of Wisconsin, 1903) say of this species, "A straggler from the south. In the museum of the University of Wisconsin there is a single specimen of the tufted tit, shot by Mr. N. C. Gilbert, December 15, 1900, near Madison. The bird was alone, and this is doubtless the only record for the state." At the present rate of extension this interesting bird, as well as the Cardinal, should be common in suitable localities in southern Wisconsin within a few years.

BREEDING WARBLERS AROUND ATLANTA, GEORGIA

BY WM. H. LA PRADE, JR.

The writer believes that there is no locality in the South where there is a greater variety of breeding Warblers than at Atlanta. With an altitude of 1050 feet, which makes it the highest city of its size east of the Mississippi, there are found here some species normally breeding much farther north. The hill country of the South has had so few competent observers that it has been largely guess work when limits have been set for the southern breeding range of many species, and it is probable that not a few birds are found regularly hundreds of miles nearer the Gulf than is generally supposed. The writer hopes that other southern observers may contribute such data as they have bearing on this subject so that we may determine whether these are exceptional records, indicating sporadic breeding, or whether the above theory is correct.

It is safe to say that 16 warblers breed within six miles of the center of Atlanta, and some notes about each species follow:

Mniotilta varia: Black-and-white Warbler. My earliest record for spring arrival is March 21, and by April 1 it can always be found. Only a few remain to breed. Mr. W. J. Mills found a nest with four eggs six miles south of the city, and Mr. D. C. Peacock a similar set four miles north. It breeds regularly but sparingly 20 miles north, where Mr. D. V. Hembree has taken several sets.

Helminthophila swainsoni: Swainson's Warbler. Mr. Robert Windsor Smith took the first specimen, four miles to the east, May 4, 1898, and the writer took the next, April 29, 1907. In May, 1916, I discovered a male in full song on the outskirts of the city. The bird was unsuspecting, and with a dainty step, reminding one of the Oven-bird, walked to within ten feet of where I was concealed, stopping every few moments to pour out its rich and ringing song. So far as I knew, this species had been regarded as a bird of the river valleys or coastal plains, so I never suspected that it might breed at an altitude of 1050 feet. But on May 20, 1920, when in the same vicinity searching for nests of the Kentucky Warbler, I heard excited chippings, which led me to recognize a Swainson's Warbler in a tangle of vines, where I soon located the completed but empty nest. On May 27, after securing photographs of the female on nest and of the nest

and eggs in situ, I collected the nest and three eggs. It was three feet from the ground, in vines slung under a small elm, and rather roughly built of dead leaves, rootlets, and pine needles. This was in thick, damp woods, near a stream bordered by extensive thickets, in a locality like those described by Mr. Brewster and Mr. Wayne, except for the absence of canes.

Helmitheros vermivorus: Worm-eating Warbler. No nest has been found here, but a few undoubtedly breed. One pair was observed through the breeding season of 1916, and one female in slightly worn plumage was shot June 1, 1916, and is now in Emory University. Twice I have searched in vain while excited females indicated well-hidden treasures. Chapman notes exceptional breeding in North Carolina, Alabama, Mississippi, and Louisiana, but I suspect that they may be found in small numbers throughout the hill country in this belt of states.

Vermivora pinus: Blue-winged Warbler. While collecting some late migrants on May 3, 1916, I shot a female Blue-wing, and on dissection was surprised to find an egg nearly ready to lay. Later in the season Mr. D. C. Peacock saw a family of young Blue-wings in care of the mother. Chapman gives northern Kentucky, Maryland, and Pennsylvania as the southern breeding limit.

Dendroica aestiva aestiva: Yellow Warbler. Having so easily located nests of this warbler in Missouri, it is hard to understand why I have not found them here. Abundant in migration, only a few found in the breeding season, around willow trees in pastures or along streams. Repeated search in trees and bushes has been in vain. More should breed here, where there are no Cowbirds to disturb.

Dendroica cerulea: Cerulean Warbler. I know of only one piece of woods where it breeds, but several pairs certainly nest there every season. High up in the sycamores and poplars the distinctive song of the Cerulean may be heard through May and June, but one needs a real rubber neck to keep an eye on these tiny singers, which look no bigger than bumble-bees in the tree tops. After the leaves fell one winter I located a nest, presumably of this species, saddled on a limb of a giant sycamore which I searched in vain the preceding May.

Dendroica dominica dominica: Yellow-throated Warbler. This is another species that has baffled local oölogists. Living in the highest pines, where they may be found from the middle of March until October, the nests are doubtless indistinguishable from

bunches of pine straw and cones, and binoculars focussed for a long time on building birds is probably the only way to locate a nest.

Dendroica vigorsi: Pine Warbler. This bird is much more abundant in winter than in summer, and local breeders are nesting before many that summer farther north leave us. While some Pine Warblers nest in high pines like the preceding species, other pairs are more lowly minded, one nest with young being only 15 feet up. The three local sets of which I have record were completed between March 15 and March 27, each nest having feathers in the lining.

Dendroica discolor: Prairie Warbler. Another early arrival. Sometimes seen during the last week in March. It frequents bushy fields, and the nest is from two to six feet from the ground. Full sets, usually four, with one set each of three and five, are complete between May 5 and May 10.

Sciurus aurocapillus: Oven-bird. One or more pairs have spent the summer five miles east of the city for several years, but no nest has been found. Mr. D. V. Hembree has taken several sets 20 miles north. Chapman states that they breed southward in the Allegheny mountains to South Carolina, but this range should be extended to include the section of Georgia north of Atlanta, as they unquestionably breed regularly in many places in this area.

Sciurus motacilla: Louisiana Water-Thrush. A regular breeder, arriving the latter part of March and nesting early enough in April to have young on the wing by the middle of May. Almost every small stream, with banks high enough to afford nesting places, has one or more pairs, but the nests are so hard to locate that I have succeeded in finding only two, one with young, and one with four eggs.

Oporornis formosus: Kentucky Warbler. Chapman notes the breeding of this species at Caesar's Head, S. C., as if it were exceptional so far south, but this is the most abundant breeding warbler around Atlanta, except the Hooded and the Chat, though nests are much harder to find than those of bush building species. I know of one large tract of woods in which I believe that 20 nesting pairs is a conservative estimate. Nests I have succeeded in finding were in rather open woods, and were located by flushing the brooding female. May 15 to May 25 is the time to expect fresh sets, and twice I have found sets of five.

Geothlypis trichas trichas: Maryland Yellow-throat. This

is another regular breeder that seems to practice more concealment than I found to be the case around St. Louis, nesting places being confined to marshy places.

Icteria virens virens: Yellow-breasted Chat. Very abundant. I have found three and four nests in a day, and in much more accessible places than those reported by Mr. Wayne and Mr. Erichsen in the Auk. Nearly all sets are of four eggs, a few having only three.

Wilsonia citrina: Hooded Warbler. One of the characteristic birds of this section, arriving the first week in April, full sets being found from May 10 to June 10. Nests are from six inches to three feet from the ground, in bushes, canes, or vines.

Setophaga ruticilla: Redstart. Chapman gives exceptional records of southern breeding at Greensboro, Ala., and Jackson, Miss. The writer believes that this species nests in many localities in the northern half of Georgia. In the past five years five nests with eggs or young have been found near the spot where the nest of Swainson's Warbler was discovered, all being in birch or elm trees, at a height of from 12 to 35 feet.

The Parula Warbler has never been found breeding here, though it breeds on the Georgia coast and probably in the mountains. The Prothonotary Warbler breeds near Augusta, but has never been seen around Atlanta. Bachman's Warbler has been recorded here once as a migrant, April 18, 1914. The late Mr. James Sanford told me of following a singing male for nearly three hours, during which time he had many good views of him through field glasses, and once was within 15 feet of him. One would not expect this species here even as a migrant, but after my experience with Swainson's Warbler I am not disposed to say that any warbler breeding in the South and appearing here in migration may not also breed. At any rate, no harm is done in entertaining the dream that even this rarest of southern warblers may some day be added to our breeding list. The Golden-winged Warbler was reported by Gearhardt as breeding in northwest Georgia, as recorded in Baird, Brewer, and Ridgeway, but some doubt seems to attach to his records. The Black-throated Green, the Blackburnian, and Cairn's Warblers are supposed to breed in the mountains of North Georgia, but we can scarcely hope to add them to our Atlanta list.

NOTES ON THE BIRDS OF CUMBERLAND ISLAND,
GEORGIA

BY T. GILBERT PEARSON

The most southern of all the Sea Islands that skirt the coast of the State of Georgia is Cumberland Island, separated from Florida by the waters of the little bay up which one would approach Fernandina from the sea. It lies some distance from the mainland and the intervening territory is covered with extensive salt marshes, through which winds a navigable creek, that composes part of the inland passage used by small boats bound up or down the coast.

About forty years ago Thomas M. Carnegie of Pittsburgh, purchased almost the entire island and near its southern end built a magnificent home, with fountains, flower gardens and other attractive surroundings. This house, "Dungeness," is one of the most elaborate along the Georgia coast, and is a familiar sight to those who in cruising the Atlantic coast, seek the shelter of the Inland Passage.

As Mr. Carnegie's children matured they in turn built homes on the island, occupying the sites where once stood the wide-galleried houses of the old plantation homes. The new owners have never engaged in agricultural pursuits and most of the old fields are now covered with bushes and second-growth trees. The Island also contains much primeval forest land, including extensive areas of oak, tulip, poplar and other hardwood trees indigenous to the region. There is an extensive area of sand-hills covered with beautiful forests of long-leaf pines. There are fresh and saltwater marshes, numerous freshwater ponds and extensive swamps.

Some hunting is indulged in during the winter months, but as no one is permitted to shoot there except the Carnegies and their friends, and as this shooting is not extensive, the wild life has been left in almost undisputed control of this great and varied region. Virginia Deer are abundant and they are in evidence everywhere as one travels about the Island. In no place have I found Wild Turkeys so plentiful.

On May 2, 1921, I landed on the Island and remained the guest of Andrew Carnegie, 2nd, until the morning of May 6. My host graciously put at my disposal every convenience of the Island in the way of automobiles, boats and guides, and in fact accompanied me almost constantly, paddling the canoe while I

fished, photographed alligators (which swarm in the swamps and ponds) and hunted birds' nests.

The following is a list of the 97 species of birds seen on the Island or over the waters in the immediate vicinity. Others were observed but not at sufficiently close range to make identification positive:

1. HERRING GULL (*Larus argentatus*).
Two in immature plumage were seen on the beach May 3.
2. LAUGHING GULL (*Larus atricilla*).
Thirty were counted at various points flying near the beach on May 3. Several were immature.
3. COMMON TERN (*Sterna hirundo*).
Several were in sight May 2 and 5.
4. LEAST TERN (*Sterna antillarum*).
Noted daily flying about the waters near Dungeness.
5. BLACK SKIMMER (*Rynchops nigra*).
A group of three Skimmers was seen. The birds were feeding from the surface as they flew leisurely by perhaps fifty yards from shore.
6. WATER-TURKEY (*Anhinga anhinga*).
An Anhinga with wings spread was seen standing on a dead tree on one of the ponds May 2, and another flew by shortly afterward.
7. FLORIDA CORMORANT (*Phalacrocorax auritus floridanus*).
Ten individuals were counted. The bird is not known to breed on the Island.
8. BROWN PELICAN (*Pelicanus occidentalis*).
On May 2 two adults were seen flying over the bay near the southern shore of the Island.
9. WOOD DUCK (*Aix sponsa*).
Three pairs noted. This species undoubtedly breeds here commonly.
10. SURF SCOTER (*Oidemia perspicillata*).
Five counted near the Dungeness wharf on the morning of May 6.
11. WHITE IBIS (*Guara alba*).
Nineteen adult birds observed. Seventeen were in one flock. There appears to be no record of any nesting colony having occupied the Island.
12. WARD'S HERON (*Ardea herodias wardi*).
A common species. Breeds.
13. EGRET (*Herodias egretta*).
A colony of Herons and Egrets have for many years built their nests in the trees and bushes bordering one of the ponds on the Island. The spring of 1921 was a very dry one and the water in the pond became so low that the trees of the rookery were left on dry ground. Egrets, Little Blue and Louisiana Herons rarely continue to use their breeding grounds under such conditions. Hence the whole colony this spring departed to a swamp so difficult to penetrate that although we saw Egrets and other Herons converging their flight to the new nesting place we did not, upon advice of Mr. Carnegie, attempt to visit the colony. This species appeared to be somewhat more plentiful than the Snowy Egret.
14. SNOWY EGRET (*Egretta candidissima candidissima*).

- Seen daily on Ashley Pond and elsewhere. Perhaps twenty noted in all. Has been known to breed here for many years.
15. LOUISIANA HERON (*Hydranassa tricolor ruficollis*).
Appeared to be the most abundant Heron on the Island. Breeds.
 16. LITTLE BLUE HERON (*Florida carulea*).
Common and undoubtedly breeding.
 17. GREEN HERON (*Butorides virescens virescens*).
One nest with eggs examined. Several birds seen.
 18. BLACK-CROWNED NIGHT HERON (*Nycticorax nycticorax naevius*).
Common species; five nests found.
 19. YELLOW-CROWNED NIGHT HERON (*Nyctanassa violacea*).
A dozen or more seen. Doubtless breeds in the swamps.
 20. WAYNE'S CLAPPER RAIL (*Rallus crepitans waynei*).
Often heard calling from the marshes.
 21. PURPLE GALLINULE (*Ionornis martinicus*).
Appeared to be common. Its notes often heard in the freshwater marshes about the ponds.
 22. FLORIDA GALLINULE (*Gallinula galeata*).
One seen in a pond near the sand dunes.
 23. LEAST SANDPIPER (*Pisobia minutilla*).
Several small flocks were constantly on the beach and the neighboring flats.
 24. SEMIPALMATED SANDPIPER (*Ereunetes pusillus*).
Were flocking with Least Sandpipers.
 25. YELLOW-LEGS (*Totanus flavipes*).
On May 3 and 4 a flock of about seventy Yellow-legs were watched as they fed in a shallow fresh water pond near the duck house.
 26. SOLITARY SANDPIPER (*Hedromas solitarius solitarius*).
Three or four seen about the fresh water ponds.
 27. WILLET (*Catoptrophorus semipalmatus semipalmatus*).
Three or four seen flying about the marshes. Undoubtedly they breed here regularly.
 28. SPOTTED SANDPIPER (*Actitis macularia*).
Several were recorded.
 29. Hudsonian Curlew (*Numenius hudsonicus*).
One flock of five was seen in flight May 2. Two birds appeared the morning of May 6.
 30. SEMIPALMATED PLOVER (*Egialitis semipalmata*).
Perhaps twenty individuals were feeding along the beach May 3 and 4.
 31. WILSON'S PLOVER (*Ochthodromus wilsonius*).
Common on the dry beaches and breeding.
 32. RUDDY TURNSTONE (*Arenaria interpres morinella*).
One flock seen May 3 and two other flocks May 4.
 33. OYSTER-CATCHER (*Hamatopus palliatus*).
One found on the beach May 4.
 34. WILD TURKEY (*Melcagris gallopavo silvestris*).
Wild Turkeys appear to be everywhere on the Island. Mr. Carnegie said that the thirty or forty killed every winter seemed to have no effect on their numbers, which continue to increase every year. These birds were seen frequently in the pasture, in the woods, or along the

roadside. Mr. Carnegie and I each caught a young one but a few days old, on May 4. The same afternoon five gobblers and a hen fed for some time on the golf course within sight of the house.

35. MOURNING DOVE (*Zenaidura macroura carolinensis*).

Only three were seen. If more land was cleared and under cultivation these birds would probably be numerous.

36. GROUND DOVE (*Chamepeelia passerina terrestris*).

Several were noted flying about or feeding by the roadside. They were not so tame as one usually finds them to be in the quiet streets of Florida towns.

37. TURKEY VULTURE (*Cathartes aura septentrionalis*).

Common. One pair had recently laid eggs in silo.

38. BLACK VULTURE (*Catharista urubu*).

This species doubtless is much more common than the three individuals seen might lead one to suspect.

39. MARSH HAWK (*Circus hudsonius*).

One male seen beating along over the pasture May 3.

40. RED-TAILED HAWK (*Buteo borealis borealis*).

One adult noted.

41. FLORIDA RED-SHOULDERED HAWK (*Buteo lineatus alleni*).

Three or four were flushed from their perches in the live oak trees.

42. BALD EAGLE (*Haliaeetus leucoccephalus leucoccephalus*).

Eagles were seen on three or four occasions—all were adults with white heads and tails. Mr. Carnegie pointed out two of their nests. I understood that there were others on the Island.

43. DUCK HAWK (*Falco peregrinus anatum*).

On May 4, while driving along the beach a few miles from Dungeness a Duck Hawk appeared coming from the direction of Fernandina up the bay. It was at the time flying perhaps a hundred feet above the water. Nearing the beach it suddenly dived at an Oyster-catcher we had been watching on the shore. The big shore-bird took refuge in flight, but the hawk almost immediately overtook it, but when within a few feet it swerved upward and towered. It quickly dived for another harmless attack, then pursued its way along the beach parallel with our course. At my suggestion Mr. Carnegie released the engine and the indicator showed a speed of forty miles an hour before we had attained a rate equal to that of the Duck Hawk. The bird, however, appeared to be moving with indolent ease and without haste.

44. SPARROW HAWK (*Falco sparverius sparverius*).

Only two were noted. Conditions on the Island would appear not to be favorable for their presence, the forest growth being too heavy and open ranges too few to meet their requirements.

45. OSPREY (*Pandion haliaëtus carolinensis*).

One seen fishing in a pond May 2. Another seen on its nest near the duck house May 3 and 4.

46. FLORIDA BARRED OWL (*Strix varia alleni*).

Two seen and one heard.

47. GREAT HORNED OWL (*Bubo virginianus virginianus*).

One seen May 3, and one heard calling the next night.

48. YELLOW-BILLED CUCKOO (*Coccyzus americanus americanus*).

Several Cuckoos were found, but only one was examined at close range. This proved to be a Yellow-billed.

49. BELTED KINGFISHER (*Ceryle alcyon*).
A few were found. Not known to breed.
50. SOUTHERN DOWNY WOODPECKER (*Dryobates pubescens pubescens*).
A familiar resident species.
51. PILEATED WOODPECKER (*Phlaotomus pileatus pileatus*).
Found at various places on the Island. Breeds.
52. RED-HEADED WOODPECKER (*Melanerpes erythrocephalus*).
Only one was discovered.
53. RED-BELLIED WOODPECKER (*Centurus carolinus*).
A fairly common resident bird.
54. CHUCK-WILL'S-WIDOW (*Aurostomus carolinensis*).
Heard calling the early part of every night.
55. NIGHTHAWK (*Chordeiles virginianus virginianus*).
Some were seen hawking about over the pasture late every afternoon. May 2 one was flushed from a single egg on the golf course.
56. CHIMNEY SWIFT (*Chattura pelagica*).
These birds find congenial nesting places in the large chimneys.
57. RUBY-THROATED HUMMINGBIRD (*Archilochus colubris*).
Two males were seen.
58. KINGBIRD (*Tyrannus tyrannus*).
A very abundant species. No nests were noticed.
59. CRESTED FLYCATCHER (*Myiarchus crinitus*).
Very plentiful in the woods.
60. WOOD PEWEE (*Myiochanes virens*).
One seen on May 3.
61. BLUE JAY (*Cyanocitta cristata cristata*).
Only three were noted. Is probably plentiful.
62. FISH CROW (*Corvus ossifragus*).
Abundant. This bird is the curse of the southern Heron rookeries. An egg shell containing a hole of the character made by a Crow was found on Long Slough. The egg was that of a Snowy Egret, Little Blue, or Louisiana Heron. As a rule the eggs of these species are indistinguishable.
63. BOBOLINK (*Dolichonyx oryzivorus*).
One small flock of male bobolinks observed on May 2.
64. FLORIDA RED-WING (*Agelaius phoeniceus floridanus*).
A familiar resident species.
65. MEADOWLARK (*Sturcella magna magna*).
Present, but not numerous.
66. FLORIDA GRACKLE (*Quiscalus quiscula aglaeus*).
Frequently seen. An incomplected nest was examined on May 2. It was being built in the hollow of a dead tree standing in a pond.
67. BOAT-TAILED GRACKLE (*Megaquiscalus major major*).
Present, and breeding.
68. SWAMP SPARROW (*Melospiza georgiana*).
Two found near Ashley Pond, May 3.
69. WHITE-EYED TOWHEE (*Pipilo erythrophthalmus alleni*).
Very plentiful; undoubtedly breeding.

70. FLORIDA CARDINAL (*Cardinalis cardinalis floridanus*).
Abundant and breeding.
71. PAINTED BUNTING (*Passerina ciris*).
Five males and three females noted May 2-6.
72. SCARLET TANAGER (*Piranga erythromelas*).
Two males appeared near the house May 2.
73. SUMMER TANAGER (*Piranga rubra rubra*).
Common in the oak forests.
74. BARN SWALLOW (*Hirundo erythrogastra*).
Perhaps fifty were seen flying about the golf course and nearby field May 2, 3 and 5.
75. TREE SWALLOW (*Iridoprocne bicolor*).
Many were resting on dead trees in the upper end of a beach pond May 3.
76. LOGGERHEAD SHRIKE (*Lanius ludovicianus ludovicianus*).
Watched an adult feeding a young on May 8. Two others were found.
77. RED-EYED VIREO (*Vireosylva olivacea*).
Seen on May 3, 4 and 5.
78. WHITE-EYED VIREO (*Vireo griseus griseus*).
Seen and heard daily.
79. BLACK AND WHITE WARBLER (*Mniotilta varia*).
In evidence daily.
80. PROTHONOTARY WARBLER (*Protonotaria citrea*).
A not uncommon species about the fresh water ponds.
81. PARULA WARBLER (*Compsothlypis americana americana*).
A few observed. Breeds.
82. YELLOW WARBLER (*Dendroica aestiva aestiva*).
These birds were frequenting the shrubbery near Mr. Carnegie's house and at Dungeness.
83. MAGNOLIA WARBLER (*Dendroica magnolia*).
Four males seen May 2.
84. BLACK-POLL WARBLER (*Dendroica striata*).
Two were found on the morning of May 2.
85. PINE WARBLER (*Dendroica vigorsii*).
Several found in the pine woods. Males were in song.
86. YELLOW PALM WARBLER (*Dendroica palmarum hypochrysea*).
Noted in company with the Magnolia Warbler.
87. OVEN-BIRD (*Seiurus aurocapillus*).
A numerous species, inhabiting the underbrush and thick woodlands.
88. YELLOW-BREASTED CHAT (*Icteria virens virens*).
Heard calling the night of May 2. None seen.
89. MOCKINGBIRD (*Mimus polyglottos*).
Abundant. Nests containing eggs were examined May 3 and 4.
90. CATBIRD (*Dumetella carolinensis*).
Often seen darting about the shrubbery.
91. BROWN THRASHER (*Toxostoma rufum*).
Frequently noted as we rode about the Island.
92. CAROLINA WREN (*Thryothorus ludovicianus ludovicianus*).

Many in full song. A nest with young was shown me in the small club house near the golf course.

93. WORTHINGTON'S MARSH WREN (*Telmatodytes palustris griseus*).

Heard singing in the marshes daily.

94. BROWN-HEADED NUTHATCH (*Sitta pusilla*).

Only three observed. Probably common and breeding in the pine woods.

95. BLUE-GRAY GNATCATCHER (*Poliophtila carulea carulea*).

Often seen and heard.

96. ROBIN (*Planesticus migratorius migratorius*).

Only one was seen. This was on the morning of May 6. Does not breed here.

97. BLUEBIRD (*Sialia sialis sialis*).

Common in the more open areas. One nest noted.

A MILD WINTER AND ITS EFFECTS ON THE MIGRATION OF BIRDS AT CHICAGO

C. W. G. EIFRIG

RIVER FOREST, ILLINOIS

The winter of 1920-21 was a memorable one for its mildness, not only for Chicago and vicinity, with which the writer is concerned, but for nearly the whole continent. Those members of the Wilson Club who attended the last meeting at Chicago will perhaps mentally put a question mark behind the statement, as regards Chicago at least, for they found the weather decidedly boreal during the last days of December, reaching -4° on the 28th, and plenty of snow too. But that was about the only real wintry spell we had. Lest anyone suspect the writer of undue meteorological enthusiasm or a too lively imagination along weather lines, let me quote from the official monthly summaries of the Chicago bureau. To go back as far as October 1920: "The mean temperature for the month, 61.9° , was the highest October mean recorded since the station was established in 1871. Mild weather was continuous from the 3rd to the 27th. Precipitation was about three-fifths of the normal. Sunshine was above the normal." "As a whole, November was mild with only light precipitation. The mean temperature, 40.20° , was 1° above normal." "In December moderate temperature prevailed throughout the first half of the month, etc. The maximum was 62° on the 3rd, the minimum was -4° on the 28th. No severe storms occurred, with the exception of a period extending from the 13th to the 15th." "January, as a whole, was mild and dry, with no severe storms. Aside from one moder-

ately cold period, 12th to 17th inclusive, every day was above the seasonable average in temperature, the excess ranging from 15° to 26° in nine days. The total precipitation, amounting to 0.97 inch was less than one-half, and the total snowfall, 3.2 inches, less than one-third of the normal. There was an unusually large amount of sunshine, 100 per cent of the possible amount being recorded on seven days." "In February mild, dry weather prevailed during most of the month. The mean temperature, 33.4° , was 8° above normal, and this was the sixth successive month with a mean temperature abnormally high. The absolute maximum of 66° on the 15th exceeds all previous February records. The small snowfall of the entire winter to February 28th, 9.4 inches, likewise breaks all previous records." "March, 1921, with a mean of 45.8° , exceeded all previous records with the single exception of 1910, while the maximum of 68° on the 5th is the highest ever recorded at Chicago so early in the season. Vegetation made rapid advancement until the 28th, when growth was checked by a freeze which injured tender plants." "April is the eighth consecutive month with abnormally high temperatures. However, unseasonably low temperatures prevailed on the 10th-11th and 16th-17th, with frosts and freezes, causing much damage to fruit and tender plants." Finally May: "As a whole May, 1921, was warm and dry. However, rather cool weather prevailed at the beginning and the middle of the month, with light frost on the 16th, followed by unseasonably high temperatures during the remainder of the month. The highest temperatures of record for so early in the season were registered on the 23rd and 24th. This is the ninth consecutive month with high mean temperature, the average daily excess from September 1, 1920, to May 31, 1921, being 6.6° . The total precipitation, 0.80 inch, was the least on record for May at Chicago." Accordingly, fall, winter, and spring were abnormally mild or warm, dry and lacking in the usual storms or gales which have earned for Chicago its well-known sobriquet "windy city." There was also more than the usual sunshine, but all this was interfered with in April and May by alternate unseasonably cool or cold and warm or hot weather, which then retarded the migration of some species, or otherwise interfered with it, broke it up more or less.

As a consequence of all this, one would expect large numbers of our hardy summer residents, such as Robin, Flicker, Killdeer,

Meadowlark and Blackbird, to remain in large numbers or even in numbers of large flocks in the case of some, or at least the successors of the same species from farther north. But that was not the case to any large extent, at least not in the immediate locality of the writer, River Forest, a western suburb of the metropolis. Or one would expect the hardy migrants such as Junco, Tree, Fox and White-throated Sparrows, also Brown Creeper, White-breasted Nuthatch and Chickadee to do so. But that again was not true to any striking degree. A few odd Flickers stayed in the neighborhood all winter, a few Creepers, too, which also happens other winters, and there were more Meadowlarks and Robins remaining all winter a few miles south than usual, but nothing striking. This would lend color to the theory of some that length of day is what prompts birds to leave or come, irrespective of temperature. At Ft. Wayne, Ind., however, I was told that Blackbirds of several species remained in large flocks all winter. In this vicinity, in Thatcher's woods, well known to people hereabout, a few Song Sparrows and Fox Sparrows lingered all winter, while Juncos and Tree Sparrows were slightly more in evidence than usually. The case of the Song Sparrow is a peculiar one. This species figured in more lists and more northerly ones in the Christmas bird census published in "Bird Lore" than ever before. Out of 78 lists from Canada, the New England states, New York, Michigan, Wisconsin and Minnesota, the Song Sparrow is given in 39, and from as far north as the Ottawa River, where the writer, during six years' residence, never found it in winter. On the other hand, in the same Thatcher's Woods there were hardly any Blue Jays in this mild winter, which usually stay there in some numbers. But a Black-crowned Night Heron was tempted to stay till January 4th at Beach, about 30 miles north of Chicago, also a Lincoln's Sparrow tarried there to December 26th. A pair of Bluebirds seems to have wintered in the Sand Dunes, as they were seen there January 22nd.

An unexpected occurrence was that of the Arctic Three-toed Woodpecker. The first ones were noted as early as October, despite the unseasonable warmth. About fifteen specimens were reported from the city and suburbs. The writer saw three on one day, November 26th, at Millers, Indiana.

However, what was the effect of the mildness of the season on the first spring migrants? That is what we want to get at. To get at this I drew out of my records the date of first arrival

for the following six species, who always announce their coming to the writer's home and its immediate vicinity in no uncertain tones:

Species	No. of Yrs.	First Arrival	Arrival in 1921
Meadowlark	9	March 13	February 14
Killdeer	7	March 13	March 2
Bluebird	6	March 4	February 16
Robin	8	March 6	February 5
Song Sparrow	9	March 9	February 20
Flicker	9	March 22	March 11

This makes the Meadowlark 27 days earlier than usual, the Killdeer 11 days, the Bluebird 16 days, the Robin 29 days, the Song Sparrow 17 days, and the Flicker 11 days, an average of 17 days. Of course, there is a factor of uncertainty as a margin of error entering into this, especially in the Robin and Song Sparrow, which in 1921 may have been some of those winter residents from a couple of miles south in our region. At any rate, the first migrants came notably earlier than usual. This must be put down to the influence of the mild season.

However, when we look at the winter range of these and similar species, as the Blackbirds, Sparrow Hawks, etc., we see at once that it does not mean much, because all these winter in the region immediately adjoining ours on the south, or at least between that and our Gulf coast. We can easily see how certain weather conditions obtaining in a relatively large area of the country can and probably do influence them in their movements. This has been shown over and over again by competent observers.

What about the spring migration of those species wintering in Central and South America? Is their coming influenced by weather conditions so near to their breeding grounds? Certainly not. This is also borne out by this year's records. While e.g. species of warblers, as the Myrtle and Palm, spending the winter in our Gulf states, also came unusually early, April 8th, in the case of the former, the warblers from South America came no earlier than usual, although one abnormality should be noted here, that of a Bay-breasted Warbler, which I saw April 30th, with some Black and White Warblers, not even Yellow Warblers being seen that day. The Kingbird, Bobolink, and Baltimore Oriole, due here about May 1st, were this year seen a week or more later, May 7th, in the case of the Bobolink, and May

13th for the Kingbird. This shows that when raw, cold or stormy weather prevails here in April or May, it will retard the migration of species having wintered in South America, but already landed on our Gulf coast in their northward migration, and the most important part of the migration, that of May, becomes normal again.

An unsuspected consequence of the mildness of the season was the shift of the breeding range of at least one southerly species northward. This is the Tufted Titmouse. It breeds commonly 30 miles to the south, and even at Riverside, five miles away. I had seen it once or twice in our woods, but only at the end of the winter, never later. This last winter about four pairs took possession of Thatcher's Woods and made it melodious at once. Later, in April, I saw them inspect knot holes in trees, and they remained, following the Cardinal, which has moved in within the last ten years.

July, 1921.

BIRDS SEEN AT THE MOUTH OF THE OHIO RIVER

BY GORDON WILSON

STATE NORMAL SCHOOL, BOWLING GREEN, KY.

For several years I have spent a week or more of my vacation, some time between July 27 and September 15, at Wickliffe, Kentucky, which is located near the junction of the Ohio and Mississippi Rivers and nearly opposite to Cairo, Illinois. Six miles above the town, which is located on the first bluffs below the mouth of the Ohio, stretches the great bottom. No levees have been built here and the bottom is still rather wild. Only a few hundred of the four or five thousand acres in this tract are in cultivation. The rest of the bottom is covered with open woods, marshes, and lakes. Some thirty-five lakes are of sufficient importance to have been named and there are many more which are almost or wholly dry late in the season. One of the most notable of these marshes is Swan Pond, some 500 acres in extent, which is covered with duck-weeds and water-lilies. Most of the lakes are bordered with tangles of elbow shrubs, while cypress knees and duck-weeds often extend far out into the water. After the fall rains set in, the bottom is almost inaccessible, but in the summer and fall it is a great pleasure ground. The ponds are still full of fish, for every winter they are restocked by the annual overflow of the rivers.

Squirrels, raccoons, and opossums keep fairly plentiful, in spite of a pretty general disregard of game laws.

About two miles above Wickliffe, in a bend of the Mississippi, there is a very extensive sandbar, which varies in size from year to year, but is usually about a mile long and half a mile wide. When the water is low this bar is a place dear to the bird lover, for the refuse from Cairo washed ashore here and the dead bodies of mussels attract many birds of rare beauty, some of which are not commonly seen, except on the Mississippi, in the interior of the United States.

Unfortunately, I have never had a spring vacation in this locality, nor have I been on hand to witness the real waves of fall migrants. Consequently, my list includes only the residents, most of the summer residents, and some of the earlier fall migrants. My records in the general period indicated above, cover the years 1915, 1916, 1917, 1918 and 1921. In 1915, 1917 and 1921 I camped for several days in the bottom, in the lake country. When not attending to camp duties I made long journeys to less-frequented ponds and marshes, often being paid for my pains by catching a good string of bream, crappies, and sunfish, and by seeing a new bird or two.

One of the most unfortunate things in bird study is that this section has never been studied exhaustively by ornithologists. Dr. L. O. Pinder, now of Versailles, Kentucky, made a valuable study of birds in Fulton County, thirty miles south of Wickliffe, and published the results in *Auk* in 1889. The two sections, however, differ considerably. I am hoping that this brief study will attract the attention of some experienced or amateur bird student in that locality, and that a few years hence a more exhaustive study may be made of the "big bottoms," especially as the projected drainage plans will materially change bird life there.

1. HERRING GULL (*Larus argentatus*).

A flock of six or eight seen near the river, August 27, 1917.

2. COMMON TERN (*Sterna hirundo*).

A few seen in 1915, 1917 and 1918, 1917 being the best year. I found only one in 1921.

3. BLACK TERN (*Hydrochelidon nigra surinamensis*).

Seen commonly in 1915, 1917 and 1918, being most abundant along the sandbar in 1917. At Hickman, thirty miles south of the mouth of the Ohio, on September 9, 1917, I saw a very large flock just after a severe storm, flying low down over the gigantic waves.

4. WATER TURKEY OR ANHINGA (*Anhinga anhinga*).

Two which were thought to be of this species were seen on Long Pond August 28, 1917.

5. WOOD DUCK (*Aix sponsa*).

A common summer resident, especially abundant on Swan Pond.

6. WHISTLING SWAN (*Olor columbianus*).

Locally known as "White Crane." Seen in 1917, 1918 and 1921, being especially abundant in 1917. I counted twelve in a single flock at the head of the sandbar in early September, 1917. Seldom have I, in many years of bird study, seen anything to compare with the beauty of the lakes, with their old cypresses standing in a clump of knees and duck-weeds and with two or three Whistling Swans perched on the gnarled and broken limbs.

7. GREAT BLUE HERON (*Ardea herodias*).

Fairly common every year except 1915.

8. LITTLE BLUE HERON (*Florida carula*).

One or two seen every year except 1921.

9. GREEN HERON (*Butorides virescens virescens*).

Not seen in 1915 and 1916, but fairly common the other years.

10. BLACK-CROWNED NIGHT HERON. (*Nycticorax nycticorax uavrus*).

One seen in 1917 among the lily-pads on Long Pond.

11. SANDBILL CRANE (*Grus mexicana*).

Fairly common in 1915; a few seen in 1916, 1917 and 1918. A very vivid picture in my mind is that of a Sandbill standing at full height and motionless on a drift at the lower end of a small wild lake, appropriately called Lost Pond.

12. COOT (*Fulica americana*).

A few seen in 1915 and 1917.

13. WOODCOCK (*Philohela minor*).

A flock of 6-10 seen on the sandbar, August 24, 1918.

14. WILSON'S SNIDE (*Gallinago delicata*).

A few seen on the sandbar in 1918.

15. PECTORAL SANDPIPER (*Pisobia maculata*).

Three or four seen on the sandbar, August 31, 1918.

16. LEAST SANDPIPER (*Pisobia minutilla*).

A few seen on the sandbar in 1915.

17. SOLITARY SANDPIPER (*Hedromas solitarius solitarius*).

Very common in 1918 and 1921, but not seen the other years.

18. SPOTTED SANDPIPER (*Actitis macularia*).

A very few seen in 1918 and 1921.

19. KILLDEER (*Oxyechus vociferus*).

Very common on the sandbar, but rarely seen in the bottoms.

20. BOB-WHITE (*Colinus virginianus virginianus*).

Common in the cleared portions of the bottoms.

21. MOURNING DOVE (*Zenaidura macroura carolinensis*).

Common to abundant.

22. TURKEY VULTURE (*Cathartes aura septentrionalis*).

Common.

23. BLACK VULTURE (*Catharista urubu*).

Very rare.

24. MARSH HAWK (*Circus hudsonius*).
One seen September 13, 1917; another September 4, 1918.
25. SHARP-SHINNED HAWK (*Accipiter velox*).
One or two seen each summer.
26. COOPER'S HAWK (*Accipiter cooperi*).
Fairly common around the edges of the bluffs.
27. RED-TAILED HAWK (*Buteo borealis borealis*).
One seen August 31, 1918.
28. RED-SHOULDERED HAWK (*Buteo lineatus lineatus*).
A few seen every summer.
29. SPARROW HAWK (*Falco sparverius sparverius*).
Fairly common.
30. SHORT-EARED OWL (*Asio flammeus*).
One seen in 1916; another August 30, 1917.
31. BARRED OWL (*Strix varia varia*).
Common in the bottoms.
32. SCREECH OWL (*Otus asio asio*).
Fairly common.
33. GREAT HORNED OWL (*Bubo virginianus virginianus*).
Common. The owl concerts of the wilder parts of the bottom are the richest I have ever heard, the Barred and Great Horned being the chief musicians.
34. YELLOW-BILLED CUCKOO (*Coccyzus americanus americanus*).
Common. It sings in a very mournful manner all night long in the late summer.
35. BLACK-BILLED CUCKOO (*Coccyzus erythrophthalmus*).
A few seen in 1918.
36. BELTED KINGFISHER (*Ceryle alcyon*)
Especially abundant around the shallower ponds.
37. HAIRY WOODPECKER (*Dryobates villosus villosus*).
Common.
38. SOUTHERN DOWNY WOODPECKER (*Dryobates pubescens pubescens*).
Common.
39. YELLOW-BELLIED SAPSUCKER (*Sphyrapicus varius varius*).
One seen August 2, 1916; another August 29, 1917.
40. PILEATED WOODPECKER (*Phlœotomus pileatus pileatus*).
Fairly common.
41. RED-HEADED WOODPECKER (*MeLANERPES erythrocephalus*).
Common to abundant.
42. RED-BELLIED WOODPECKER (*CeNTURUS carolinus*).
Common.
43. NORTHERN FLICKER (*Colaptes auratus luteus*).
Common.
44. CHUCK-WILL'S-WIDOW (*Antrostomus carolinensis*).
One heard July 30, 1917. My vacations have occurred usually too late for me to hear this bird and the Whippoorwill.
45. NIGHTHAWK (*Chordeiles virginianus virginianus*).
Common.
46. CHIMNEY SWIFT (*ChaturA pelagica*).
Abundant.

47. RUBY-THROATED HUMMINGBIRD (*Archilochus colubris*).
Fairly common.
48. KINGBIRD (*Tyrannus tyrannus*).
Common to abundant.
49. CRESTED FLYCATCHER (*Myiarchus crinitus*).
Common.
50. PHOEBE (*Sayornis phæbe*).
A few seen in 1915 and 1917.
51. WOOD PEWEE (*Myiochanes virens*).
Common.
52. ACADIAN FLYCATCHER (*Empidonax virescens*).
Common in the bottoms. I know of few bird-notes so stirring and "woody" as the call of this bird.
53. BLUE JAY (*Cyanocitta cristata cristata*).
Common to abundant.
54. CROW (*Corvus brachyrhynchos brachyrhynchos*).
Common to abundant. I often found large flocks of Crows on the sandbar, in company with Herons, Swans, and Sandpipers, feeding on dead mussels.
55. COWBIRD (*Molothrus ater ater*).
Common.
56. RED-WINGED BLACKBIRD (*Agelaius phœniceus phœniceus*).
A few seen in 1915. They are said to be very numerous in spring and common in the nesting season.
57. MEADOWLARK (*Sturnella magna magna*).
Common.
58. ORCHARD ORIOLE (*Icterus spurius*).
Fairly common. It was usually beginning to leave before my arrival.
59. BALTIMORE ORIOLE (*Icterus galbula*).
A few seen in 1915, 1917 and 1918.
60. BRONZED GRACKLE (*Quiscalus quiscula aeneus*).
Abundant.
61. GOLDFINCH (*Astragalinus tristis tristis*).
Common.
62. LARK SPARROW (*Chondestes grammacus grammacus*).
Seen in 1915 and 1917. It is said to nest there, as I know it does in Calloway county, seventy miles east of Wickliffe.
63. CHIPPING SPARROW (*Spizella passerina passerina*).
Common.
64. FIELD SPARROW (*Spizella pusilla pusilla*).
Common.
65. TOWHEE (*Pipilo erythrophthalmus erythrophthalmus*).
Rather rare.
66. CARDINAL (*Cardinalis cardinalis cardinalis*).
Common to abundant.
67. ROSE-BREADED GROSBEAK (*Zamelodia ludoviciana*).
One seen and heard near Prairie Lake, August 30, 1921.
68. INDIGO BUNTING (*Passerina cyanea*).
Common.

69. DICKCISSEL (*Spiza americana*).
A few seen in 1915 and 1917. They had usually migrated before my arrival.
70. SUMMER Tanager (*Piranga rubra rubra*).
Common.
71. PURPLE MARTIN (*Progne subis subis*).
Common.
72. CLIFF SWALLOW (*Petrochelidon lunifrons lunifrons*).
Seen August 7, 1916.
73. BARN SWALLOW (*Hirundo erythrogastra*).
Seen in 1915, 1918 and 1921. Rare.
74. BANK SWALLOW (*Riparia riparia*).
Seen in 1915, 1917 and 1918.
75. MIGRANT SHRIKE (*Lanius ludovicianus migrans*).
Fairly common. On one day in 1918 I saw more of this species than I usually see in a whole season in my regular territory.
76. RED-EYED VIREO (*Vireosylva olivacea*).
Fairly common.
77. YELLOW-THROATED VIREO (*Lanivirco flavifrons*).
Fairly common in the deep woods.
78. WHITE-EYED VIREO (*Virco griseus griseus*).
Common every year except 1921.
79. BLACK AND WHITE WARBLER (*Mniotilta varia*).
Fairly common.
80. PROTHONOTARY WARBLER (*Protonotaria citrea*).
Common around the wilder lakes.
81. YELLOW WARBLER (*Dendroica aestiva aestiva*).
Seen only in 1915 and 1916. It is said to be a common summer resident.
82. MYRTLE WARBLER (*Dendroica coronata*).
A few seen September 9-12, 1917.
83. BLACK-THROATED GREEN WARBLER (*Dendroica virens*).
A few seen in 1918.
84. LOUISIANA WATER-THRUSH (*Seiurus motacilla*).
Seen only in the years 1917 and 1921. In the latter year it was very common around the edges of half-dried ponds and sloughs.
85. KENTUCKY WARBLER (*Oporonis formosus*).
One in fine plumage seen August 23, 1918.
86. MARYLAND YELLOW-THROAT (*Geothlypis trichas trichas*).
Seen commonly every year but 1921.
87. YELLOW-BREASTED CHAT (*Icteria virens virens*).
Fairly common in 1915 and 1917.
88. REDSTART (*Setophaga ruticilla*).
Seen in 1916, 1917 and 1921, being especially plentiful in 1921.
89. MOCKINGBIRD (*Mimus polyglottos polyglottos*).
Common.
90. CATBIRD (*Dumetella carolinensis*).
Common every year but 1921.
91. BROWN THRASHER (*Toxostoma rufum*).
Seen only in 1915 and 1917.

92. CAROLINA WREN (*Thryothorus ludivicianus ludivicianus*).
Common.
93. BEWICK WREN (*Thyomanes bewicki bewicki*).
Common.
94. WHITE-BREASTED NUTHATCH (*Sitta carolinensis carolinensis*).
Common.
95. TUFTED TITMOUSE (*Baeolophus bicolor*).
Common to abundant.
96. CAROLINA CHICKADEE (*Penthestes carolinensis carolinensis*).
Common to abundant.
97. BLUE-GRAY GNATCATCHER (*Poliophtila carulca carulca*).
Common.
98. WOOD THRUSH (*Hylochichla mustelina*).
Common. Nothing added more to the grandeur of early dawn and twilight than the rich, gurgling melody of this justly-celebrated songster.
99. ROBIN (*Planesticus migratorius migratorius*).
Common, and becoming steadily more abundant.
100. BLUEBIRD (*Sialia sialis sialis*).
Common.

THE PRAIRIE CHICKEN IN EAST CENTRAL IOWA

BY FRED J. PIERCE

WINTHROP, BUCHANAN COUNTY, IOWA

Indirectly, the advance of civilization has made many alterations in the lives of America's birds, and, in infrequent cases, it has spelled their doom. The coming of the white man into theretofore undeveloped country made a great many changes to which a great many birds could not readily adapt themselves. He cut down the forests, drained the wet lands, turned vast stretches of virgin prairie land into fields of food for himself, and built cities in what was formerly the great domain of nature's children. Some of the birds retreated farther into the wild as man advanced; others less timid returned his friendship and came close to his dwellings to rear their young; and a few, of their own volition, accepted his structures as superior to their own and thenceforth called them their homes. Unfortunately, a few, by reason of the excellent food their bodies contained, were dealt severe and long continued persecution,—to such extent that they were nearly, if not completely, wiped off the face of the earth.

In this paper the writer wishes to present some of the scattered notes he has gathered on the (Iowa) Prairie Chicken of yesterday and today. This now protected Iowa game bird was for many years a very common species, but, because of the great

amount of persecution it has undergone, it has at last been put on the shelf as a game bird, and is now accorded the protection it has so long deserved. The present Iowa legislation has been doing and will do a vast amount of good toward its increase. The first five-year ban (ending 1922) on shooting Prairie Chickens has been followed by a second five-year closed shooting period, and it is to be hoped that this term may be again extended.

In an early day, Iowa's vast prairies stretched away on every side. The long, waving prairie grass formed the Prairie Chickens' natural home, and here they made their nests and reared their little ones, quite unmolested by hand of man. Of course, prairie fires were an inevitable danger, but these did not seem to be frequent enough to seriously affect their growth and prosperity. If man had not interfered, their existence would yet be envied. An ideal climate, an abundance of food, natural enemies not overwhelming,—what more could be desired? In the winter, too, they were able to cope with the weather. The long and very severe winters did not hold terrors for them, for when their summer home—the dense, heavy grass—became snow covered, they often burrowed under it and converted the matted growth into a snug retreat for the night. Some of these tunnels would reach a distance of ten feet. Thus housed and protected, what did the wise Prairie Chicken care if it was “blizzing” outside and the mercury did go down to forty below? The next morning he came out to feed on weed seeds and whatever else nature had provided for him. A sleet storm, though, must have presented some serious difficulties to this “snow bird.”

I am greatly indebted to Mr. Julius Gates, one of my neighbors, who has given me a great deal of valuable information regarding the Prairie Chickens' past abundance and the methods by which they were destroyed. Mr. Gates immigrated to this country in 1869, during a period when Prairie Chickens were trapped and marketed in immense quantities, and has for a half century been associated with this bird in the farming regions near Winthrop.

Trapping Prairie Chickens in Iowa seemed to reach the zenith some time in the seventies. Every one in the country was apparently interested in trapping and marketing these noble birds. Nearly every farmer had an abundance of spare time during the winter months and was anxious to turn his

vacant hours into dollars, so without thought or care of the scarcity this practice would eventually bring in the Prairie Chickens' ranks, he constructed a number of traps and nonchalantly set about hastening their destruction. The sons were as enthusiastic over this easy method of securing money as their father. The trapping industry was current gossip everywhere. "Well, how many 'chickens' did you get today?" was the stock question.

The traps used were very simple in working principle, but a good deal of time was required to make a successful trap. A large box made of laths, wider at the bottom than at top, constituted the trap. The box was about two feet high, two or more feet wide, and as long as a lath. A balanced door or "gangplank," which dropped the victims into the trap, filled a square hole in the top; the door was made of a shingle. Across the center of the box or coop a board was nailed to make it stronger, and in this holes were bored to receive sharpened sticks. Ears of corn were placed on these for bait. The corn seldom failed to induce the birds to hop upon the trap (or run up on poles leaned against it for this purpose) and step on the door in their attempt to reach the corn. The door dropped them inside. It was weighted with a stick of wood on the outer end so that it always came back automatically to its original position, where it was ready for another cargo. The vertical laths which formed the sides extended above the top and were sharpened on the ends to prevent the birds from approaching the bait from any place except at the opening in front of the door. A rough enclosure (with one end open) made of tall willow poles or brush usually surrounded the trap. In the fall buckwheat was frequently sown in these selected spots so that the place would have a strong attraction when trapping operations began. Some ambitious trap owners made traps with two doors and had their birds going in from two sides. The traps were usually tested with domestic chickens before they were taken out. If properly constructed, the trap would be full of chickens in a very short time; if not, it was not worth taking out.

A short time after the trap was set, a flock of Prairie Chickens would be seen flying toward it, and, upon sighting the corn bait, a few would venture in. These acted as decoys and soon a steady stream would be going in. Occasionally a bird would fathom the purpose of the trap and, catching himself, would

fly back; but usually the birds were totally ignorant of the trap's object.

The trapper was happy when he peered in and saw the trap filled with birds. Many of them had become frightened, and in trying to escape had run around inside the trap and so injured their necks and wings that they were bleeding profusely. Now came the exciting part, for the birds were hard to catch and hold. They had an unbelievable amount of strength in their wings and many would fly out of a man's clutch in spite of his best efforts to hold them.

After the birds were killed, the necks were broken and folded under the wing; in this position (they were not dressed) they were frozen and then compactly placed in barrels, ready for shipping. They brought twenty-five cents each on the market, and a limited amount was also taken by local hotels at this price. Mr. Gates says that one winter his brother and he got fifty birds. Some neighbor boys trapped twenty-four in one day, he says. The young and old birds looked so much alike that it was next to impossible to distinguish them by appearance. A common way to tell was to hold them up by the bill and bend the head up or down. If the bill was flexible, it was a young bird; if stiff, an adult.

After the nefarious practice of trapping had gone on for some years, laws were passed to prohibit it, but, I am told, quite a number were still set away from roads in unfrequented places; however, these eventually passed out of existence.

Only a fair conception of the great numbers of Prairie Chickens which were once found here is gained by the statements of old residents. Mr. Gates says in the early morning they would often come in great flocks to the trees along Buffalo Creek and indulge in characteristic music, which he terms "cackling." * He says the trees would be loaded down:—"hundreds and hundreds of them, and oh! *how* they *would* cackle!" Every tree in the preferred district would be full of the birds, and he has often been at a loss to understand how the trees withstood the great weight. After leaving the trees they went to the fields and breakfasted on weed seeds, corn and other grains if they were to be had. They used to come around the farm buildings in the early hours of morning; the farmer could often shoot them off his barn roofs with very little difficulty.

* See *Oölogist*, April, 1921, page 40 (Vol. 38, No. 4).

Gunning had a great deal to do with their decrease. A bird so plentiful and so easily secured was sure to receive a great amount of attention from shooters. Farmers, town folks, all, young and old, were hunting them continually. A Buchanan County newspaper of December 22, 1863,* tells of the enormous amount of Prairie Chickens which were coming into Independence, the county seat. One man sold \$350 worth in a day, and sales of \$50 to \$100 were of frequent occurrence, while it was not unusual to see three and four wagonloads of Prairie Chickens, Quail and Pheasants (together) on the streets in one day. The shipping of Prairie Chickens had assumed great proportions and some of the stores were piled high, preparatory to shipping east. It does not state how these birds were killed, but I infer they were both trapped and hunted. Another issue of the newspaper states that the county's best shooter had bagged 157 in a day with 150 shots. Still another note tells of four hunters who left Independence at 3:00 p. m. one day, drove fifteen miles and returned the next evening with 337 Prairie Chickens. This was certainly a record for thirteen hours or less. Great Prairie Chicken hunts, attended by many people, were frequently staged. Boys often kicked out the snow burrows and killed the helpless birds when they came to where they were sitting in the snow. This the boys considered great sport.

Reports of farmers lead to the belief that the barbed-wire fence has been responsible for the death of countless Prairie Chickens. These birds fly very low in their short flights about the fields and, I am told, hundreds of times they were victims of the wires. Farmers say they have often seen the bodies of the impaled birds hanging on the fences. Probably many other low-flying birds meet death in a similar manner.

Investigation of statements also shows that intentional prairie fires had an *enormous* effect on their decline in abundance. It was a common practice with farmers to burn off the prairies in the spring to remove the dead top grass. Unfortunately, this was habitually done when the prairies were covered with nests of the Prairie Chicken, and untold numbers of nests and even young were mercilessly destroyed in this way. After the fires had passed over these tracts, eggs were gathered up by the bushel. The fresh eggs that had been cooked in the

* Quoted in *History of Buchanan County, Iowa, and Its People*, by Harry C. and Katharyn J. Chappell, two vols., Chicago, 1914.

fire were eaten at once, while the others were sorted and the fresh ones used later for the table. It was small wonder that this species could not regain its slipping foothold on life when its nests and young were destroyed in this cruel and wholesale manner.

When the fields of timothy hay began to supplant the prairies, the Prairie Chicken accepted them as nesting places, but here too they met with misfortune, for the mowing machine destroyed all the nests and young to be found at that season. When the hay was raked up, too, it was not unusual to find the mangled body of a mother bird who would not forsake her treasures when the mower came along making its "cutting remarks."

My friend, Mr. Gates, tells of many interesting characteristics of the Prairie Chicken, which he has observed during his sojourn in this region. They were looked upon as reliable weather prophets by farmers in frequent instances. Also when they indulged in their spring fighting and mating antics, the farmer knew that he would soon be working in his fields. The important-feeling males would go to a knoll or rise in the ground (the highest spot to be found always) to fight and boom, early morning being the preferred time. When two cocks found themselves facing each other, they invariably sprang into the air and flew at each other at full speed; when they crashed together they were usually about three feet from the ground. The Prairie Chicken's "*boom*" is certainly a wonderful sound on a fine spring morning, and once heard it is never to be forgotten; the bird is seldom thought of without the deep resounding boom coming to mind.

My father tells of a Prairie Hen which nested in a slough beside a cornfield, the nest being just at the end of a corn row. When plowing the corn in this particular row, it was necessary for the team to pass over the nest, one horse on each side of it. The brave bird did not leave the nest until the horses were directly over her. They were of course frightened when she burst out between their legs, but the eggs hatched safely. Horses often stepped on the birds when they refused to desert their nests. I know of two boys who set some Prairie Chicken eggs under a domestic hen. They awaited the developments with considerable interest, but when the little ones became two days old they all disappeared — "nature had reclaimed her own."

The first quarter of the Twentieth Century will soon be finished. On every hand the Prairie Chicken is becoming in evidence and bids fair to again become the plentiful game bird it once was. We who love the Prairie Chicken as a resident of our beautiful Iowa farm lands, rather than for the amount of meat its body contains, dislike to think of the time when it will once more have to stand up before the firing squad. The automatic shotgun, the small edition of the deadly machine gun, is becoming all too popular among so-called "sportsmen." Its manufacture ought to be prohibited. Covies of from ten to fifty of the birds are common in many regions. Frequent mention of their increase is found in the local presses. Where formerly we found none, we now see them rather regularly, and if present indications are at all propbetic, we shall have large numbers of them with us in the future. Time alone will tell whether this species can wholly adapt itself to the greatly changed conditions it now finds in its old haunts.

November, 1921.

THE WILSON BULLETIN

Published at Oberlin, Ohio, by the Wilson Ornithological Club.

Official Organ of the Wilson Ornithological Club and the Nebraska Ornithological Union (in affiliation).

Price in the United States, Canada and Mexico, \$1.50 a year, 50c a number, post paid. Price in all countries in the International Union, \$2.00 a year, 60c a number. Subscriptions should be sent to Geo. L. Fordyce, Youngstown, Ohio.

EDITORIAL

Dr. Cole's history of the Bird Banding movement in this country is especially appropriate at this time of expansion of the work. It was through his efforts and continued interest and sacrifice that the work was kept sufficiently before ornithologists so that the value of it as a method in bird study was finally recognized. The revival of the work in a new form, that which we are pushing now, is, of course, due to the work of S. Prentiss Baldwin, with his systematic trapping and banding. May the good work go on.

The Editor has always been interested in the parasitic habits of the Cowbird, and has kept a more or less accurate record of the number of eggs found in the nests of various species. Never has he found such a large percentage of parasitized nests as the present season. Two examples will serve to illustrate the situation. A nest of the Red-eyed Vireo was found with three eggs of the Cowbird and none of the vireo; the three were as much alike as could well be. A nest of Towhee contained two of the Towhee and six of the Cowbird. In point of resemblance the six were in three pairs. Parasite eggs are always removed.

We earnestly commend the making of "Bird Counts" which the U. S. Biological Survey is sponsoring and urging. It is only from data obtained from many such counts well scattered over the country, and made as accurately as possible, that we shall be able to follow changes that may be going on among the birds of the country. It is altogether likely that there have been and continue to be shifts of bird population of great significance to human interests due to shifts of human interests themselves. We may continue to speculate about these shifts, as we have in the past, but with the data in hand that these "Counts" are bringing to us, speculation will largely give place to known facts. Join the ranks and make at least one such "Count" this summer.

BIRD BANDING DEPARTMENT

Under the Direction of Wm. I. Lyon, Waukegan, Ill.

THE EARLY HISTORY OF BIRD BANDING IN AMERICA

LEON J. COLE, DEPARTMENT OF GENETICS,
UNIVERSITY OF WISCONSIN, MADISON, WISCONSIN

There has recently been a great revival and extension of interest in bird banding in this country, and I presume it is because of this that I have been asked to prepare a brief account of the early efforts along this line. Since the chief outlines of this history have already been published on several occasions¹ there would be no object in repeating them. There is, however, a more intimate and personal history connected with the early endeavors to establish bird banding as a systematic method of bird study which may not be without interest to the considerable numbers who are interested in the undertaking at this time, even though it may not add anything essential to what has already been written. This is my excuse, therefore, if the present account appears to be more a personal narrative of some of the early struggles, discouragements and successes than a connected history of the bird-banding movement in this country. For the same reason, I shall not consider the independent development of the study of birds by this method in several European countries. This is essentially an account of the beginnings and early days of the American Bird Banding Association, the functions of which have lately been so happily taken over and are being so effectively prosecuted by the Bureau of Biological Survey.

Sporadic attempts to mark birds in one way or another, in order to determine whether they returned to the localities in which they were originally marked, have undoubtedly long been made. We know that Audubon made one such successful experiment, and game birds particularly have occasionally been banded or tagged in some way by individual hunters or by sporting clubs. Such efforts were, however, usually purely local in their scope, the marks affording no means of identification to anyone except those who did the banding, and hence yielded no "returns" unless the birds chanced to be recaptured in the localities in which they were marked. The first systematic attempts in this country, so far as I know, to secure wider coöperation by having a return address on the bands, were those of Mr. Taverner, then at Detroit, and of Dr. Bartsch at Washington. Although both of these ornithologists worked on a relatively small scale and for a limited period, they secured results sufficient to demonstrate the value of the method.

¹Cole, L. J., The tagging of wild birds as a means of studying their movements, *Auk*, Vol. XXVI, 1909, pp. 137-143; Cole, L. J., The tagging of wild birds: Reports of progress in 1909, *Auk*, Vol. XXVII, 1910, pp. 153-168; Cleaves, H. H., What the American Bird Banding Association has accomplished during 1912, *Auk*, Vol. XXX, 1913, pp. 248-261; Lincoln, F. C., The history and purposes of bird banding, *Auk*, Vol. XXXVIII, 1921, pp. 217-228.

My own interest in bird-banding grew independently out of my life-long interest in birds and in the problems of migration. I had the method in mind as early as 1901² and the results of Prof. F. H. Herrick, obtained in his study of the distribution of the lobster on our Atlantic seaboard by means of tagged specimens, convinced me of the practicability of the method for birds. In 1902, in connection with a study of the German carp which I was making for the United States Fish Commission, I tagged a small number of these fish in order to determine their movements and distribution, but the work was not continued and was on too small a scale to produce results. I became determined, however, to try the method out on birds at the first opportunity.

Such opportunity did not offer until the winter of 1907-8, when I broached the subject to the New Haven Bird Club, a small but enthusiastic group of bird students interested primarily in local field work. The proposition was received cordially and a committee, consisting of Dr. Louis B. Bishop, Mr. Clifford H. Pangburn, and myself, as chairman, was appointed to put the plan into operation. This plan contemplated at that time only local efforts. It involved securing a supply of bands and their distribution to members of the club, who should carry them with them on their field trips, and use them whenever opportunity offered, principally on nestlings. The banding, however, was rather incidental, the chief interest of the field workers being along other lines, and the number of birds banded in 1908 proved to be disappointingly small. I was, however, more than ever convinced of the value of the method, and felt particularly that if the interest and coöperation of the large number of amateur bird students in the country could be secured in the work it would gradually build up an accumulation of accurate data on bird movements which would be of the greatest scientific value. During the season I discussed the matter particularly with Dr. Bishop and with Dr. Glover M. Allen of Cambridge, and corresponded with a number of other ornithologists. It was in these discussions that the plan developed of gradually extending the work to national scope, but for the time it seemed best to keep it under the auspices of the New Haven Bird Club. The committee, however, asked and received permission to expand its powers, and the whole work, was, in fact, placed unrestrictedly in its hands. It is my recollection that during the first year the Club had contributed something towards the modest financial support of the work, but it was now determined to depend for financial assistance entirely on voluntary subscriptions.

The expanded program increased greatly the burden of correspondence, the difficulties of securing bands and of obtaining funds to meet necessary expenses. The correspondence and keeping of the records fell entirely to myself and had to be conducted without clerical assistance, except a necessary minimum now and then when a form letter was to be sent out. This grew to be a considerable burden, especially as it had to be done in addition to my regular duties as instructor in the Sheffield Scientific School. Obtaining suitable bands and in sufficient quantity was then as it always has been, a serious problem. In the early days we se-

² Cole, L. J., Suggestions for a method of studying the migrations of birds. 3rd Rept. Mich. Acad. Sci., 1901, pp. 67-70. 1902.

cured blank aluminum, either in tubes which were cut into the desired lengths for the "closed" bands, or in sheets which were cut up for "open" bands, and the stamping was done in part by ourselves, and in part by a janitor at so much per hour for his labor. Financial assistance came from a number of sources of which I do not at present have the record, but we were always sailing very close to the wind and more than once were almost on the rocks. On such occasions, I usually turned to Dr. Bishop, and it was largely owing to his unfailing response in times of need that we were able to keep the work going in these early years.

The plans for 1909 met a cordial response from a considerable number of ornithologists. The records now in my possession are incomplete and in attempting to give a list of even those collaborators who took a most active interest I am doubtless omitting a number whose names should be mentioned. A partial list, taken at random, includes: T. C. Stephens, Sioux City, Iowa; Harry S. Hathaway, Providence, R. I.; Ernest Harold Baynes, Meriden, N. H.; Alfred C. Redfield, Havenford, Pa.; B. S. Bowditch, Demarest, N. J.; Alfred O. Gross, then at Harvard University; Lynds Jones, Oberlin, Ohio; Ora W. Knight, Bangor, Me.; Charles W. Miller, Shawnee-on-Delaware, Pa.; Arthur H. Norton, Portland, Me.; Leonard S. Pearson, Wayne, Pa.; R. M. Strong, Chicago, Ill.; A. A. Saunders, Anaconda, Mont.; S. A. Curtis, Detroit, Mich.; Roy Thompson, Cando, N. D.; William L. Findley, Milwaukee, Ore. While this list undoubtedly has glaring omissions, it will at least serve to indicate to what extent the work in this season took on more than a local character.

The results obtained in 1909 were also much more encouraging. As these were reported in some detail in the *Auk*,³ there will be no need to repeat them here. Something over a thousand birds were banded during the season and a fair number of "returns" was obtained the same year. The most interesting of these in many respects were the results from banding done by Redfield and Pearson in a colony of Black-crowned Night Herons at Barnstable, Mass. Of nearly 200 young birds banded seven "returns" came in during August and September of the same year. Some of the letters announcing the finding of these birds were of more than scientific interest, and I cannot refrain from mentioning two of them in particular. The first was decidedly apologetic, and ran as follows:

"Gentlem dear sirs Your bird was shot here to day by me Albert Bailey for which I was more than Sorry when I found it had a ring on. I took it for a Hawk as It flew several times over my yard as I thought after chickens and Gentlemen all I can say that I am sorry If I did wrong In so doing and also beg Pardon.

"Yours with Rees

"Albert Bailey."

The other letter, from A. R. Graham & Son, Berkeley Hills Trout Farm, Berkeley, Mass., was in quite a different tone. It read:

"Gentlemen: The bearer of the enclosed [band] was found in one of our traps yesterday morning. Now will you please tell us if you are

³ Vol. XXVII, 1910, pp. 153-168.

raising these pests or did you simply capture and tag it to see how far it would migrate?"

Inquiry elicited the information that owing to the deprivations of Kingfishers, "Hawks" and Herons on their fish steel traps were set on the tops of posts near the pond, where the birds would alight. Concerning the capture of our banded specimen, it was added:

"As he hung suspended he was obliged to 'throw up' his catch before he could quack and the same was three trout and two pickrel all about 5 inches long. We catch and shoot about 40 of this family of birds every year and consider we have saved about \$5.00 of trout per bird destroyed."

Bird-banding not only has its romance, but it seems to stimulate the imagination. Mr. Finley banded a wren in Oregon and it was later found dead in a watering trough in the same state. A newspaper reported the finding, with a headline announcing that Wren Crosses Continent, since it had on its leg a band bearing the inscription, "The Auk, New York, 3429."

It became evident during the year that some more definite organization was necessary to carry on the expanded work, and this necessity grew into the idea of forming a national society for this purpose. At the meeting of the American Ornithologists' Union in New York City in November, 1910, I presented a report of the season's work and emphasized the need of a permanent organization. At the dinner, held at the Hotel Endicott on the evening of November 8, a paper was circulated calling for the signatures of those who desired to become charter members of such an organization. As a matter of historical interest it may be worth while to reproduce the list here. It includes the following names: G. J. Carpenter, B. S. Bowdish, George P. Ellis, W. DeW. Miller, L. A. Fuertes, T. Gilbert Pearson, Leon J. Cole, Thos. S. Roberts, Ruthven Deane, Witmer Stone, George Spencer Morris, John H. Gage, Charles F. Batchelder, James Savage, C. J. Pennock, Bruce Horsfall, Arthur H. Helme, J. A. Weber, A. C. Bent, Frederic H. Kennard, Dwight Franklin, J. T. Nichols, E. H. Forbush, J. Dwight, Jr., Louis B. Bishop, Lynds Jones, Chas. W. Miller, Edw. J. F. Marx, Francis Harper, Arthur A. Allen. To this list were added the following whose names were put down by request: Glover M. Allen, C. H. Pangburn, A. A. Saunders and Samuel Wright.

Following the dinner there was a meeting to perfect organization and a committee drew up articles of association, which were duly approved.⁴ Thus came into being the American Bird Banding Association. At the first meeting the following officers were elected: *President*, L. J. Cole; *Secretary-Treasurer*, C. J. Pennock; *additional members of the Executive Committee*, Louis B. Bishop, Glover M. Allen and Thos. S. Roberts.

The progress of the work was interrupted to some extent by my change in April, 1910, from New Haven to take up my present position at the University of Wisconsin. Furthermore, the duties of my position occupied so much time and were so foreign to the bird-banding, that I felt I must drop the active direction of this as soon as some one could be found to take it up. I carried it on as best I could, however, till April,

⁴ *The Auk*, Vol. XXVIII, 1910, p. 167.

1911, when it became imperative that we should make some other provision, as I was leaving for Europe the following month, to be gone all summer. I took the matter up with several interested persons and as a consequence received a generous offer from Mr. Ernest Harold Baynes, on behalf of the Meriden (N. H.) Bird Club, to take over the direction of the work and to raise the necessary funds; and at the same time a telegram from the Linnæan Society of New York City, stating that that society had appointed a committee to assume the responsibilities of the bird banding if desired. It was necessary for me to leave the decision in the hands of the Executive Committee, and it seemed best to them, because of location and for other reasons, to accept the offer of the Linnæan Society. This offer was made largely through the interest and efforts of Mr. W. W. Grant, and it is indeed due in great measure to his generous assistance at this time that the work was prevented from coming to a standstill. The name and membership of the American Bird Banding Association were continued, but the income was greatly supplemented by assistance from the Linnæan Society and by private subscriptions obtained through the energetic efforts of Mr. Grant and of the new secretary, Mr. Howard H. Cleaves. At this point, then, my active participation in the Association ceased, and the history beyond that time is not mine to write. I may merely add a word to round out the story. Comparatively little had been accomplished in 1910, and owing to the lateness of the season when the transfer was made, and the difficulties encountered in procuring a supply of bands, the same was true for 1911. Thereafter the work was actively pushed under the direction of Mr. Cleaves until, along with many other non-essential activities, it suffered another reverse during the war.

The credit for the recent great revival of interest in bird-banding belongs to Mr. S. Prentiss Baldwin of Cleveland, for he first amply demonstrated the superiority of trapping birds for banding purposes over the haphazard banding of nestlings. The use of traps had appealed to us in the earlier stages of the work and I discussed the matter fully with Mr. Charles W. Miller, who was at that time director of the Worthington Society for the Study of Bird Life, at Shawnee-on-Delaware, Pa. Mr. Miller wrote under date of May 10, 1909: "The method of trapping certain birds, tagging them and letting them go, and thus possibly trapping them again next season, it seems to me, is a very feasible plan and one in which I should be glad to coöperate with your committee in any way that I might be able." Four days later he reported that he had trapped and banded eight Orioles and one Song Sparrow, and by the end of the season the list was of considerable size. The Orioles particularly were "repeaters," and were often trapped several times in a day. On May 9, 1910, Mr. Miller wrote: "The first of last years' banded birds reported this afternoon in the shape of an adult male Baltimore Oriole, No. 3250. Banded May 15, '09, and retrapped three times on the 17th of the same month"; and he adds, "I should have liked to have been a speck on that band! What interesting things could be reported."

Arrangements were also made with Mr. C. W. Beebe for extensive trapping operations at the New York Zoölogical Park, but these were interrupted by the departure of Mr. Beebe on one of his extensive expeditions.

It was Mr. Baldwin, however, who really demonstrated the possibilities of the trapping method combined with banding, and one pregnant paragraph in his fascinating report⁵ emphasizes the new field opened up

“While this report includes only the ‘Returns’ of birds taken from one year to another, it is evident that not less important, to a person who operates traps at the same place all of a season, or all of a year, is the opportunity, by this method, of keeping in touch with the daily life of birds living in the vicinity; of knowing just when they come; just when young leave the nest; just how long they remain in the vicinity; and when they leave; and watching the exact movements of individual birds during migration. Indeed, the careful observer, in a fixed location, may obtain facts of greater scientific value on the daily records than from year to year.”

The remaining history of bird-banding in this country is recent history, and is still in the making. In 1920 the work of the American Bird Banding Association was taken over by the U. S. Bureau of Biological Survey, and the Association, after a life of intermittent activity extending over a period of ten years, came to an end. While it did not accomplish all it might have, it nevertheless played its part as a pioneer in bringing to the attention of ornithologists, and to the public to a limited extent, the value and possibilities of bird-banding; and it fostered the movement until the time was ripe for it to be taken over by an agency with facilities for its proper supervision and advancement. Those of us who have watched and helped in its growth may congratulate ourselves that it is now in such good hands, particularly under the able and enthusiastic guidance of Dr. Oberholser and Mr. Lincoln.⁶

In closing, I cannot forego a word as to the future, which certainly holds out bright prospects for results from bird banding. A host of volunteer trappers and banders is taking up the work; local associations, such as the New England Bird Banding Association, are being formed; and results of the greatest value and interest are sure to accrue. I think it is safe to predict that these results will not only be of theoretical interest, but that much of practical importance will come out of them as well. The Biological Survey is already stressing the importance of the work in relation to the administration of the Migratory Bird Act, and many other practical applications are sure to follow. In general the results will be of two kinds; those relating to the larger migratory movements, and those pertaining to more local life-history studies. In the first of these a large series of banding stations, strategically located, is of the utmost importance; for the second, in order to obtain the highest type of results, it is necessary that much of this work be done by thoroughly trained experimenters. In both cases it is important that the stations have a greater permanency than can be assured on the basis of purely voluntary coöperation. I would in no way belittle the value of the services of the independent individual observer; but I look forward to

⁵ Baldwin, S. Prentiss, Bird-banding by means of systematic trapping. *Proc. Linn. Soc. N. Y.*, No. 31, 1919, pp. 23-56. for bird study. This paragraph is well worth quoting:

⁶ See Lincoln, F. C., Instructions for bird banding. *U. S. Dept. Agr., Circ. 170*, 1921; also *Auk*, Vol. XXXVIII, 1921, pp. 217-228.

the time when we shall have a series of permanent stations either under the direct supervision of the Bureau of Biological Survey, or perhaps better, connected with our Agricultural Experiment Stations, Agricultural Colleges, Universities, or other institutions of learning, and coöperating with the Bureau. Such stations should have enough of a permanent organization and staff to insure a continuous regular routine of trapping and banding of migrants, and they could in addition undertake the study of such local problems as seemed desirable. Such a system of definitely located stations would in a way be comparable with the distribution of local weather bureaus and would serve a similar purpose, that is, they would form a network of outposts for the accumulation of records. If there were a station at each of the Agricultural Colleges and Universities, to say nothing of smaller colleges, in a great migration route like the Mississippi Valley, they could not fail in a number of years to accumulate information of the greatest significance in the study of migration. I may add that steps are being taken looking toward the foundation of a bird-banding station at the University of Wisconsin, and if this effort is successful it is to be hoped that this may be merely the first of a large number of similar stations.

The great advances in scientific knowledge have for the most part followed the development of some new method of delving into Nature's secrets. Bird-banding as a method of bird study is in its infancy and we may confidently look for significant results from its further application.

FLAT TRAPS

When the birds begin to sit on their eggs the trappers must be very careful or they will cause the loss of many sets of eggs by keeping the old birds away from the nest too long. This was the reason for making the flat or box shaped traps at Waukegan, Ill.

The sparrow type trap is only used nights and mornings. When you arrive home just close the doors, put in fresh feed, and you are ready for the evening's trapping; but be sure to make the rounds the last thing before dark to make sure that no birds are left in over night, as a cold rain or rats or owls may prove to be fatal before morning.

After the morning's trapping is over, open the doors of all the Government sparrow type traps so the birds may go in to feed and get out again. They soon loose fear and eventually you will catch them, but the flat trap seems to be far better at such times, for the birds will go under to feed without the fear that they show in entering a small opening; then there are no doors to close as they are always ready,—just pull the string. If you fail to go home some evening then there is no worry about the birds that you are responsible for being locked in a cage, which spoils your evening or makes you hurry home to release them.

The first ones were made with sides of four-inch boards one inch thick, but they were too heavy; then wire frames were made and covered with netting, but they were also heavy; finally, with aid of an expert metal worker, who is now making them for sale, a neat trap was made with folded seams and a smooth door, leaving no rough edges and sharp

points to scratch your hands and the birds. These are rigid and strong, and if they are bent out of shape they can easily be straightened.

The flat traps proved themselves the most successful in the trapping of 2678 birds at Waukegan last year.

FIELD NOTES

A SEPTEMBER MOURNING DOVE BROOD

On the afternoon of August 31, 1921, while walking through a small "jungle" of crab apple trees, gooseberry bushes, and other small growth, I found a Mourning Dove sitting on a nest containing two eggs. The nest was built in a broken off crab apple tree, about four feet from the ground. The eggs hatched about a week later, and the young probably left the nest safely, although I did not see them after they were large enough to fly. Is this a late date for the Mourning Dove to be nesting in east central Iowa?

FRED J. PIERCE.

Winthrop, Iowa.

STAIN FOR BIRD HOUSES

A satisfactory stain for bird houses can be easily made from walnut hulls. The outside covering of a walnut, when rotted slightly, furnishes a good strong color. Rub it over the surface of the bird house and it produces a dull brown color which blends nicely with its surroundings and is pleasing to the eye of a bird. The stain will last several seasons, when it can be renewed. The stain, where walnuts are available, is especially desirable for the small types of bird houses, such as those for Wrens, Bluebirds, etc.

FRED J. PIERCE.

Winthrop, Iowa.

A CROW THAT NEARLY "LOOPED THE LOOP"

Not long ago I noticed a Crow flying overhead carrying an article in his feet that looked like a mouse or something of the sort. This Crow wanted to transfer the morsel to his bill, and in trying to do so bent his head underneath him so far that he lost his balance and barely escaped overturning in the air. This must have surprised him considerably, but he was a determined Crow and shortly tried it again, with no better success. He was continuing his vain efforts when lost to view, but as his unsteady flight had brought him very near the ground, he doubtless alighted, where his object was accomplished with much less danger to his equilibrium.

FRED J. PIERCE.

Winthrop, Iowa, Nov. 6, 1921.

ODD NESTING SITE OF PHOEBE

(*Sayornis phoebe*)

Perusal of one of my old note books brings to my attention a phoebe's nest constructed in the air-shaft of a coal mine near my home

in Des Moines, Iowa. The shaft had been abandoned and the top was on a level with the surface of the ground. A wire fence was rudely set up around the opening to keep stray cattle from falling in. The phoebes had chosen this site for their nest, which was fastened onto the side of the perpendicular walls seven feet below the surface of the ground. At the time of discovery, which was on May 12, 1914, the nest contained five eggs. I proceeded to collect these for my collection by using a long stick with a piece of copper wire attached to one end and bent into a loop for scooping up the eggs. Leaning over a cavity probably a couple hundred feet deep and about five feet square it was impossible to maintain sufficient equilibrium to bring all of the eggs up to the surface.

The question, however, which came to my mind was this: If the young birds should have hatched could they possibly have escaped from a birthplace so dangerously situated. Aside from the nest no projection offered itself as a stepping stone to the outside world. It would seem to be an impossible feat for young birds never before out of the nest to fly upwards for seven feet, especially to a species that under ordinary circumstances has the opportunity of a more easy downward flight at the time of their initial attempt. It seems quite doubtful also as to whether the young birds could cover the seven feet by climbing straight upwards clinging to the planks, twelve inches wide, which were snugly fitted together. Some birds might be provided by nature to escape from a similar opening, such possibly as the chimney swift, but I feel doubtful if the young phoebes would have been capable of the task.

At least I felt that the parents would be increasing their number more rapidly by immediately starting a new home in a more choice location than by spending the next few weeks in hatching out and raising the young to fall into the dark depths of the mine.

EMERSON A. STONER.

A BLUE-GRAY GNATCATCHER'S NEST

On April 23, 1921, near Ballard Normal School, Macon, Ga., an uncompleted Blue-gray Gnatcatcher's nest was discovered in a young elm tree. The nest was twelve feet or a little over from the ground, on one of the two main forks of the tree, and partly supported by a twig. It was deep, the outside covered with lichens, and to a casual glance appeared to be merely a large tuft of lichens. The tree grew beside a fence that ran along a lane, through which some hundred and fifty children passed to and from school each day, in addition to the numerous adults who also used the lane. Back from the fence a rather open, wooded area of pine mingled with several species of deciduous trees and a sparse undergrowth, largely species of *Cratægus*, sloped down to a small stream. A line of pines ran along the opposite side of the lane, and beyond this an open rocky field.

During the following week the nest was completed. By May 16, possibly earlier, the four young birds were hatched. Both parents assisted in feeding. Neither approached the nest directly, but always alighted first in some other part of the tree. The birds did not appear disturbed by the presence of several observers near the tree, so long as they were comparatively quiet.

For two or three days before leaving the nest the young birds climbed up to its edge. In fact it appeared as though there were not sufficient room for the four of them. Some two evenings before the young Gnatcatchers left the nest an Indigo Bunting, just learning to fly, alighted in the tree. The parent Gnatcatchers flew around the young Bunting, scolding, and nearly striking it, until it moved on to another tree.

May 26, late in the afternoon, the young birds left the nest. Just before dark all were seen on the fence or on the lowest twigs of *Cratægus* shrubs. The following morning three of the young Gnatcatchers were located in small trees or shrubs near the nest, none of them over five feet from the ground. They had already learned to fly a few feet. The fourth young bird was not located, but from the actions of the parents it appeared probable that it was in some of the bushes farther from the lane.

BERYL T. MOUNTS.

HOUSE WREN NESTING IN RURAL MAIL BOX

It is a well known fact that the House Wren will nest in any available nook or cavity that strikes its fancy regardless of what the object's use in the world happens to be. Hundreds of seemingly unsuitable places have been selected by this eccentric species as desirable home sites. I have heard of many of these unusual home selections and have seen a few, but on one occasion only have I known them to appropriate a rural mail box for this purpose.

A farmer with whom I am acquainted owned a mail box with a bad fitting cover. The receptacle was of the oblong box type, with a long hinged cover on the top, and when the cover was shut there was a large crack between it and the box.

This box chanced to catch the eyes of a pair of home-making House Wrens and presently the owner of the box found it partially filled with sticks. The sticks were a nuisance and were unceremoniously removed. But the wrens were not in the least daunted by this interference in their plans and continued to fill the box with more sticks as fast as they were removed, loudly berating any intruder in appropriate language, known only to the wren's spiteful vocabulary. After this state of affairs had prevailed for some time, with neither defensive nor offensive force giving way, the farmer's son built a nice little wren house and placed it on the mail box post. This cured the trouble immediately. The wrens' labors were apparently transferred to the new structure with no misgivings and, so far as I know, they return each year to nest in the little house, as they have now done for a number of years.

The bird house on the post attracted considerable attention from people passing by. One tourist, possessed of an abnormal "bump" of curiosity, drove in off the Grant highway, upon which he was passing, to inquire what the little box on the mail box post was for. He went away carrying his first bird protection lesson.

FRED J. PIERCE.

Winthrop, Iowa, Jan. 4, 1922.

AN UNUSUAL MORTALITY AMONG MIGRATING LAPLAND
LONGSPURS IN NORTHWESTERN NEBRASKA

During the afternoon and evening of Sunday, February 19, 1922, large flocks of the western form of the Lapland Longspur, known as the Alaskan Longspur (*Calcarius lapponicus alasceus* Ridgway), descended into the White River valley of Dawes county in northwestern Nebraska. A few Horned Larks, probably *Otocoris alpestris enthymia* Oberholser, were also present in the flocks. Evidently the flight represented a great wave of northward migration. As evening came on a severe snowstorm developed, and the temperature dropped precipitately. The large flocks of these birds were observed flying low and confusedly in and about the towns of Chadron, Whitney and Crawford, in Dawes county, so that the air seemed filled with them. After nightfall the lights of the town and in windows of houses added further to the confusion of the birds.

On the following Monday morning large numbers of the Longspurs and a smaller number of the Horned Larks were found dead in various parts of these towns. At Chadron most of the birds were killed within a block of the intersection of the two main streets of the town where the lights seemed to have blinded them. Without doubt many of them were killed or maimed by flying against wires, the branches of trees, lighted windows, and buildings, in the towns, where they were found the next morning on the streets, sidewalks and lawns. But many died and were found lying on the ground in open places with no buildings near. The same flight that visited Dawes county extended west at least to Harrison, Sioux county, and east to Gordon, Sheridan county, where a similar heavy mortality occurred during the night of February 19.

Invariably the birds picked up and examined on Monday morning had their crops and stomachs entirely empty, indicating that the storm conditions or other cause had prevented any feeding for several hours before they descended into the region above mentioned. Had they just completed a long and wearisome diurnal migration? With little question they were hungry and exhausted so that they were unable to withstand the shock of the storm which descended upon them, many of them died of exposure during the night, aside from those dying as a result of collisions in their confused flying about.

On the night of Monday, February 27, 1922, much the same sort of catastrophe occurred at Spalding, Greeley county, near the eastern edge of the sandhills. The birds reached that locality in large flocks during the night, encountered a cold wave there, and on Tuesday morning their bodies were to be found by the thousands strewn along the streets and over the countryside adjoining. As in the case just described in northwestern Nebraska, the dead birds found in Greeley county showed clearly that they had had no food for some time before their death, and some were even emaciated. Some that were not dead, but practically helpless, when gathered up and brought into the warmth of buildings, and provided with food and water, quickly revived, and when released flew strongly away. The Longspurs in the Greeley county flight were of the eastern form, the typical Lapland Longspur (*Calcarius lapponicus lapponicus* Linnaeus).

For details concerning the avian tragedies above described, I am in-

debted to Mr. L. M. Gates and Mrs. George Blinco, of Chadron, Nebraska, and Mr. P. A. Frauciois of Spalding, Nebraska, who also sent me fragments of the dead birds for accurate identification.

MYRON H. SWENK.

Lincoln, Nebraska.

A REAL SYCAMORE WARBLER

On June 22, 1918, I was standing on the bridge over the Big Barren River, three miles north of town, watching for any birds that might appear along the river. Near the end of the bridge stands a large sycamore tree. Because of the height of the bridge my eyes were on a level with the upper limbs of the tree. Suddenly a Sycamore Warbler darted in among the leaves and I heard the chatter of young birds still in the nest. As the place was inaccessible, either with glasses or by climbing, I gave the matter no more thought and had so far forgotten it that I failed to look for the nest when the leaves had fallen.

On April 19, 1919, I was again standing on the bridge when I happened to think of the experience of the year before. While I was telling some friends about it, we saw a Sycamore Warbler fly to the same place, seize some of the material of the old nest, which was now plainly visible, and fly with it to a much lower limb on the opposite side of the tree. Here we soon made out a nest in process of construction.

On April 8, 1920, I visited the place again and a Sycamore Warbler was building a nest on another limb, nearly on a level with the nest of 1918. I often visited the place in 1921, but failed to see either the bird or a nest. In all my experience as a bird student these are the only nests of this species that I have discovered, even though I have seen the bird in small numbers every summer.

GORDON WILSON.

State Normal School,
Bowling Green, Ky.

NESTING OF THE BELL VIREO

The Bell Vireo has been known at Red Cloud, Nebraska, for several years, but in 1920 we were favored with a study of the nesting bird for the first time. About July 10, 1920, one of my friends who is interested in birds and has a large garden with many fruit trees, told me of a bird that was new to him nesting in his lilac bush ten rods from the house. It was about two and one-half feet from the ground and near the outer edge on the south side, half covered by overhanging leaves and yet quite in sight. Four of us pushed aside the leaves and gazed at the tiny bird to our heart's content. She seemed to think, as her eyes twinkled, "I can see you all right but you cannot see me." I could not bear to put her off the nest for fear of injury or fright, so came again a few days later, with the same result. Saturday, July 17, I had to leave for over Sunday and feared the eggs would hatch in my absence, which they did, so I went with metric rule to take observations on nest and eggs. To my surprise, as soon as I neared the nest the bird flew off, quite nervous. As I wished first to study the line over the eye and a few other points, I

retired to the other side of the bush and the bird returned to the nest at once. On my approach, he jumped off again and began to sing the familiar notes of the Bell Vireo, thus confirming my previous diagnosis. I then examined the four eggs, all sharply ovate, three white and one twelve millimeters in length, with an irregular ring of pale brown spots around the largest diameter. The nest was less than two inches in diameter, inside measurement, and one and three-quarter inches deep. It was hung below a small horizontal fork, and made outside of the cotton of cottonwood trees or the silk of milkweeds and decaying paper bits, lined with tiny root hairs and other more brittle material. Before the birds could fly, something, cat or snake it may be, brought to naught this thing of joy. I have saved the nest to show my bird-loving friends, but not fastened to the twigs as it should be. It makes one wonder why the evolution of "the survival of the fittest" has not resulted in teaching all perching birds to build higher from their ground enemies, and I imagine that the answer is that they build today exactly as they did ten thousand years ago, not having yet been apprised of the law of evolution.

J. M. BATES.

Red Cloud, Nebraska.

Minutes of the Twenty-third Annual Meeting of the Nebraska Ornithologists' Union

The twenty-third annual meeting of the Nebraska Ornithologists' Union was held at Lincoln, Nebraska, Friday and Saturday, May 19 and 20, 1922. The sessions included an open program Friday afternoon, a dinner Friday evening followed by a business session, and a field day on Saturday.

The open program was given in Room 207, Plant Industry Hall, College of Agriculture campus, University of Nebraska, beginning at 3 p. m. on Friday. Sixty persons were present at the program. The first paper was an account of the "Nesting of the Bell Vireo" by Rev. J. M. Bates of Red Cloud, Nebraska, and, in the absence of the author, was read by the Secretary. Mrs. Addison E. Sheldon of Lincoln, then presented a paper on the "Home Life of the Brown Thrasher," illustrated with lantern slides, in which was given a synopsis of the principal happenings observed in connection with the nesting of a pair of Brown Thrashers just outside the window of the Sheldon home, in a bridal wreath bush. These birds were kept under constant observation by Mr. and Mrs. Sheldon from the time of the first beginning of the nest until the last fledgling had departed from it, and every movement of the birds was noted and recorded during this entire period, from sunup till nightfall, thus forming a remarkable biography of this pair of birds.

Following these papers a symposium on the shore birds (*Limicolae*) of Nebraska was held. Prof. M. H. Swenk exhibited specimens showing most of the thirty-nine species of shore birds known to occur in the State in their various plumages, and explained the characters by which they could be identified, both in the hand and in the field. Prof. R. W. Dawson followed with a discussion of the migratory movements of Nebraska shore birds, based on all of the available data. Dr. R. H. Wolcott concluded the symposium with a discussion of the nesting habits of the shore birds, especially of the ten species known to nest in Nebraska.

At the conclusion of the program at 6 p. m., the members of the N. O. U. dined at the College of Agriculture Cafeteria, following which the business session was held. In the absence of the President, Dr. H. Hapeman of Minden, the Vice-President, Mrs. H. C. Johnston of Superior, called the meeting to order. The reports of the officers were received, and the financial report of the Secretary-Treasurer was referred to a committee composed of Mrs. Addison E. Sheldon and Mrs. L. H. McKillip, for auditing. The names of Mr. Gayle B. Pickwell of Lincoln, Mr. J. E. Plank, Jr., of Kearney, Mrs. Alfred Tooley of Central City, Mrs. Fred W. Tyler of Lincoln, and Mr. Leonard Worley of Lincoln, were proposed for membership, and all were elected.

Nominations for new officers were then made from the floor, and as a result the following officers were elected for 1922:

President—Mrs. Addison E. Sheldon, Lincoln.
Vice-President—Mr. Lucius H. Watson, Lincoln.
Secretary-Treasurer—Prof. M. H. Swenk, Lincoln.

The matter of a revision of the articles of agreement of the affiliation between the Nebraska Ornithologists' Union and the Wilson Ornithological Club, made necessary by the recent increase in dues in the Wilson Club to \$1.50 for Associate members and \$2.50 for Active members, was presented by the Secretary-Treasurer, and debated by the members. The Secretary-Treasurer read the draft of a revised set of six articles of agreement to replace those adopted by both the N. O. U. and the W. O. C. in 1915, and upon motion the revised articles were adopted by the N. O. U. The Secretary was instructed to present the revised articles to the W. O. C. for action.

It was moved by Mrs. Addison E. Sheldon that inasmuch as under their present charters cities and villages of less than 5,000 inhabitants in Nebraska do not have the power to pass and enforce ordinances to protect the birds and their nests and eggs within the city or village limits, that the N. O. U. declare itself in favor of extending this power to such cities and villages, the same as is granted in their charters to cities of 5,000 to 25,000 inhabitants, and that it use its influence to attain that end. This motion was seconded and unanimously passed.

It was moved by Dr. R. H. Wolcott that inasmuch as shore birds of nearly all kinds are decreasing rapidly over the entire country, and quite noticeably in Nebraska, and as the present Nebraska law regards black-bellied Plover, Golden Plover, Yellowlegs and Greater Yellowlegs as game birds, that it join with a group of progressive sportsmen in an effort to have only the Wilson Snipe among the shore birds recognized as a game bird in this state, and that it use its influence to attain that end. The motion was seconded and unanimously carried.

The matter of the field trips on the following day was then discussed, and it was decided that one party should start around Capital Beach west of Lincoln the next morning at 6 o'clock under the leadership of Messrs. H. B. Lowry and L. H. Watson, and that a second party should start an hour later under the leadership of Prof. M. H. Swenk. Another party including Prof. R. W. Dawson and Mesdames L. R. Button and G. A. Loveland was to visit the flats near Arbor, Nebraska, north of Lincoln, while a fourth party under the leadership of R. H. Wolcott was to work in the woods along Salt Creek between Lincoln and Saltillo.

Fifteen members were present at this session of the N. O. U., as follows: Mesdames Lily R. Button, Margaret M. Corey, Blanche Garten, F. C. Johnston, G. A. Loveland, L. H. McKillip, E. H. Polley, Mary St. Martin and Addison E. Sheldon, and Messrs. R. W. Dawson, L. O. Horsky, H. B. Lowry, M. H. Swenk, L. H. Watson and R. H. Wolcott. Adjournment took place at 8 p. m.

On Saturday, May 20, the twentieth annual field day of the N. O. U. was held, according to the plans outlined the previous evening. The total list of the day included one hundred and five birds, the largest list ever obtained on any N. O. U. field day, as follows:

Bluebird, Robin, Olive-backed Thrush, Wood Thrush, Long-tailed Chickadee, White-bellied Nuthatch, Western House Wren, Brown Thrasher, Catbird, Mockingbird, Yellow-breasted Chat, Maryland Yellowthroat, Yellow Warbler, Bell Vireo, Yellow-throated Vireo, Warbling Vireo, Red-eyed Vireo, Migrant Shrike, Rough-winged Swallow, Bank Swallow, Barn Swallow, Cliff

Swallow, Purple Martin, Scarlet Tanager, Dickcissel, Indigo Bunting, Western Blue Grosbeak, Rose-breasted Grosbeak, Cardinal, Towhee, Lincoln sparrow, Song Sparrow, Western Field Sparrow, Clay-colored Sparrow, Goldfinch, Bronzed Grackle, Baltimore Oriole, Orchard Oriole, Meadowlark, Western Meadowlark, Red-winged Blackbird, Yellow-headed Blackbird, Cowbird, Bobolink, Crow, Blue Jay, Prairie Horned Lark, Trail Flycatcher, Wood Pewee, Phoebe, Say Phoebe, Great-crested Flycatcher, Arkansas Kingbird, Kingbird, Chimney Swift, Nighthawk, Yellow-shafted Flicker, Red-headed Woodpecker, Northern Downy Woodpecker, Hairy Woodpecker, Yellow-billed Cuckoo, Long-eared Owl, Broad-winged Hawk, Cooper Hawk, Marsh Hawk, Mourning Dove, Turnstone, Piping Plover, Semipalmated Plover, Killdeer, Black-bellied Plover, Spotted Sandpiper, Western Willet, Solitary Sandpiper, Yellowlegs, Hudsonian Godwit, Sanderling, Semipalmated Sandpiper, Red-backed Sandpiper, Least Sandpiper, Baird Sandpiper, White-rumped Sandpiper, Pectoral Sandpiper, Stilt Sandpiper, Long-billed Dowitcher, Wilson Phalarope, Northern Phalarope, Coot, Carolina Rail, King Rail, Green Heron, Great Blue Heron, Bittern, Lesser Bluebill, Shoveller, Blue-winged Teal, Mallard, White Pelican, Black Tern, Franklin Gull, Ring-billed Gull and Eared Grebe.

Two very interesting nests were observed on this field day, namely those of the Say Phoebe and Piping Plover. The Say Phoebe is a western flycatcher, not common even in migrations east of the 99th meridian, and heretofore rarely noted at Lincoln, yet a pair was found building a nest in characteristic fashion on this day. The nesting of the Piping Plover constitutes the second record for Lincoln, a nest with the full complement of four eggs being found. A newly finished nest of the Red-winged Blackbird with one Cowbird egg in it, but no eggs of the owner of the nest, was found.

REPORT OF THE TREASURER, 1921-22

Receipts

Cash on hand, May 13, 1921.....	\$93.96
Annual dues collected.....	68.00
Sale of publications.....	
Interest on investment.....	\$10.88
Cash on hand, May 13, 1921.....	\$ 93.96
Annual dues collected.....	54.00
Sale of publications.....	5.20
Interest on investment.....	10.88
	<hr/>
	\$164.04

Expenditures

Wilson Bulletin (subscriptions).....	\$ 54.00
Wilson Bulletin (donation).....	30.00
Postage	1.00
Balance on hand, May 19, 1922.....	79.04
	<hr/>
	\$164.04

NOTES=HERE AND THERE

Conducted by the Secretary

The Western Section of The American Association for the Advancement of Science, holds a summer meeting this year at Salt Lake City June 22-24. The program is replete with features of interest to students of nature and it is hoped that our members in that section will join forces with the Inter-Mountain Chapter of The Cooper Ornithological Club to see that ornithology is well represented. Mrs. A. O. Tregauza of Salt Lake City, is Chapter Secretary of The Cooper Club.

Professor Thomas L. Hankinson of Michigan State Normal College, Ypsilanti, announces that the summer school at that institution will include a course on "The Birds of Michigan," June 20 to August 4. Many other colleges now include such courses in their summer schools.

The Indiana Audubon Society held its twenty-fourth annual meeting May 12 and 13 at Indianapolis, in coöperation with The Nature Study Club of Indiana. A fine program had been arranged, which included motion pictures of bird-life and several interesting field types. Mr. Frank C. Evans of Crawfordsville, is Secretary.

Professor Dayton Stoner of the Department of Zoölogy, University of Iowa, is one of a party of six from that university which sailed from Vancouver, B. C., on May 14 for the Fiji Islands and New Zealand. A zoölogical reconnaissance of Viti Levu, Fiji Islands and of North Island, New Zealand, will occupy the time of the members of the party during the entire summer. Professor and Mrs. Stoner will devote their efforts mainly to the birds and insects.

There has been considerable activity in the past few years in the sale of second-hand books on ornithology and other branches of natural history. The writer receives catalogs and lists quite frequently from no less than half a dozen dealers who specialize in literature along these lines and will be glad to furnish the addresses to any members who may be interested.

Hawk and Owl Clubs are in vogue in several of our states, sponsored, we are told, by several of the ammunition companies. In the state of Virginia the detrimental results are being felt in the heavy damage to fruit trees occasioned by gnawing of the roots by a largely increased rodent population. The Biological Survey is authority for the statement that a million dollars would not cover the loss there during the past few years and that in the vicinity of Winchester alone at least \$250,000 worth of apple trees have been killed. Wilson Club members should be prepared to combat the organization or perpetuation of such clubs in their respective states.

Dr. Lynds Jones, our Editor, will take his usual transcontinental ecology trip this year, beginning June 23, and ending August 4 at Newport Beach on the Pacific Coast. Dr. Jones knows well the trail ere this and we can only wish him even greater success than in former years.

The Tennessee Ornithological Society gave an ornithological exhibit in the Art Hall of the Nashville Carnegie Library throughout the month of April. Its purpose was to illustrate the work being done by the Audubon Societies and to educate the public to the attractiveness of bird study as a recreation. A comprehensive exhibit included many hundreds of mounted birds, skins, nests, eggs, books, pictures and bird boxes. The T. O. S. is now closing its seventh year.

Approximately 15,000 binoculars and field glasses were recently sold at retail, by the Government at attractive prices, through The Ordnance Salvage Board, Frankford Arsenal, Philadelphia, Pa. Notice of future sales, if any, will be given in this column if the information can be gotten in time.

The Biological Survey is experimenting with the use of poison gasses, developed during the war, for exterminating noxious birds and rodents. Large roosts of English Sparrows exist in and about every city; the writer knows of one extensive hawthorn thicket, in the outskirts of his home town, which is used nightly, throughout the winter, by perhaps half a million sparrows, grackles and cowbirds. Marsh roosts of western blackbirds, prairie dog towns and fields infested with spermophiles are among the possibilities for this method of control.

The Secretary has just returned from a trip which comprised sixteen interesting days in the Cumberland Mountains and on the upper Cumberland River, in Tennessee. Active field work enabled him to record observations of considerable interest as well as to add some choice specimens to his collection. Incidentally, the trip is his alibi for the brevity of these notes.

PUBLICATIONS REVIEWED

BIRDS OF SOUTH DAKOTA. By William H. Over and Craig S. Thoms. Bulletin No. 9, South Dakota Geological and Natural History Survey (which is also) Bulletin No. 9, Series XXI, of the University of South Dakota. Vermillion, South Dakota. 142 pages, 20 plates and colored frontispiece. March, 1920.

This Bulletin, in which it has been the aim of the authors to secure as complete a list as possible of the birds of South Dakota, enumerates 322 forms.

Part I consists of brief discussions on the importance of bird study, various means of attracting and conserving birds, the economic relations of the group, coloration and changes in plumage, and closes with a short account of bird migration.

Part II is made up of a "List and Description of Birds of South Dakota." Here a lack of uniformity of presentation is apparent which might lead to difficulty for one unfamiliar with the classification of birds. The order Raptores is the only one mentioned and clarity as well as completeness would have been more apparent if at least the names of the other orders had been given in their proper places. In the discussion of the Anseres, while the members of the subfamilies Merginae, Auserinae and Cygninae are discussed under these headings, the members of the subfamilies Anatinae and Fuligulinae are lumped together under one heading and the reader is left to his own resources in separating the species of each subfamily. The same criticism pertains to the discussion of the Families Odontophoridae and Tetraonidae and to that of the Colymbidae and Gaviidae. In many cases the diagnoses of species and subspecies are scarcely sufficient and in other instances the identification marks given might be considerably improved upon, *e.g.* that of Lincoln's Sparrow. For certain species in which a considerable difference in color between the sexes prevails the color of the male only is given, *e.g.* Wilson's Warbler and the Redstart.

Numerous slips in typography such as misspelled specific names, capitalization of the first letter of some specific names, the printing of the word "subfamily" in some places as an entire word and in others as two words and the misspelling of the common name of *Rhynchophanes mccowni* mar the appearance of the paper and lead the reader to think that perhaps the authors were in too great haste to rush into print.

On page 129 the statement that "The Dipper or Water Ouzel is a slate-colored Thrush" is somewhat misleading; and surely the Swamp Sparrow as well as, perhaps, a few other species of birds not mentioned in the report should have been included.

Part III consists of a brief "Bibliography" in which some of the citations are scarcely sufficiently definite.

Scattered throughout the text of the Bulletin are the twenty plates, one of which is duplicated, and most of which are very good. They are reproductions from photographs and illustrate nesting boxes, baths, food boxes, nests and eggs and various species of birds. However, a happier

grouping of the subjects on certain plates might well have been indulged in.

The colored frontispiece of the Meadowlark, the work of Bruce Horsfall, is borrowed from the National Association of Audubon Societies.

In spite of its obvious defects this paper shows a trend in the right direction in the way of stimulating interest in birds and bird study and furnishes a substantial background for the recognition of South Dakota birds.

D. S.

The "Blue Bird"

Is now published monthly, the year 'round, with new and interesting departments, features and contests, and AT NO ADDITIONAL COST TO SUBSCRIBERS.

Official organ of The Cleveland Bird Lovers' Association.

SEND 20c FOR SAMPLE COPY

Annual Subscription \$2.00

Agents Wanted Everywhere

THE BLUE BIRD

1010 Euclid Ave., Cleveland, Ohio

The Oologist

Birds - Eggs - Nests - Taxidermy

The Oologist is the only magazine published in America devoted to the interests of those making collections of Birds, their Nests and Eggs. For thirty-seven years it has been the recognized medium for the exchange of ideas along these lines and its columns teem with advertisements of this character, solely for exchange. It is the second oldest bird journal in America and indispensable to those engaged in either the amateur or scientific study of birds.

Subscription, fifty cents per year, with a free exchange notice. Sample copy free. Address The Oologist, Lacon, Ill.

JAN 28 1922

13,814

Vol. XXXIV. No. 3

September, 1922

THE WILSON BULLETIN



OFFICIAL ORGAN OF
The Wilson Ornithological Club and The
Nebraska Ornithologists Union

Entered as Second-class Matter, July 13, 1916, at the Post Office at Oberlin, Ohio, under Act of March 3, 1879.

CONTENTS

NESTING BIRDS OF LAKE COUNTY, OREGON, By Dr. A. G. Prill	131-140
SOME REMARKS ON THE FACIAL EXPRESSION OF BIRDS By George M. Sutton	141-147
THE BIRDS OF GREENWOOD LAKE AND VICINITY By Louis H. Kohler	148-163
SOME IOWA OWL NOTES By Fred J. Pierce	164-166
NESTING HABITS OF A GREAT HORNED OWL By O. J. Murie	167-168
NESTING OF THE SANDHILL CRANE By Dr. A. G. Prill	169-171
ANNUAL MEETING AT CHICAGO	172-173
EDITORIAL	174
BIRD BANDING DEPARTMENT	175-181
NOTES — HERE AND THERE	182-183
FIELD NOTES	184-188
COMMUNICATIONS	189

THE WILSON BULLETIN

Published quarterly, March, June, September and December, as the official organ of the Wilson Ornithological Club and the Nebraska Ornithologists' Union, and edited by Dr. Lynds Jones, assisted by a board of five members.

All articles and communications intended for publication and all books and publications for notice, should be sent to Dr. Lynds Jones, Spear Laboratory, Oberlin, Ohio.

The subscription price is \$1.50 a year, including postage, strictly in advance. Single numbers, 50 cents. Free to all members not in arrears for dues.

Subscriptions should be addressed to the Treasurer, and applications for membership to the Secretary.

The officers of the Wilson Club for the year 1921 are:

President—Dr. R. M. Strong, Loyola University, Chicago, Ill.

Vice-President—Dr. H. C. Oberholser, Washington, D. C.

Secretary—Albert F. Ganier, 2507 Ashwood Ave., Nashville, Tenn.

Treasurer—George L. Fordyce, Youngstown, Ohio.

EDITORIAL BOARD

Lynds Jones, Editor-in-Chief
Oberlin, Ohio

G. L. Fordyce, Youngstown, Ohio; A. F. Ganier, Nashville, Tenn.; T. C. Stephens, Sioux City, Iowa; Dayton Stoner, Iowa City, Iowa
M. H. Swenk, Lincoln, Neb.

Published Quarterly at Oberlin, Ohio



Ring-billed Gulls and Caspian Terns
500 Nests on the Island, June 22, 1922

THE WILSON BULLETIN

A QUARTERLY JOURNAL OF ORNITHOLOGY

VOL. XXXIV

SEPTEMBER, 1922

NO. 3

OLD SERIES VOL. XXXIV. NEW SERIES VOL. XXIX

NESTING BIRDS OF LAKE COUNTY, OREGON

(With Special Reference to Warner Valley)

BY DR. A. G. PRILL, SCIO, OREGON

Lake County, Oregon, as its name implies, is a county of lakes, but this article has special reference to that portion of the county known as Warner Valley.

Warner Valley lies in the southeastern portion of Lake county and contains a series of lakes known as Warner Lakes.

The territory covered in my investigations of the bird life of this section comprises the valley from a few miles north of Plush to the lower or south end, a distance of some 36 miles.

The valley proper is from five to eight miles wide and covering about 180 square miles.

In this valley, beginning at the north, are found the following lakes: Hart, Crump, Pelican, Dodson, Greaser, and Alkali Lakes.

All are freshwater lakes, except Alkali, and are fed by Honey Creek at Plush, Deep Creek at Adel, and Twenty Mile Creek in the southwest corner.

The major portion of the entire valley is flooded in the early season by irrigation ditches, to mature the crop of wild hay.

Scattered over this tract are many portions of land above high water mark. Several of the lakes contain islands. Surrounding these lakes are large patches of tules and flags and outside of such areas are found the wild grass meadows.

The general elevation of the valley is 4500 feet.

On the west side of the valley are high mountain ranges, known as the Warner Rim, and on the south and east, equally as high ranges, elevations up to 6500 feet, and on top of these ranges are found the table lands.

The mountains and table lands are covered with sage brush and greasewood, with scattering trees of Juniper.

The low lands along the streams have dense growths of Cottonwood, Willows, Junipers, Choke Cherry, Wild Plum trees and some Wild Rose bushes.

The farming lands, which are all irrigated, have large groves of Poplar trees, fruit orchards, alfalfa fields and gardens.

Along all the irrigation ditches are found dense growths of willow trees and bushes.

The various descriptions heretofore given will be referred to under separate headings of the many birds found breeding in this valley.

My observations covered a period from May 20 to June 20, 1922, being the height of the breeding season during this year.

While nests of all the species listed were not located there is no doubt of their nesting, as the birds were mated, and were observed during my stay.

Nearly all the lakes contain fish and vegetation, suitable for food for the many wading and water fowl which annually come here to nest.

It was observed that the various species selected breeding grounds quite separate and apart. For example, the Greebes were found on the west side of the lake, the Gulls, Terns and Pelicans on the east side.

The Redhead Ducks were found only in one portion of the valley.

Reference to the map which accompanies this article will further make clear this point.

1. WESTERN GREBE—*Aechmophorus occidentalis*.

Not common. Four pair on Crump Lake and three pair on Hart Lake. Not seen in other parts of the valley.

4. AMERICAN EARED GREBE—*Colymbus nigricollis californicus*.

Very common on Hart and Crump Lakes. Nesting in the tules bordering on the lakes. Nests of tules floating on water, four to six eggs.

6. PIED-BILLED GREBE—*Podilymbus podiceps*.

One pair found on Pelican Lake. Would appear to be a rare nesting bird here.

54. RING-BILLED GULL—*Larus delawarensis*.

Very common. Nesting on island in the east part of Crump Lake; 500 nests on one island and 85 nests on another island. Ninety per cent of nests contained young June 11. Two and three eggs in sets.

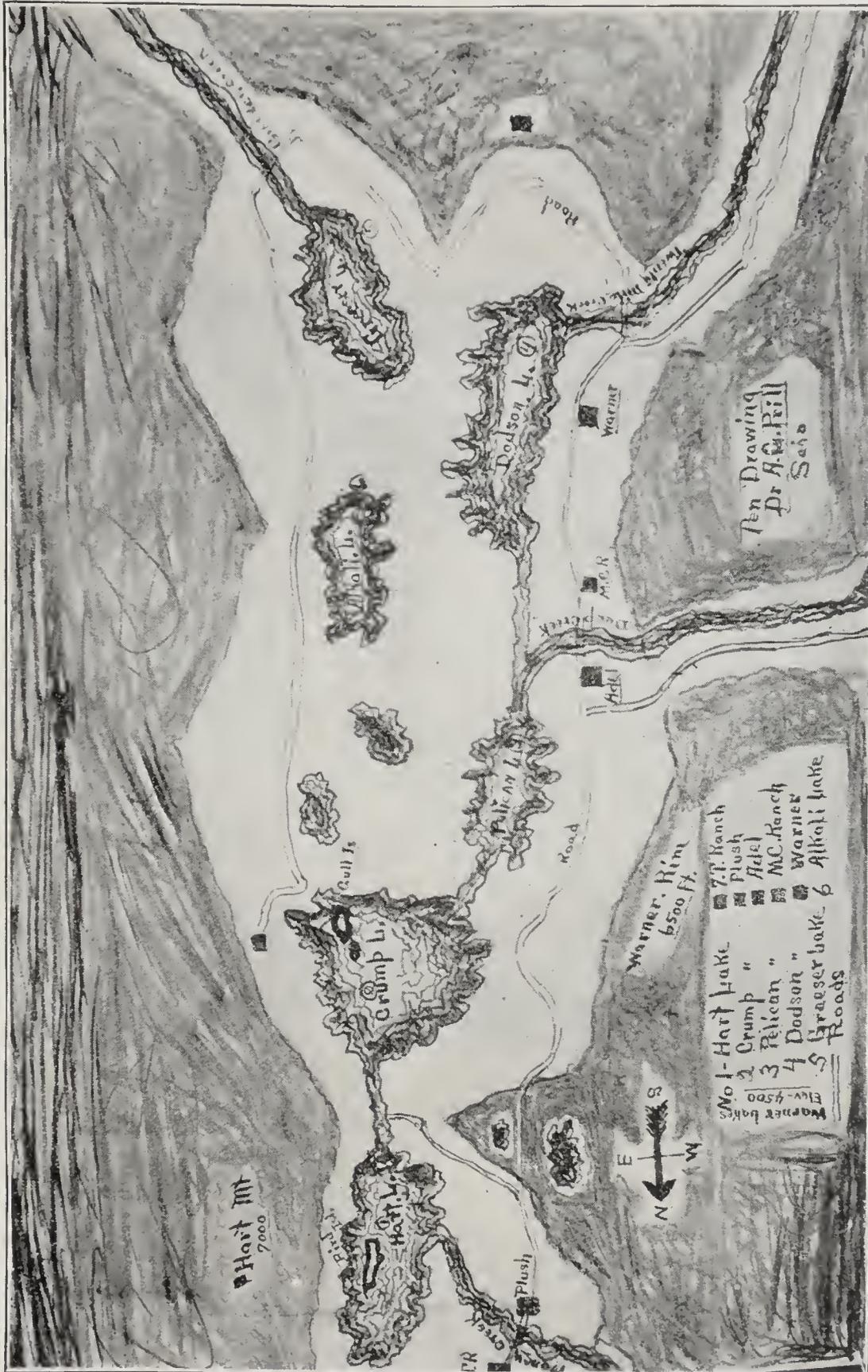
64. CASPIAN TERN—*Sterna caspia*.

Not common. Twenty-five pair nesting in colony on island in Crump Lake. Complete sets by June 11. Nesting with the Ring-billed Gulls. One, two, three eggs in set.

69. FORSTER'S TERN—*Sterna forsteri*.

Nesting on island in Crump Lake; separate and apart from other birds. Nest very compact, made of flags and grass, raised four or five inches from ground. Three eggs in set June 11.

77. BLACK TERN—*Hydrochelidon nigra surinamensis*.



Map of Warner Valley and Lakes, 1922

Not common. Some 25 pair nesting near the eastern border of Crump Lake. Eggs two and three in sets June 11.

120c. FARALLONE CORMORANT—*Phalacrocorax dilophus albociliatus*.

Not common. A dozen pair nesting on Bird island, Hart Lake. Three and four eggs June 5. Nest on the ground made of tule and flags.

125. AMERICAN WHITE PELICAN—*Pelecanus erythrorhynchos*.

Not abundant. Twenty-five pair seen in the valley. Nesting on Bird island, Hart Lake, and Gull island, Crump Lake. One and two eggs June 11.



Typical Nest and Eggs of Forster's Tern

129. A129. AMERICAN MERGANSER—*Mergus americanus*.

One pair seen on Crump Lake June 5.

131. HOODED MERGANSER—*Lophodytes cucullatus*.

One pair seen on Crump Lake and one pair on Dodson Lake June 1.

132. MALLARD—*Anas boschas*.

One of the most abundant ducks nesting in the valley. Nesting in the marshes, also on Deep Creek, Honey Creek, Twenty Mile Creek and on the rocky side of Warner Rim, under sage brush. Eggs 7 to 15, May 25 to June 10.

135. GADWALL—*Chaulelasmus streperus*.

Very common. Found nesting in the tule marshes around the lakes.

Sets May 23 to June 15, six to eleven eggs. Nests made of tules, sometimes floating on the water.

136. BALDPATE—*Marca americana*.

Only three pair seen in the valley. These birds were mated and without doubt getting ready to nest.

140. BLUE-WINGED TEAL—*Querquedula discors*.

One pair seen and one nest found with eggs May 25. Not common.

141. CINNAMON TEAL—*Querquedula cyanoptera*.

Common, and found nesting throughout the valley on small grass islands above high water mark. Nesting June 10. Sets seven to ten.

142. SHOVELLER—*Spatula clypeata*.

Not common, but at least a dozen pair seen in the valley. Mated and nesting June 1.

143. PINTAIL—*Dafila acuta*.

Not over six pair seen in the valley. One nest on Deep Creek. Eleven eggs, June 15.

146. REDHEAD—*Marila americana*.

Quite a common duck. Found nesting on islands near Pelican Lake. June 10. Sets eight to 10 eggs.

147. CANVAS-BACK—*Mcrila valisineria*.

One of the rarer specie found in the valley, and only three pair seen mated June 5.

167. RUDDY DUCK—*Erismatura jamaicensis*.

Several mated pairs seen in Pelican and Crump Lakes June 5.

172. CANADA GOOSE—*Branta canadensis canadensis*.

At least 25 pair nesting in valley. Canada Geese with young seen June 1. Set two eggs on Bird island. Incubation half on June 5.

187. WHITE-FACED GLOSSY IBIS—*Plegadis guarauna*.

Three pair seen June 1 on the eastern border of Crump Lake.

190. AMERICAN BITTERN—*Botaurus lentiginosus*.

Very common, and could be heard in all parts of the marshes in the valley. Would estimate at least 100 pair nesting. Sets May 25 to June 10, three to four eggs. Nest built in the tules some eight or ten inches above water.

194. GREAT BLUE HERON—*Ardea herodias herodias*.

Very common, probably 25 pair nesting. Colony near Dodson Lake of eight nests built in the top of willow bushes fifteen feet high. Nest on Bird island were on the ground and made of tules. Sets two to six, May 24.

202. BLACK-CROWNED NIGHT HERON—*Nycticorax nycticorax naevius*.

Not common. But twelve pair observed in the valley.

206. SANDEHILL CRANE—*Grus canadensis mexicana*.

Seen in all portions of the valley. Ten pair nesting, about one pair to every eighteen square miles of marsh land. Nest with eggs, May 20 to 30. Nest with young birds, June 6. Nesting far out in the marshes.

214. SORA—*Porzana carolina*.

Several pair seen near Dodson Lake, and were no doubt getting ready to nest.

221. AMERICAN COCK—*Fulica americana*.

Very common in all the tule marshes and flags. Sets 7 to 10. Dates, May 28 to June 30. Many not complete sets on later dates.

223. NORTHERN PHALAROPE—*Phalaropus lobatus*.

Three pair mated seen near marshes of Dodson Lake and their actions would indicate nesting June 1.

224. WILSON'S PHALAROPE—*Steganopus tricolor*.

Quite a number of pairs seen near Dodson Lake, all being mated, and without doubt getting ready to nest June 1.

225. AMERICAN AVOCET—*Recurvirostra americana*.

A common nesting bird of the valley. Preferring small alkali island in the marshes. Nests of tules, flags and grass raised some three inches from ground. Eggs 4. Sets May 30 to June 10.

230. WILSON'S SNIFE—*Gallinago delicata*.

Several birds in pairs seen in the south end of valley in the meadow lands.

263. SPOTTED SANDPIPER—*Actitis macularia*.

Several pairs nesting on Deep Creek, Honey and Twenty Mile Creeks. Nest near streams, made of dried grass. Eggs four, June 4.

264. LONG-BILLED CURLEW—*Numenius americanus*.

Two pairs of birds seen in the valley. Nest of four eggs found June 6. Built on dry knoll covered with wild grass made of dry grass. Returning next day to lake. Photo of nest and eggs. Found the birds in much excitement, with two crows near. On reaching nest found eggs had been carried off by the crows.

273. KILLDEER—*Oxyechus vociferus*.

Very common along the streams and borders of the lakes where open dry ground could be found.

294. CALIFORNIA PARTRIDGE—*Lophortyx californica*.

Very common. Many pairs seen along Deep, Honey and Twenty Mile Creeks. Just beginning to nest June 10.

309. SAGE GROUSE—*Centrocercus urophasianus*.

Very abundant on the table lands of Warner Rim and on the Sage Brush Mountain, east of the valley. Nearly all had young birds by June 1.

316. WESTERN MOURNING DOVE—*Zenaidura macroura marginella*.

One of the most common and numerous birds of the valley. From six to fifteen pair found near each ranch house. Over fifty pair nesting along Deep Creek for a distance of one mile. Nests low down in willow and cottonwood trees. Eggs two, May 20 to June 10.

325. TURKEY VULTURE—*Cathartes aura septentrionalis*.

Very common bird in the valley nesting on the rocky cliffs of Warner Rim.

331. MARSH HAWK—*Circus hudsonius*.

Several pair seen in the valley nesting in the tules. All had young May 25.

322. SHARP-SHINNED HAWK—*Accipiter velox*.

One pair seen on Deep Creek near marshes.

337b. WESTERN RED-TAIL—*Buteo borealis calurus*.

Two pair seen in the valley. One nest on rocky cliff up Deep Creek with young June 1.

342. SWAINSON'S HAWK—*Buteo swainsonii*.
Several pair seen in different parts of the valley.
349. GOLDEN EAGLE—*Aquila chrysaetos*.
One pair near Crump Lake in rocky cliff, 1500 feet high.
352. BALD EAGLE—*Haliaetus leucocephalus leucocephalus*.
One pair near Greaser Lake, nesting in Greaser Canyon, found by sheep herders, with young in nest.
355. PRAIRIE FALCON—*Falco mexicanus*.
Very common. Several pairs seen in various sections of the valley.
- 360a. DESERT SPARROW HAWK—*Falco sparverius phalaena*.
Six pair observed along the roads leading around the valley.
367. SHORT-EARED OWL—*Asio flammeus*.
One pair seen near Greaser Lake.
- 375a. WESTERN HORNED OWL—*Bubo virginianus pallescens*.
Very common. Generally seen near some ranch buildings resting during the day in large cottonwood trees.
378. BURROWING OWL—*Scototyto cunicularia hypogaea*.
One pair seen near Dodson Lake with nest June 11.
390. BELTED KINGFISHER—*Ceryle alcyon*.
Found along Deep, Honey and Twenty Mile Creeks. Nesting in the sand banks June 1.
- 394a. GAIRDNER'S WOODPECKER—*Dryobates pubescens gairdneri*.
Several pairs seen and nests located well up in cottonwood trees June 1.
408. LEWIS'S WOODPECKER—*Asyndesmus lewisi*.
At least six pairs seen, and one nest in cottonwood tree on Deep Creek, June 6.
413. RED-SHAFTED FLICKER—*Colaptes cafer collaris*.
Quite common, and nesting in willow or cottonwood trees. Eggs five to eight, June 1 to 10.
- 420a. WESTERN NIGHTHAWK—*Chordeiles minor heuryi*.
Observed in large numbers on Deep Creek. Arriving June 1. Not nesting by June 15.
435. MORCOM'S HUMMINGBIRD—*Atthis morcomi*.
Two pairs seen on Deep Creek. Identification, from one female specimen.
444. KINGBIRD—*Tyrannus tyrannus*.
Quite common in all sections nesting in juniper bushes June 1.
447. ARKANSAS KINGBIRD—*Tyrannus verticalis*.
A very common bird and found around all the farm ranches. Nest-
448. CASSIN'S KINGBIRD—*Tyrannus vociferans*.
One pair on Twenty Mile Creek.
ing in barns, telephone poles and high fences, June 10.
457. SAY'S PHOEBE—*Sayornis sayus*.
Several pairs seen on Deep Creek.
462. WESTERN WOOD PEWEE—*Myiochanes richardsoni richardsoni*.
Several pair on Deep and Twenty Mile Creek in the willows along the streams. No nests June 15.
469. WRIGHT'S FLYCATCHER—*Empidonax wrightii*.

Several pairs seen in the poplar trees near the ranches, nesting high up in the trees, June 10.

474c. DESERT HORNED LARK—*Otocoris alpestris leucolama*.

Only a few pair seen in the entire valley, June 1.

475. AMERICAN MAGPIE—*Pica pica hudsonia*.

Very common on Twenty Mile and Honey Creek, but none seen on Deep Creek. Nesting in willows May 25. Birds very destructive to eggs of other birds.

481. CALIFORNIA JAY—*Aphelocoma californica*.

A very common bird, found along the streams and irrigation ditches.

486. AMERICAN RAVEN—*Corvus corax sinuatus*.

Two pair seen in the entire valley.

489. NORTHWEST CROW—*Corvus caurinus*.

Very common. Nesting but in the marshes in willow trees. All nests found had young by May 25. A bird destroying many eggs, especially of the Duck family.

494. BOBOLINK—*Dolichonyx oryzivorus*.

A pair or two found in every alfalfa field.

495. COWBIRD—*Molothrus ater*.

A number were seen at Adel and Warner.

497. YELLOW-HEADED BLACKBIRD—*Xanthocephalus xanthocephalus*.

Very common, and nesting in the many tulie and flag swamps. Eggs three to four, June 10 to 15.

498F. NORTHWESTERN RED-WING—*Agelaius phoeniceus caurinus*.

Very common and found nesting in the wild grass meadows near the marshes. Eggs three to five. Full sets by May 27.

499. BICOLORED BLACKBIRD—*Agelaius gubernator californicus*.

Three pair nesting near Pelican Lake. Eggs 3. Nest in a clump of wild grass.

501b. WESTERN MEADOWLARK—*Sturnella neglecta*.

Quite common in the meadow lands around the entire border of the valley.

508. BULLOCK'S ORIOLE—*Icterus bullocki*.

Very common. Found near all the ranch houses in poplar trees and nesting along the stream. Nests very often high up and some as low as ten feet from ground. Eggs 5. Full sets June 15.

510. BREWER'S BLACKBIRD—*Euphagus cyanocephalus*.

Very common. Probably 100 pair nesting within a mile of Adel on Deep Creek. Nest built in cottonwood, willow, juniper trees and sage brush. One pair of birds had stolen the new nest of Bullocks. Eggs 4 to 7. May 20 to June 15. Oriole had a set of six eggs.

514a. WESTERN EVENING GROSBEAK—*Hesperiphona vespertina montana*.

Nesting in the pine forests at an elevation of 6500, and high up in the trees.

517a. CALIFORNIA PURPLE FINCH—*Carpodacus purpureus californicus*.

Several pairs along Deep Creek, but no nests located.

519. HOUSE FINCH—*Carpodacus mexicanus frontalis*.

Common near all the ranch houses, which had trees or orchards. Nest June 10.

- 529a. PALE GOLDFINCH—*Astragalinus tristis pallidus*.
A band of about twenty birds seen June 1.
- 552a. WESTERN LARK SPARROW—*Chondestes grammacus strigatus*.
The most common sparrow found in the valley. Nesting on the ground in pastures and meadows.
- 581B. MOUNTAIN SONG SPARROW—*Melospiza cinerea montana*.
Several pair seen near Adel and Warner.
596. BLACK-HEADED GROSEBEAK—*Zamelodia melanocephala*.
A common bird along the water courses in the deep willow thickets.
599. LAZULI BUNTING—*Cyanospiza amæna*.
Two pair seen on Deep Creek nearly every day June 1 to 10.
607. WESTERN Tanager—*Piranga ludoviciana*.
A very common bird along the mountain streams, but not as numerous as Bullock's Oriole.
612. CLIFF SWALLOW—*Petrochelidon lunifrons*.
Nesting by the thousands on the high cliffs of Warner Valley. Eggs four to five, June 15.
613. BARN SWALLOW—*Hirundo erythrogastra*.
Quite common, nesting under bridges and under barns, June 10.
614. TREE SWALLOW—*Iridoprocne bicolor*.
Very common out in the marshes where willows or cottonwood trees with holes were found June 10.
615. VIOLET-GREEN SWALLOW—*Tachycineta thalassina lepida*.
Two pair nesting near Adel in dead willow stubs June 10.
616. BANK SWALLOW—*Riparia riparia*.
Numerous pairs nesting in a bank on Deep Creek, half mile east of Adel. June 1, four to five eggs.
619. CEDAR WAXWING—*Bombycilla cedrorum*.
Seen quite frequently in all parts of the valley on the west side.
- 627a. WESTERN WARBLING VIREO—*Vircosylva gilva swainsoni*.
One pair seen at Adel, nesting in poplar grove, June 10.
652. CALIFORNIA YELLOW WARBLER—*Dendroica aestiva brewsteri*.
This warbler was found in large numbers on Deep Creek and Twenty Mile Creek. It seemed that nearly every clump of willow bushes had a pair of warblers. Eggs four to five, June 10 to 20.
- 681a. WESTERN YELLOW-THROAT—*Geothlypis trichas occidentalis*.
Very common along all the water courses, arriving about June 1.
- 683a. LONGTAILED CHAT—*Icteria virens longicauda*.
Common in and along the water courses. Nesting in willow bushes June 15.
701. AMERICAN DIPPER—*Cinclus mexicana unicolor*.
One pair nesting at falls on Deep Creek June 1.
715. ROCK WREN—*Salpinctes obsoletus obsoletus*.
Two pair seen up Deep Creek canyon.
- 721b. WESTERN HOUSE WREN—*Troglodytes aedon parkmani*.
A pair generally nesting at each farm house. Eggs May 20, young June 15.
- 725a. TULE WREN—*Telmatodytes palustris paludicola*.

Found in large numbers in the tulie swamps near the lakes. Eggs four to six, June 1.

758. RUSSET-BACKED THRUSH—*Hylocichla ustulata ustulata*.

One pair on Deep Creek, in the dense willow, but hear many singing along the streams.

761a. WESTERN ROBIN—*Planesticus migratorius propinquus*.

Very common nesting bird of the valley. Eggs four to five and found May 20 to June 10.

768. MONTANA BLUEBIRD—*Sialia currucoides*.

Several pair observed in the valley and on the tablelands up to 6500 elevation.

The diversified fauna of Warner Valley makes it the ideal nesting home of many birds, the list observed by me containing 102 specie, and no doubt some of the rare species were not found.

The greatest enemy to bird life in the valley, especially to eggs, are the crows and magpies, as in the vicinity where these birds were nesting hundreds of egg shells, especially duck's, were found.

Coyotes and skmks also destroy nests and kill hundreds of the young birds.

The ducks, nesting in their order of numbers are: Mallard, Gadwall, Cinnamon Teal, Redhead, Shoveller, Pintail, Ruddy and Canvasbacks.

Other water fowl in order of abundance: Ring B. Gulls, Forster's Tern, Avocets, Am. Eared Greebes, Am. Bittern, Caspian Tern, Great Blue Herons, Black Tern, Pelicans and Sand Hill Cranes.

These birds cover the main bird life of the great marshes and lakes of Warner Valley.

SOME REMARKS ON THE FACIAL EXPRESSION OF BIRDS

BY GEORGE M. SUTTON

Before an audience of laymen the writer once made an allusion to the "bright and interesting face of a White-throated Sparrow." The remark caused a considerable amount of comment among certain ones of the audience who had never thought of the possibility that a bird as well as a human being may possess facial expression. Since that time, and, in fact, with such circumstances as a greater or less stimulus, a considerable amount of recording, and a vastly greater amount of observation have been accomplished with the end in view of becoming familiar with the facial expression of birds. It has become evident that even between birds of close relationship great differences may occur in this respect, and similarly, birds of distant connection may exhibit surprising similarities. It may be well to state at the outset that the eye proper, that is, the exposed cornea, with the pupil and usually colored iris showing through the translucent membranes, is not so much responsible for facial expression as is usually thought. Rather, as regards the eye, the lids in their position and movement are responsible. That the dilation of the pupil influences expression of the eye greatly is evident to one who closely observes a Great Horned Owl in a trap on the ground, whose eyes, when focused on the dark leaves at his feet, give the impression of being mellow, liquid, and lustrous, and which as suddenly as the movement of the head itself, become hard, piercing, and terribly fierce as the captive, facing the observer and the light, raises his feathers and snaps his bill sullenly.

That an Owl possesses facial expression seems readily conceivable, due to the fact that the arrangement of eyes, bill, and facial discs immediately suggests the human face. For this reason, and also on account of the possibility of successfully keeping this group in confinement, Owls have been the subject of much of the writer's study, and aside from the great delight in possessing the beautiful soft creatures, observation has brought to light numerous most interesting matters. The Screech Owl, which shrinks to become a stub on the branch where he perches, is a familiar proof that the expression of the face of a bird depends not so much on the eyes as on the eyelids, and it also shows what a great part the general contour

of the head and body plays as well. When the Screech Owl "freezes," to use the word of some authors, no change, apparently, takes place in the eye proper, but the lids are arranged in a manner used at no other time, giving the individual an unspeakably droll expression. The effect of wooden rigidity rather than downy softness is gained by a close compression of all the feathers, and the ear-tufts are raised conspicuously, though curiously enough, at such incongruous angles that symmetry is usually lost. Often, at such times, the mandibles may be parted, an addition to the effect of total loss of inherent owlish characteristics. It is possibly not so well known that the Long-eared Owl resorts to the same trick at times, and even, seem it ever so strange, the Great Horned Owl—a bird whose bold nature and great strength would seem a sufficient protection, without its resorting to so cowardly an implement as the mere imitation of a stick. The writer once had the immense satisfaction of actually overlooking one of his pet Horned Owls, which, perched on a barrel near a large pile of gunny-sacks, became so much a part of his surroundings that some time was spent in searching in the darkest and least accessible parts of the barn. When, suddenly, as it became evident that a certain supposed sack was actually the Owl, assuming the ludicrous aspect of his small relative, the Screech Owl, it provoked a hearty laugh. In every respect was this great "Tiger among birds" "frozen," even as the little Screech Owl. The outlines of the eyelids were almost exactly the same, and even in such respects as the parting of the mandibles was the simulation complete. In the face of this Owl, as he was for the first time discovered, there appeared an indiscribably humorous expression, as if the clever bird realized perfectly well just what was going on in the mind of the observer!

Anyone who has had Owls as captives will remember the great changes which come over the expression of an Owl's face when he suddenly realizes that he is no longer a captive, but free. The eyes usually open wider, and the head feathers compress, as with bobbing movement or sudden turning of the head, he peers about for a possible place of refuge. The expression, evident in most wild birds, is the most glorious the individual ever assumes. Even in a much worn and bedraggled individual an unmistakable trimness becomes evident, when he realizes that freedom is again his own.

The painter of birds must realize that for each species of

Owl there is a distinct facial expression, though in cases there is a marked similarity. Certain expressions, for example, of the Short-eared and Long-eared Owls suggest each other strongly, due probably to the fact that the eyes of both are comparatively small,—and there are certain points common to the Great Horned and Snowy. But there is quite as great a difference between the facial expressions of a Barn and Barred Owl as there is between those of a Canary and a squirrel, at least so far as shape and general effect of the facial arrangement is concerned. The Barn Owl's face may be described as sad, weird, or mystical; the Barred Owl's as open, rather mild, and frank. The weird face of the Barn Owl has gained for him an enviable publicity, for the most part in small town newspapers. He is usually heralded as the Monkey-face, and may even be described as a new beast—half monkey and half Owl. All this enthusiasm in announcing the bird as unheard of before is due to the extremely odd, even unique face. The Barn Owl, so far as the writer's experience goes, never "freezes."

The Owls, as a group, are particularly attractive in a discussion of this phase of bird-study, and might well form the subject of an entire paper, but possibly it is well to cover more ground in this paper which must be, at best, merely a collection of preliminary remarks. But before passing on, attention should be called in this connection to the Marsh Hawk, which in certain moods, and viewed from certain angles, suggests an Owl considerably. A female Marsh Hawk from front, with feathers of the head and body fluffed out, becomes a very owl-like creature. In this case the similarity is due to the facial disc of feathers, which, as is well known, is characteristic of the genus *Circus*.

Among the Falcons, Buzzard-Hawks, Accipitrine forms, and Eagles, the superciliary shield plays an important part in the facial expression, in every case giving them, with the aid of clean-cut contour and bold bill, a characteristically wild, fierce, physiognomy. In the lovely dark eyes of the Sparrow Hawk, and the great far-seeing orbs of the Golden Eagle is a keen, intelligent expression closely akin, while in almost every bird of prey is a certain brilliance and piercing quality due to the fact that the eyes are deeply set, and that the high light, and often brilliant iris, blaze out from comparatively sombre surroundings. But if for an instant it is imagined that the eye with its superciliary shield only is responsible for the fierce visage of

a Hawk, let the same creature fluff out after a satisfying meal, when the soft edges of a fluffy crest, before compressed, and the assumption of an easy attitude of body, immediately ameliorate the fierceness of the eye, and the bird seems a different creature. Similarly, though to a greater degree, may a sick hawk become in all senses of the word, sad and pitiable, though the attractive beauty of the normal expression may return for fleeting instants. The fact that many caged or zoo birds are not in good health is sufficient warning that the artist must avoid using them as models, if he is to catch the living expression of the wild bird. Better a fleeting glimpse of the true, wild face, than hours of study of the average unfortunate captive, who has lost all joy of life, and every hope of freedom.

Legend and sketch alike portray the Hawks as fiercest of birds; but to the contrary, within the scope of the writer's memory, there does not dwell the semblance of a sweeter bird face than that of a downy nestling Rough-legged Hawk, which, resting in his nest, far above a Labrador river, had no reason to fear such an oncomer whom he had never known. Surely even to the least imaginative, the attractive face of that little hawk could but win sympathy and affection, though it will be readily admitted that the parent birds as they swooped about with clear screams were exponents of typical hawkdom in every sense of the word.

The Turkey Vulture offers an interesting case of lack of positive facial characteristics, though no one could of course mistake a Vulture's face for that of any other bird. But there is scarcely anything to suggest fierceness, fear, offensiveness, or even intelligence in any marked degree. The case in hand brings to its proper place in importance the influence of the crest, and other head feathers in the facial expression. Remove the feathers entirely from any bird's head, and it is rather startling that the eye seems to lose all its former importance as a factor. However, that there is a marked difference in the expressions of similarly headed birds, such as the Wild Turkey and Turkey Vulture, goes without saying, and it will be observed that the bill, nostrils, and color and lustre of the eye are all important factors.

Plates of birds often give the impression that a bird's eyes are perfectly round, and though this is actually sometimes the case, it is very unusually so, and quite the exception to the rule. Similarly, in mounted specimens one may often discover

the same defect. The taxidermist endeavors to round out the lids to such a degree that the delicate angles and contours responsible for the eye's expression are hopelessly lost. Especially is this the case with the Shore-birds, whose usually very dark eyes are framed in delightfully shaped lids. In some cases the fore angle is quite acute, but in the greater number of species the rear angle is the smaller by far, and sometimes lower down in the head than the fore-angle. All these facts mean that the student or artist who would successfully paint or mount birds must know the facial expression of his subjects. The Woodcock's rather droll expression is often imperfectly represented, though it is almost impossible to lose utterly *this* expression, due to the fact that the eye must be placed far back in the head if the anatomy of the creature is observed at all. Nine times out of ten, in mounted specimens, the beautiful narrowed eyes of the Lesser Yellow-legs are rounded out like those of the Black-bellied Plover, and the proportion is almost as disheartening, I believe, in the case of published portraits of the bird.

If, in drawing a bird's head, the eye be placed intentionally too far back or too high in the head, it will be evident how important such matters are, and when it is properly realized that every minute detail is for the most part just as constant as the more blatant ones, the artist and taxidermist will come to acknowledge the gravity of his task of bringing real lifelikeness to his creations.

In the case of nearly all woodpeckers the rear angle of the eye is higher than the fore. If this point is not properly imitated or reproduced a large part of the typical Woodpecker expression goes. And similarly, in the case of Loons and many divers, the eyes are rather elliptical, and give, together with their color and position in the head, a rather serpentine visage. The Puffin has an indescribably artificial looking eye, though there is a suggestion of more actuality when the bird grasps something in its bill. The cornea of the Puffin's eye is very flat. The iris is a cold, flat gray, and the high light, due to the flat surface of the cornea, is hardly apparent at all at times. These points give the Puffin an expression all his own, and coupled with the notably eccentric bill make it one of the most characterful species.

In the case of some Grebes, notably the Horned as a common example, the eye is truly wonderful, aside from its being

part of a bird's face. Like a glowing gem of salmon pink, set in a soft gray or deep black velvet matrix, its white encircled pupil gives a startlingly snakelike look, even in a dead specimen. A burnished gold edging about the pupil of the Razor-billed Auk gives the same effect and the pupil of this bird's eye is delicately fringed in a manner I believe unique. The Road-runner adult is another species with a serpent-like face, due to the fact that the pupil of the eyes is ringed with a light circle, in addition to the dark colored iris.

Those who know the small birds intimately will agree that various feelings are expressed in the face; that there is a cognizable difference between the contented, the angry, the sick, and the terrorized individual. Whether any other moods, such as jealousy, laughter, or an appreciation of humor, and "vamping," may be thus indicated by the facial expression is highly doubtful, and of course implies a considerable range of intelligence for the bird. The feathers of the terrorized bird are usually pressed close to the body, and the feathers of the head and neck and legs are so tightly drawn in that the anatomy is plainly visible—where in the same bird in a contented condition a rounded contour would be evident. Fear is often indicated by parting of the bill, and of course very rapid breathing. Every collector knows that a bird just shot, and picked up in all its fresh beauty from the ground possesses a wonderfully sweet facial expression, one rarely if ever seen in the living bird. This may be due partly to the closing lids, but it is caused more, possibly, by the delicate lifting of all the feathers, and the fact that the eye has lost all focal powers. How many times must the collector think, even if he does not speak, his thoughts: "What a beautiful face this little bird has."

To watch a caged canary for a short time reveals the fact that it directs its eyes either forward, up, or down, at will, much as we do; this muscular action is the property of many species, to a greater or less degree, but in the Owls and Hawks is slight and scarcely noticeable. It means, therefore, that the Owl, to follow an object, must turn its head, and not only its eyes,—whereas, other forms may look forward or to the side with equal ease. Thus may the artist depict a small Passerine form with bill pointed directly at the observer, and the eyes also, whereas, if the Owl's profile be given the focus of the eyes of the bird must be in the same direction as that of the bill.

The presence or absence of eyelashes affects the facial ex-

pression to a degree, though this is possibly a negligible matter. Among the Cuckoos, which have lashes, the face is characterized by a somewhat mystical solemnity. The contrastingly colored lids in this case are of great importance.

The matter of high lights on the eyes is interesting. The writer once crippled a Killdeer, and while it was yet living observed that in the outdoors at close range, almost the whole upper half of the eye was in high-light, and a vivid reflection of the landscape was apparent. Moreover, the high-light was much dimmer than usual—in fact several shades deeper than the white on the throat. The experience rather spoiled a theory held up till this event, namely, that the whitest white and deepest black on the bird always occurs in the eye. It seems that the deepest dark does occur in the eye; but as to the whitest white,—that is another matter.

A word may well be said as to the practical methods of registering and noting the correct facial expression. Constant use of the camera is of course a splendid course to follow, but one finds use of the camera often impracticable, and furthermore, if it is desired to preserve the shades of color of the fleshy parts, water color sketches will best serve the purpose. Thus, when birds are shot, may their life colors be preserved, and the comparative distances of base of bill to eye, and contour of the feathers, be carefully noted and recorded. Later, then, with the use of a skin, some photographs perchance, illustrating habitat, and the field sketches, may a final portrait of the bird be executed which may do at least a fair amount of justice to the subject. But better still is the detailed drawing or portrait from life.

In the foregoing very much scattered remarks a mere hint at the scope of the subject has been given; but it may suggest to some at least an interesting field of endeavor, and will form the basis of a plea for more accurate bird taxidermy, and redoubled effort to make all bird portraits lifelike in every respect. Though the artist will forever cry that we must idealize and improve Nature, it may truly be said that Nature herself is so glorious that we would do well to be content in depicting her even as she is.

THE BIRDS OF GREENWOOD LAKE AND VICINITY
(NEW JERSEY AND NEW YORK)

LOUIS S. KOHLER, PATERSON, N. J.

Greenwood Lake, one of the most popular and most visited summer and winter resorts of the vacationist, fisherman and naturalist of New York City and the surrounding suburbs, being distant about two hours' journey from the metropolis, is, without doubt, the finest body of water in northern New Jersey and southern New York. This lake is about six hundred and twenty feet above sea level, and is approximately seven miles long and varies in width from three-quarters to one mile. About half of the lake is located in the State of Jersey and the other half in the State of New York.

The country bordering this magnificent body of water is of a very rugged nature and amply satisfies every desire of the ornithologist and oologist who may care to roam about its precincts. To the west the Bearfort and Bellvale Hills rear themselves to a commanding height of about seven hundred feet and to the east the Sterling Hills extend nearly the whole length of the lake. To the north, about two miles away, Mount Peter, the highest elevation in the vicinity, is perhaps the most visited spot of the whole section, and at the northeast Bear Rock, whose elevation is about 1200 feet, is likewise a favorite climb of nearly every able-bodied visitor of this section.

At the southern end of the lake, Belcher Creek and the marshy section on either bank affords every opportunity to the student to observe many of the Anseres, Herodiones, Pygopodes, as well as the Limicolae which visit this inland lake.

About a mile up along the eastern bank the dam and overflow of the lake empties its surplus water into the Wanaque Creek, whose valley is, indeed, the Mecca of every bird student as far south as the Hewitt Station. To the west of the lake, about two miles above the southern end, a small body of water, known as Surprise lake, is nestled in the Bearforts some four hundred feet above the surface of the main lake and this also is an excellent spot for the bird student.

Following the eastern bank from the dam, the principal points of interest to the ornithologist are: The shallows just above the Ice House, Storms' Island, Hickory Point and Finigan's Cove, Echo Rock, Chapel Island and the long cove at the extreme northern end of the lake, to the east of the Village of

Greenwood Lake, N. Y. On the west bank south from Greenwood Lake Village, Deacon's Point is the first point of interest. Thence follows Furnace Cove, the trail to Surprise Lake, and Belcher Creek and the adjacent marshes at the extreme southern end.

The writer, during the past fifteen years, has spent many days roaming about and paddling during the summer and skating during the winter on the surface of this lake and has secured an approximately correct list of the winter and summer residents, vernal and autumnal migrants, and visitants, both rare, casual and regular, as will be indicated by the appended list, which also bears numerous notes regarding each species mentioned. And for the purpose of making this list of the most value to the resident or visitor of this section at any time of the year, the writer, during the years 1916 and 1917, spent from two to three days each week during every month of those two years in making observations on and about the lake, therefore, it is quite fair to assume that most of the conclusions that he has arrived at may be accepted as indicative of the prevailing conditions of bird-life in this section.

Before proceeding with this list of birds of this section, the naturalist visitor will in all probability be interested in some of the other forms of natural life prevailing in this locality and, for their benefit, a short resume is included.

Of the Amphibians and Reptiles, the writer has located from time to time specimens of the Spotted Salamander (*Ambystoma punctatum*), Red-backed Salamander (*Plethodon erythronotus*), Sticky Salamander (*Plethodon glutinosus*), Long-tailed Salamander (*Speierpes longicauda*), Red Salamander (*Speierpes ruber*), Dusky Salamander (*Desmognathus fusca*), Newt (*Dicamptylus viridescens*), Toad (*Bufo americanus*), Swamp Tree Toad (*Pseudacris triseriatus*), Cricket Toad (*Acris gryllus crepitans*), Pickering's Tree Toad (*Hyla pickeringii*), Common Tree Toad (*Hyla versicolor*), Bull Frog (*Rana catesbeiana*), Green Frog (*Rana clamata*), and Wood Frog (*Rana sylvatica*), Water Snake (*Natrix sipedon*), Red-bellied Snake (*Storeria occipito-maculata*), DeKay's Brown Snake (*Storeria dekayi*), Ring-necked Snake (*Diadophis punctatus*), Black Snake (*Coluber constrictor*), Garter Snake (*Thamnophis sirtalis*), Hog Nose Snake (*Heterodon platyrhinos*), Copper Head Snake (*Agkistrodon contortrix*) and Rattle Snake (*Crotalus horridus*), Snapping Turtle (*Chelydra serpentina*), Painted Terrapin (*Chry-*

semys picta) and Muhlenberg's Terrapin (*Clemmys muhlenbergii*), Wood Tortoise (*Clemmys insculpta*), Spotted Terrapin (*Clemmys guttata*) and Box Tortoise (*Terrapene carolina*).

Of the Lepidoptera, Diptera, Hemiptera, Hymenoptera, Odonata and Orthoptera there are many representatives and the field offers many opportunities to the entomologist throughout the section. Likewise the Mammalia and other forms of Vertebrata and Invertebrata. To the geologist and Indian relic hunter this section is rich in finds to all alike.

Colymbus holboelli—HOLBOELL'S GREBE.

One male was observed on November 25, 1918, swimming and diving on the surface of the lake near Pine Island during the early morning. This is the only record that I have been able to find of this species on this lake, although it is quite possible similar occurrences may have been made by this species.

Colymbus auritus—HORNED GREBE.

A regular spring and fall migrant. First observed on this lake on April 14, 1906, and the latest record for any year was made on October 12, 1914. A male and female were observed on August 10, 1912, which is the earliest autumnal record made. These birds are well named by the natives, whose vernacular for them is Dipper Ducks. In every instance they would never let me approach nearer than seventy-five feet but that they would submerge and re-appear some two or three hundred feet off.

Tachybaptus podiceps—PIED-BILLED GREBE.

A regular spring and autumn migrant. Occasional summer resident. They appear about April 10 in the spring and are last seen about October 5 in the fall. Never more than about a total of fifteen birds are observed each spring and fall. Two nests were located by the writer in the marshes near Belcher Creek, one June 5, 1916, with two fresh eggs, and another on July 1, 1917, with a complete set of seven eggs, well incubated.

Gavia immer—LOON.

A rare visitant. One male was observed by the writer on April 2, 1914, swimming on the lake near Finigan's Cove. This constitutes all that I can find for this locality, although a resident of Hewitt advises me he shot one some years ago and bore out the statement by producing the bird stuffed. This gentleman claims he secured this bird near Pine Island on one of his duck-shooting excursions.

Larus argentatus—HERRING GULL.

A common spring migrant, but rare in the autumn. Occasional during the winter when the lake is free of ice. Only one autumnal date (October 3, 1914) has been secured.

Hydrochelidon nigra surinamensis—BLACK TERN.

A dead bird was picked up by the writer on the bank of Belcher Creek on June 8, 1916. Apparently a straggler.

Mergus americanus—MERGANSER.

An occasional winter visitant. Observed January 18, 1903, at Chapel Island, and on February 12, 1914, at Belcher Creek.

Anas platyrhynchos—MALLARD.

An irregular visitant. Observed on October 16, 1906, at Sterling Forest during the early morning, one male and two females.

Anas rubripes—RED-LEGGED BLACK DUCK.

Regular migrant. Two specimens examined by writer from a lot of six shot by Cleveland Cook of Haskell, N. J., on November 20, 1906, which were secured on Belcher Creek. One was found fast in a muskrat trap along this creek by the writer on March 10, 1912, which, after being released, made off towards the northern end of the lake.

Anas rubripes tristis—BLACK DUCK.

Abundant migrant. Earliest fall date secured was September 30, 1911, and latest spring date April 12, 1908.

Nettion carolinensis—GREEN-WINGED TEAL.

Migrant and occasional winter resident. A few are observed each migration. Two winter dates secured, one December 28, 1904, and one February 6, 1916.

Querquedula discors—BLUE-WINGED TEAL.

Migrant and occasional winter resident. Its status is practically the same as the preceding species. Observed during the winter on December 15, 1910.

Aix sponsa—WOOD DUCK.

Formerly a common migrant and occasional resident, but of late years is only rarely met with. Last recorded for the vicinity was on April 13, 1916, a male and a female.

Marila marila—GREATER SCAUP DUCK.

A rare visitant. One examined among a lot of Black Ducks shot on November 25, 1910, near Finigan's Cove.

Clangula clangula americana—GOLDEN-EYE.

Winter visitant. Found by the writer off Deacon's Point on December 2, 1902.

Branta canadensis—CANADA GOOSE.

Regular migrant. Observed every year both in large and small flocks from October 1 to 15 in the fall and from March 10 to April 15.

Botaurus lentiginosus—BITTERN.

An irregular migrant and an occasional breeder. A pair was observed near Belcher Creek on May 30, 1916, and I believe they must have nested here this year, although a careful search revealed nothing that would indicate a nest.

Ixobrychus exilis—LEAST BITTERN.

An occasional summer resident. Found on Belcher Creek on June 14, 1914, and again on July 28, 1916. These are only dates secured by the writer, but it is quite possible they breed here each year.

Ardea herodias—GREAT BLUE HERON.

A regular migrant. Earliest date in spring secured was April 2, 1906, and the latest fall date October 6, 1913. Observed at Surprise Lake during 1908 and 1911, and in Belcher Creek marshes nearly every year since 1904.

Butorides virescens—GREEN HERON.

A regular summer resident. Nests are found each year in Belcher Creek marshes. Arrives about April 15 and remains until September 30.

Nycticorax nycticorax naevius—BLACK-CROWNED NIGHT HERON.

Rather common resident. Most generally seen in evening when flying about overhead and uttering their peculiar call. No record of their nesting about this lake has come to my attention.

Rallus elegans—KING RAIL.

An occasional visitant. Observed on Belcher Creek on May 27, 1916. Only record.

Rallus crepitans—CLAPPER RAIL.

One specimen which is claimed to have been secured on Belcher Creek was examined by the writer during 1914 in the possession of C. McKinnon of Ringwood. It is very doubtful that this was secured here as this is many miles above their usual range in the State of New Jersey.

Rallus virginianus—VIRGINIA RAIL.

Common summer resident. Two nests have been located by the writer along Belcher Creek, one on June 24, 1910, and one on May 31, 1913. Both had sets of nine eggs well incubated.

Gallinula galeata—FLORIDA GALLINULE.

One male found floating on the surface of Belcher Creek on July 2, 1916, in a bad state of decomposition. Only record.

Philohela minor—WOODCOCK.

Summer resident. Nests are found each year on Belcher Creek marshes. Appear in this vicinity about April 1 and leave about November 25.

Gallinago delicata—WILSON'S SNIPE.

A regular migrant. Appear in the spring about April 10 and pass to the south between November 5 and 20.

Actitis macularia—SPOTTED SANDPIPER.

Common summer resident. Nests are found nearly every year. Arrive about April 25 and depart about September 30.

Oryechus vociferus—KILLDEER.

Rather common migrant and occasional summer resident. One nest with eggs found on a farm near Hewitt on May 2, 1912. Only nest found in this vicinity. Rarely ever seen in companies of more than two or three at one time.

Colinus virginianus—BOB-WHITE.

Permanent resident on all sides of the lake. No nests have been found by the writer in this vicinity, but, as the birds are present during the breeding season, it is quite certain that they breed here.

Bonasa umbellus—RUFFED GROUSE.

Permanent resident, mostly in the heavily wooded hills adjacent to the lake, both in New Jersey and New York. Two nests have been found, one near Surprise Lake, on May 28, 1914, and another along the Wanaque River, just above Hewitt, under an old rail fence, on June 2, 1917. Both of these nests had sets of ten eggs in them and both nearly ready to hatch.

Phasianus colchicus—RING-NECKED PHEASANT.

A rather common permanent resident about the lake. Usually observed in small roving flocks of three or four, and more often, a single male or female is observed.

Zenaidura macroura carolinensis—MOURNING DOVE.

A common summer resident. While not as plentiful as a decade ago, still many can be observed flying about, usually in pairs, throughout the summer season. They usually arrive in March and April and remain until the middle of November.

Cathartes aura septentrionalis—TURKEY VULTURE.

An occasional visitant. One observed at Hewitt on May 7, 1912, feeding on some offal from a local butcher, who cast some small pieces of lamb on a garbage disposal. I came upon this bird unexpectedly and obtained a favorable chance to positively identify it before it made off.

Circus hudsonius—MARSH HAWK.

Common permanent resident. More usually met with during the warmer months than during the winter months than during the winter, but a few may be found even on the coldest days of each year. Belcher Swamp is a favorable place for this species.

Accipiter velox—SHARP-SHINNED HAWK.

Rather common throughout the year, but most often met with during the vernal and autumnal migrations. No record of it breeding here, save on May 3, 1909, the writer observed a pair feeding three young about two weeks old. As these young were still in the downy stage it is very possible that they were hatched in the immediate vicinity.

Accipiter cooperi—COOPER'S HAWK.

A common migrant, occasional summer resident and also a rare winter visitant. Have no record of it breeding in this vicinity. About nine miles to the southwest, at Echo Lake, a nest with three eggs was found on April 10, 1908.

Buteo borealis—RED-TAILED HAWK.

An occasional winter visitant and rather common migrant. Observed at Finigan's Cove on December 3, 1913, and at Belcher Creek on February 12, 1915.

Buteo lineatus—RED-SHOULDERED HAWK.

Rather common resident. Writer examined one shot near Brown's Hotel on April 16, 1914, a full grown male. Others observed at various points about the lake over nearly all the months of the year.

Buteo platypterus—BROAD-WINGED HAWK.

Occasional summer resident. Rather common migrant. No record of breeding here.

Archibuteo lagopus sanctijohannis—ROUGH-LEGGED HAWK.

A regular winter visitant. Occasional during the migrations.

Haliaeetus leucocephalus—BALD EAGLE.

Occasional about this lake. One male observed on June 18, 1906, near Deacon's Bend and another at Sterling Forest on October 20, 1910.

Falco peregrinus anatum—DUCK HAWK.

Transient visitant. Observed in Belcher Creek Swamps on November 2, 1907, and at Greenwood Lake, N. Y., on February 6, 1910.

Falco sparverius—SPARROW HAWK.

Common permanent resident. Nests have been found each year since 1904 on different points about the lake, usually in deserted Flicker or Red-headed Woodpecker cavities.

Falco columbarius—PIGEON HAWK.

Common transient. May be seen about the lake at frequent intervals. No record of it breeding here, and it is seldom seen during the breeding season.

Pandion haliaetus carolinensis—OSPREY.

An abundant migrant. Appears locally about April 20, and individuals are observed as late as October 10. One nest was located with a set of three eggs on May 30, 1904, on the east shore of this lake near Finigan's Cove.

Asio wilsonianus—LONG-EARED OWL.

Occasional visitant. Observed by the writer near Sterling Forest on November 13, 1914, and another specimen was found dead along the Wanaque River near Awosting, apparently having been shot by a hunter and left, November 25, 1916.

Strix varia—BARRED OWL.

A rather common permanent resident. One nest was located on April 3, 1910, at Sterling Forest, which constituted my only breeding record.

Otus asio—SCREECH OWL.

A common permanent resident and a regular breeder about this lake. Both phases of plumage can be found each year.

Bubo virginianus—GREAT HORNED OWL.

A rare visitant. Observed twice by the writer. First on May 3, 1912, and second on November 28, 1917, both records being made near Surprise Lake.

Coccyzus americanus—YELLOW-BILLED CUCKOO.

Common summer resident. Arrives May 5 to 20 and departs October 1 to 10. Breeds at many points about the lake.

Coccyzus erythrophthalmus—BLACK-BILLED CUCKOO.

Common summer resident. Arrives May 15 to June 4, slightly later than the preceding species, and departs usually ten days earlier in the autumn. Nests are occasionally found, but not as often as the Yellow-billed Cuckoo.

Ceryl alcyon—BELTED KINGFISHER.

Common summer resident, and breeder. Prior to June 2, 1911, no nests were located here, but since that date every year has been productive of one or two, and even three, as in the case of 1917. Are observed as late as November 30 here, and occasionally as early as February 22.

Dryobates villosus—HAIRY WOODPECKER.

Permanent resident. To be found in the heavily wooded sections throughout the year. Two nests with eggs found on May 16, 1907, at Ringwood, three miles to the east of this lake, which constitutes the only record of the vicinity made by the writer. It is quite possible, however, that closer observation would reveal nests each season as the birds are present throughout the breeding season each year.

Dryobates pubescens medianus—DOWNY WOODPECKER.

Common permanent resident, and also an abundant breeder. It is more abundant during the colder months than during the other portions of the year.

Sphyrapicus varius—YELLOW-BELLIED SAPSUCKER.

Common visitant throughout the year. Never resident.

Meclanrpes crythrocephalus—RED-HEADED WOODPECKER.

Rather common permanent resident. Never abundant, but some may be observed on each stroll through the adjacent woods throughout the year. Nests are found occasionally in secluded spots and the adults and young can be observed wandering about after the breeding season almost every year.

Colaptes auratus luteus—FLICKER.

Common summer resident. Also fairly abundant some winters. In 1907, 1910 and 1916 they were to be found almost daily throughout the colder months, but during the other years only a few scattered individuals were observed during December and February and March. Breeds and nests in every available dead stump throughout the section.

Antrostomus vociferus—WHIPPOORWILL.

Common summer resident. Arrives May 7 to 20 and departs from September 10 to 30. Breeds and nests at nearly all the more sparsely settled sections about the lake. It is particularly abundant along the Wanaque River between the dam and Hewitt and can be observed every night during the spring and early summer on all sides.

Chordeiles virginianus—NIGHTHAWK.

Common summer resident. Arrives May 15 to 30 and departs September 9 to October 1. Nests are occasionally found, but not as often as the preceding species. This species is more often seen during the day than the preceding.

Chaetura pelagica—CHIMNEY SWIFT.

Common summer resident. Arrives April 26 to May 15 and departs September 15 to October 20. Nests abundantly throughout the section in unused chimneys of nearly all the houses.

Archilochus colubris—RUBY-THROATED HUMMINGBIRD.

Common summer resident. Arrives May 7 to 15 and departs September 4 to 15. Nests are occasionally found but are usually very difficult to find because of the seclusive habits of this species.

Tyrannus tyrannus—KINGBIRD.

Common summer resident. Arrives May 6 to 24 and departs September 2 to October 1. Breeds and nests throughout the vicinity of the lake.

Myiarchus crinitus—CRESTED FLYCATCHER.

Common summer resident. Arrives May 6 to 30 and departs August 29 to September 15. Common breeder and home builder throughout the section.

Sayornis phæbe—PHOEBE.

Common summer resident. Arrives March 16 to 25 and departs September 28 to October 24. Nests under bridges and in open sheds throughout the section.

Nuttallornis borealis—OLIVE-SIDED FLYCATCHER.

A rare visitant. One was observed by the writer in the Wanaque River Valley on September 6, 1917. This bird was perched in a river birch just off the railroad right-of-way and close enough at hand to positively identify it.

Myiochanes virens—WOOD PEWEE.

Common summer resident. Arrives May 6 to 26 and departs September 24 to October 5. Common breeder and home builder throughout the section.

Empidonax flaviventris—YELLOW-BELLIED FLYCATCHER.

Occasional visitant. Observed May 19, 1914, at Hewitt, N. J., and on September 6, 1917, at Warwick Woodlands, N. Y.

Empidonax vireescens—ACADIAN FLYCATCHER.

Occasional visitant. Observed at Surprise Lake, May 9, 1916, and at Finigan's Cove on May 12, 1917.

Empidonax trailli alhorum—ALDER FLYCATCHER.

Occasional summer visitant. June 18, 1909, at Mount Peter, N. Y., one was found dead. Another was observed near the dam at Greenwood Lake Glens, N. J., on July 2, 1917.

Empidonax minimus—LEAST FLYCATCHER.

Common summer resident. More plentiful some years than in others, but may be found quite abundantly every year. Arrives April 28 to May 5 and departs September 19 to October 1. Nests in many places about the lake. This bird shows a distinct preference to the wild cherry saplings for nesting sites and of about fifty nests found by the writer during the past fifteen years in this vicinity, sixty per cent were in these trees.

Octocoris alpestris—HORNED LARK.

Occasional autumn and winter visitant. Observed along the Jersey Road on the west side of the lake, both in New Jersey and New York, feeding usually on the manure of the horses which travel this road continually.

Cyanocitta cristata—BLUE JAY.

Common permanent resident. Breeds and nests throughout the section. During the college days the first bird usually to greet the observer is the Blue Jay. I have found them even on days when the temperature was from five to ten degrees below zero just as plentiful as during the seasons of the year when they are naturally expected to be at the height of their abundance.

Corvus brachyrhynchos—CROW.

Common permanent resident. Breeds in all the more sparsely settled sections all about the lake. Nests have been located with eggs as early as April 10 and as late as June 15.

Sturnus vulgaris—EUROPEAN STARLING.

Common permanent resident. They first were recorded about this lake on June 18, 1908, and since that time have increased with surprising rapidity every year, plainly indicating this increased abundance. They nest in every conceivable place.

Dolichonyx oryzivorus—BOBOLINK.

Common summer resident. Arrives in early May and departs from September 15 to 30. Common breeder in all the open fields of the farms about the lake.

Molothrus ater—COWBIRD.

Common summer resident. Arrives March 15 to April 5 and depart October 15 to November 1. Their eggs have been found in nests of the Warbling Vireo, Yellow-throated Vireo, Yellow Warbler and Redstart.

Agelaius phœniceus—RED-WINGED BLACKBIRD.

Common summer resident. Arrives March 15 to 30 and departs October 1 to 15. Nests are found each year in the reedy and swampy places about the lake.

Sturnella magna—MEADOWLARK.

Common permanent resident. Breeds and nests throughout the section in old fields and open meadows.

Icterus spurius—ORCHARD ORIOLE.

Common summer resident. Arrives about May 15 and departs September 10 to 15. Nests throughout the section in the larger orchards, which are seldom visited by the inhabitants.

Icterus galbula—BALTIMORE ORIOLE.

Common summer resident. Arrives May 4 to 10 and departs September 15 to October 1. Abundant nest builder throughout the section.

Euphagus carolinus—RUSTY BLACKBIRD.

Common migrant. Appears locally from March 15 to April 10 and from September 19 to October 1.

Quiscalus quiscula—PURPLE GRACKLE.

Common summer resident. Abundant nest builders wherever the conifers abound. Occasionally nests are found in unfrequented orchards.

Quiscalus quiscula acncus—BRONZED GRACKLE.

Occasional migrant. One male found had been shot near the Ice Houses on the east bank of the lake on May 2, 1915.

Passer domesticus—ENGLISH SPARROW.

Common permanent resident.

Pinicola enucleator leucura—PINE GROSBEAK.

Rare winter visitant. Observed on December 28, 1916, along the Wanaque River near Awosting. There were six birds in this flock, two males and four females. Only record I have for the vicinity.

Carpodacus purpureus—PURPLE FINCH.

An abundant migrant, and occasional winter visitant. Arrives from the south in the spring about April 15 and returns in the fall about September 15. Observed at Beacon's Bend on December 8, 1917, and at Hewitt on December 15, 1917.

Loxia curvirostra minor—RED CROSSBILL.

Rare visitant. Observed at Sterling Forest on May 13, 1916.

Acanthis linaria—REDPOLL.

Rare visitant. Observed twice about the lake. Once at Sterling Forest on December 28, 1917, and at the Brandon House on February 2, 1918.

Astragalinus tristis—GOLDFINCH.

Common permanent resident. Found nesting nearly every year in the open thickets and fruit trees at various points about the lake in both states. The earliest nest which the writer has found of this species was at Awosting on July 25, 1916. The major portion of the nests located were from the middle of August to September 5. During the colder months they rove about in small flocks and may be met with in many portions of this section.

Spinus pinus—PINE SISKIN.

Regular winter visitant, but never very abundant. Arrives from the

north about October 15 and has been seen last in the spring on April 30.
Plectrophenax nivalis—SNOWFLAKE.

Irregular winter visitant. Only present during extreme cold snowy weather, when they are driven south by the scarcity of food in their chosen haunts. Observed February 2, 1910, at the Windemere Hotel, January 18, 1916, at Hewitt, and March 15, 1920, at Deacon's Point.

Poocetes gramineus—VESPER SPARROW.

Common summer resident. Arrives about March 20 and leaves us about October 15. Breeds every season in the open fields all about the lake.

Passerculus sandwichensis savanna—SAVANNA SPARROW.

Common visitant; irregular summer resident. Found nesting at Awosting on May 30, 1908. Only record. Arrives about April 1 and passes south about September 15.

Ammodramus savannarum australis—GRASSHOPPER SPARROW.

Common summer resident. Arrives about April 30 and departs October 1 to 10. Nests found regularly each year in the old fields.

Zonotrichia leucophrys—WHITE-CROWNED SPARROW.

Rare winter visitant. Most abundant in October and November and in April and May. Wherever the White-throats frequent one must look for this species.

Zonotrichia albicollis—WHITE-THROATED SPARROW.

Common winter visitant. Arrives about September 15 and departs about May 20.

Spizella monticola—TREE SPARROW.

Common winter resident. Arrives from the north about October 15 and leaves again about April 30. This is probably the most frequently met with bird during the winter in this section.

Spizella passerina—CHIPPING SPARROW.

Common summer resident. Appears about March 30 and leaves late in October. Nests in almost every kind of small tree not over fifteen feet up. Particularly prefer the low conifers for nesting sites.

Spizella pusilla—FIELD SPARROW.

Common summer resident. Arrives about March 10 and departs about November 1. Nests are found each year in the old fields all about the section.

Junco hyemalis—SLATE-COLORED JUNCO.

Common winter resident. Arrives about October 10 and leaves around May 5. Wherever the Tree and Song Sparrows are present one is almost sure to find this species with them.

Melospiza melodia—SONG SPARROW.

Common permanent resident. Abundant breeder all about the lake.
Melospiza georgiana—SWAMP SPARROW.

Common summer resident. Not as abundant as the *Melospiza melodia*, but nests are found regularly in the swamps bordering on Belcher Creek and at the northern end of the lake.

Passerella iliaca—FOX SPARROW.

Common migrant and occasional winter visitant. Arrives from the north about October 1 and passes north again in the spring about March 15. Observed at Surprise Lake on December 15, 1910, and at Hewitt along the Wanaque on February 20, 1918.

Pipilo erythrophthalmus—TOWHEE.

Common summer resident. Arrives about April 1 and departs about October 15. Nests regularly each year all about the vicinity.

Zamelodia ludoviciana—ROSE-BREASTED GROSBEAK.

Common summer resident. Arrives about May 5 and departs October 1 to 10. Nests quite regularly at various points about the lake.

Passerina cyanea—INDIGO BUNTING.

Common summer resident. Arrives about May 8 and leaves September 25 to 30. Nests regularly each year in the low thickets near the lakeside.

Piranga erythromelas—SCARLET TANAGER.

Common summer resident. Arrives May 5 and departs October 5. Breeds throughout the district. Prefer the oak trees for nesting sites.

Progne subis—PURPLE MARTIN.

Occasional visitant. Observed at Brown's Hotel on May 15, 1908, and at Greenwood Lake, N. Y., September 4, 1917.

Petrochelidon lunifrons—CLIFF SWALLOW.

Common summer resident. Arrives April 30 and leaves August 25 to September 1. Nests are found quite regularly on the barns in the district and on the ice houses near Sterling Forest.

Hirundo erythrogastra—BARN SWALLOW.

Common summer resident. Arrives about April 10 and leaves early in September. Common breeder throughout district.

Iridoprocne bicolor—TREE SWALLOW.

Common summer resident. Arrives April 5 and leaves about October 25. They doubtlessly nest here as they are present throughout the nesting season, but the writer has never found a nest of this species near the lake.

Riparia riparia—BANK SWALLOW.

Common summer resident. Arrives April 10 and departs September 5 to 10. Nests regularly wherever there are sand banks in the vicinity.

Stelgidopteryx serripennis—ROUGH-WINGED SWALLOW.

Occasional summer visitant. Two pair have been observed quite regularly for a number of years past near the dam of the lake at Greenwood Lake.

Bombycilla garrula—BOHEMIAN WAXWING.

Rare winter visitant. Observed but once. Five were positively identified on January 3, 1919, near Hewitt Station on the Erie Railroad in a wild cherry sapling, where they were perched for about ten minutes.

Bombycilla cedrorum—CEDAR WAXWING.

Common summer resident. Occasional in the winter. Nests quite regularly in the adjacent orchards.

Lanius borealis—NORTHERN SHRIKE.

Occasional winter visitant. Observed at Brown's, Storm Island, and at Greenwood Lake, N. Y.

Lanius ludovicianus migrans—MIGRANT SHRIKE.

Rare migrant. Observed August 20, 1908, at Sterling Forest, and on September 15, 1917, at Belcher Creek. Only single birds in each case.

Vireosylva olivacea—RED-EYED VIREO.

Common summer resident. Arrives May 5 and departs September

36. Nests regularly each year in the wooded sections.

Vireosylva gilva—WARBLING VIREO.

Common summer resident. Arrives about May 5 and leaves about September 20. Nests are found occasionally, but not as regularly as the preceding species.

Lanivireo flavifrons—YELLOW-THROATED VIREO.

Common summer resident. Must certainly nest here, but the writer has never found a nest. Arrives April 30 and leaves about September 10.

Lanivireo solitarius—BLUE-HEADED VIREO.

Common summer resident. Nests occasionally in the deeper woods adjacent on the Bellvale and Bearfort hills. But on the east side no nests have been found and but few birds frequent there. Arrives about May 25 and leaves late in September.

Vireo griseus—WHITE-EYED VIREO.

Common summer resident. Arrives May 1 and leaves about September 25. Nests are found quite regularly in the lower growths of the adjacent woodlands.

Amniotilla varia—BLACK AND WHITE WARBLER.

Common summer resident. Arrives about April 25 and departs about October 1. Nests are found occasionally in the heavily wooded sections about the lake. In every case these nests were found on the ground at the base of a tree, except in one case, in May, 1910, when the nest was in the side of a decayed tree trunk about a foot from the ground.

Helmitheros vermivorus—WORM-EATING WARBLER.

Occasional summer resident. Have no record of its nesting here, but believe they do, as pairs have been noted during the breeding season in the Bearforts on three different occasions. Arrives usually about May 5 and leaves September 5 to 8.

Vermivora pinus—BLUE-WINGED WARBLER.

Common summer resident. Arrives May 5 and departs about August 25. Have found it nesting on three occasions in the lower portions of the Bellvale Mountains in the low bushes and on the ground at the foot of some bushes.

Vermivora chrysoptera—GOLDEN-WINGED WARBLER.

Rare transient visitant. Only observed by the writer during the migrations and usually only one or two individuals. Passes north May 7 to 16 and again southward about September 1.

Vermivora rubricapilla—NASHVILLE WARBLER.

Rather common migrant. Passes north about May 10 and return from the north again in later September. Usually most abundant in overgrown cut-offs.

Vermivora peregrina—TENNESSEE WARBLER.

Rare migrant. Spring migration May 15 to 20 and fall migration about September 10 and 15.

Compsothlypsis americana usneae—NORTHERN PARULA WARBLER.

Very common during migrations. Spring, May 10 to 20, and fall, late September. Occasionally met with in June and July, so it is fair to assume they breed in the vicinity, but no nests have been located.

Dendroica tigrina—CAPE MAY WARBLER.

Rare migrant. Observed at Deacon's Point May 20, 1916, and at Sterling Forest May 15, 1920.

Dendroica aestiva—YELLOW WARBLER.

Common summer resident. Arrives about May 4 and leaves about September 30. This is probably the most common warbler of the section. Nests regularly each year all about the lake.

Dendroica caerulescens—BLACK-THROATED BLUE WARBLER.

Common migrant. Spring migration May 5 to 20 and fall migration September 1 to October 1. Occasionally met with during middle of June in the Bearforts and Bellvales.

Dendroica coronata—MYRTLE WARBLER.

Common migrant. May 1 to 20 in the spring and October 10 to 25 in the fall. Have been seen as early as April 9 and as late as November 5.

Dendroica magnolia—MAGNOLIA WARBLER.

Common migrant. Arrives May 10 to 20 and passes south August 20 to 31. Have observed them as late as June 10 in the Bearforts.

Dendroica pensylvanica—CHESTNUT-SIDED WARBLER.

Common summer resident. Nest regularly each year in this section. Arrives about May 8 and leaves about September 10.

Dendroica castanea—BAY-BREASTED WARBLER.

Rather rare migrant. When present it passes north about May 15 and south about September 1 to 5. Observed in 1914, 1917 and 1921. All records were made in the Bellvale hills.

Dendroica striata—BLACK-POLL WARBLER.

Common migrant. Spring, May 15 to June 1, and fall, September 5 to 30. Can be looked for all about the lake during these periods.

Dendroica fusca—BLACKBURNIAN WARBLER.

Rather common migrant. Arrives about May 6 to 15 and passes south about September 5. The valley of the Wanaque between the Glens and Hewitt is probably the best place to look for this species in this section, although a number have been observed on both sides of the lake in the heavily wooded sections.

Dendroica virens—BLACK-THROATED GREEN WARBLER.

Common migrant. Arrives from the south about May 5 and passes south again about September 15 to 30. Large flocks of this species are observed all about the lake during each migration and they are most often observed in the uppermost branches of the deciduous growths.

Dendroica vigorsii—PINE WARBLER.

Rather rare migrant. Spring migration April 5 to 15 and fall migration October 1 to 5.

Dendroica palmarum—PALM WARBLER.

Rare migrant. Only observed twice: May 6, 1910, at Awosting along the Wanaque, and on May 7, 1918, at Sterling Forest.

Dendroica palmarum hypochrysea—YELLOW PALM WARBLER.

Common migrant. One of the earliest warblers to appear in the section. Arrives April 15 and passes south about October 15.

Dendroica discolor—PRAIRIE WARBLER.

Rather rare migrant. A few individuals are observed each in the spring migration, May 5 to 10.

Sciurus aurocapillus—OVEN-BIRD.

Common summer resident. Arrives about May 1 and departs in early October. Nests regularly, but are very hard to find.

Scirus norcoracensis—WATER-THRUSH.

Common migrant. Arrives in the spring about May 1 and passes south about September 1 to 15. The valley of the Wanaque is an excellent section to observe this species during the migrations.

Sciurus motacilla—LOUISIANA WATER-THRUSH.

Common summer resident. Arrives about April 25 and departs in late August. Must surely nest here, but the writer has never located its home.

Oporornis formosus—KENTUCKY WARBLER.

Rare migrant. Only observed three times in the section: May 10, 1914, at Deacon's Point, Sterling Forest May 5, 1918, and Hewitt's May 10, 1920.

Oporornis agilis—CONNECTICUT WARBLER.

Rare migrant. Only observed once, May 9, 1917, at Sterling Forest.

Oporornis philadelphia—MOURNING WARBLER.

Rare migrant. Observed but twice, May 19, 1920, at Awosting, and May 16, 1921, at Greenwood Lake Glens.

Geothlypis trichas—MARYLAND YELLOW-THROAT.

Common summer resident. Arrives May 1 and departs in early October. Nests abundantly throughout the section in the swampy areas.

Icteria virens—YELLOW-BREASTED CHAT.

Common summer resident. Arrives about May 4 and departs in early September. Nests regularly each year in many parts of this district.

Wilsonia citrina—HOODED WARBLER.

Common summer resident. Arrives about May 5 and departs in early September. Nests are frequently found in secluded spots where there is little chance of their being molested by mankind.

Wilsonia pusilla—WILSON WARBLER.

Common migrant. Arrives about May 15 and passes south in early September.

Wilsonia canadensis—CANADIAN WARBLER.

Common migrant. Spring migration takes place May 8 to 20 and fall migration early September. Individuals are occasionally met with in the spring up to June 10.

Setophaga ruticilla—REDSTART.

Common summer resident. Arrives about May 1 and leaves in late September and early October. Nests rather abundantly throughout the section.

Anthus rubescens—PIPET.

Common migrant. Arrives from the south April 1 to 20 and passes south in late October.

Dumetella carolinensis—CATBIRD.

Common summer resident. Abundant breeder throughout section. Arrives in the spring in late April and departs in early October.

Torostoma rufum—BROWN THRASHER.

Common summer resident. Arrives about April 5 to 10 and departs in late October. Nests regularly each year throughout the section.

Troglodytes aëdon—HOUSE WREN.

Common summer resident. Arrives about April 27 and departs in late September. Nests abundantly throughout the district.

Nannus hiemalis—WINTER WREN.

Winter resident. Rather eccentric in its occurrence. Some years only a few individuals are observed, whereas during others they are quite numerous.

Telmatodytes palustris—LONG-BILLED MARSH WREN.

Common summer resident in Blecher Creek Swamp, but this is the only place they are to be found in this section with any regularity.

Cistothorus stellaris—SHORT-BILLED MARSH WREN.

Common summer resident in Belcher Creek Swamp and at other swampy areas in the section. More often met with than the preceding species.

Certhia familiaris americana—BROWN CREEPER.

Rather common winter resident and occasionally met with in the summer months. Observed during five successive summers in the Bellvales from 1915 to 1919, records being made in late June and early July.

Sitta carolinensis—WHITE-BREASTED NUTHATCH.

Common permanent resident. More frequent in the fall and winter months. Must breed, but have no record of finding its nest in the section.

Sitta canadensis—RED-BREASTED NUTHATCH.

Occasional visitant. Observed quite regularly during the winter months and as late as June 3 in the spring.

Penhstes atricapillus—BLACK-CAPPED CHICKADEE.

Common permanent resident. More abundant in the fall and winter months than the other portions of the year. Two nests have been located, one near Surprise late in May, 1916, and one at Bear Rock on June 1, 1919.

Regulus satrapa—GOLDEN-CROWNED KINGLET.

Common migrant and rather common winter resident. Arrives from the north about October 1 and leaves in early April.

Regulus calendula—RUBY-CROWNED KINGLET.

Common migrant. Passes north in early May and south in October and early November.

Hylocichla mustelina—WOOD THRUSH.

Common summer resident. Arrives about May 1 and leaves in early October. Nests abundantly throughout the district.

Hylocichla fuscescens—WILSON THRUSH.

Common summer resident. Arrives in the spring in late April and leaves in early September. Nests quite frequently are found in the heavily wooded sections.

Hylocichla alicia—GREY-CHEEKED THRUSH.

Common migrant. Spring, May 1 to 10, and fall, early October.

Hylocichla ustulata swainsoni—OLIVE-BACKED THRUSH.

Common migrant. Spring, May 5 to 15, and fall, early October.

Hylocichla guttata pallasi—HERMIT THRUSH.

Common migrant and occasional summer and winter resident. On May 27, 1910, a nest just completed was found in the Bearfort Hills west of Greenwood Lake, and on June 10 this nest contained four young about five days old.

Planesticus migratorius—ROBIN.

Common summer resident. Arrives early in March and leaves in late November. Abundant breeder throughout district.

Sialia sialis—BLUEBIRD.

Common permanent resident. Nests throughout section.

The migration notes in the foregoing list are based on a tabulation covering a period of sixteen years and the general averages are shown in each case.

SOME IOWA OWL NOTES

BY FRED J. PIERCE, WINTHIROP, IOWA

The Screech Owl is the commonest representative of the Owl family in this region, and is undoubtedly of extreme value to the farmer as a pest destroyer. He is seldom seen in the hours of the day, but at night makes his presence known by his wavering, mournful cry, which is pleasing music to the ear of a professed lover of nature. Why anyone should think this weird and gripping voice from the night disagreeable is hard to understand, yet many people do. Retiring in habit, this bird seems to have few objectionable qualities, and is, therefore, a neighbor to be encouraged, rather than one to be shunned.

Some time ago I described the effective work done by a Screech Owl in ridding our farm buildings of English Sparrows during the winter of 1919-20.* During the past winter (1921-22) similar work was done by an industrious and not too timid Owl—perhaps the previous visitant.

This Screech Owl was first seen in the large mow of our barn, after a severe snowstorm in mid-December, and it visited it frequently thereafter. The Sparrows' numerous roosting-places in the haymow and nearby silo chute were no longer safe and, judging from the small size of our English Sparrow flock, the Owl's appetite for Sparrows was a very hearty one.

For several years the ladder rungs inside the silo chute have been a preferred reposing quarter of the Sparrows. When not molested a hundred or so would congregate there to spend the night. My father and I have often gone there after dark and killed numbers of them by climbing the steps and knocking them over with a club, while a lantern was held below to bewilder them with the light. It was fairly easy to dispatch the birds with a well directed blow. In former winters we have used these means to keep the Sparrow flock reduced, but the past winter the Screech Owl included the chute in his list of hunting grounds and the Sparrows were left little cover. A

* The Screech Owl as a Sparrow trap. *Bird-Lore*, Nov.-Dec. 1920, p. 350.

broken window pane made the chute easy of entrance. Another of the Sparrows' haunts is our chicken house. One morning, upon entering this building, we found the Owl there, flying about over the chickens' heads and causing the greatest of confusion, apparently frightening himself fully as much as he was terrorizing the chicken population. He finally collected his wits and escaped through an open window.

The late Dr. Bert Heald Bailey, in his "Raptorial Birds of Iowa" (1918), said that the Screech Owl's "food consists very largely of mice; although sometimes small birds are taken, especially the English Sparrow and Blue Jay." Is it not possible that the Screech Owl catches a few native Sparrows, or can it discriminate between the English and American species?

One afternoon in January (1922) I heard a company of Crows making a great din in a wood close at hand, and, thinking I might catch sight of a Hawk or Owl which was being "mobbed," I followed the flight line taken by Crows which were hastening to the scene of excitement. As I approached, the Crows departed, and I found a Barred Owl jumping from branch to branch in the tops of some conifers, trying to keep one eye on the fleeing Crows and the other on me. He did not leave, however, probably taking me as the less of two evils, and soon settled in a tree over my head.

The Owl's back was toward me when he became quiet and I wished to get a better look at his face; he did not seem at all inclined to turn around, either. Soon I imitated the Screech Owl's wavering whistle, thinking I could perhaps make him turn around. A moment later, by chance, I dropped my eyes to a lower plane and I was *greatly* astonished to see a Screech Owl eyeing me from a branch a few yards away and only a little higher than my head, as if to say, "That was a poor imitation, Pierce—you need some lessons." How he came to be there I can but conjecture. He must have flown there when he heard my whistle, although the flapping of his wings did not catch my eye. If he had been sitting on the limb when I came I think I should have seen him, although his plumage (red) and the bark of the tamarack did much to conceal him. Both of the Owls were well camouflaged when sitting directly in front of the tree trunks, and after looking away it was hard to pick their outlines from the bark. The ground was covered with icy snow and the bright sun shining upon it produced a blinding effect. The Screech Owl's eyes were narrowed to mere slits.

In a little while the Screech Owl flew to a dead tamarack, the upper half of which was broken off and gone. This trunk is filled with holes and cavities made by Flickers and Red-headed Woodpeckers year after year, and into one of these the Owl disappeared. Probably one or more of these cavities form the quarters of him and his mate—if he has one.

This tract of trees is evidently the year-around home for at least one pair of Screech Owls, for nearly every summer the young can be seen there. Watching the rows of half grown youngsters perched on some branch in this tract in the spring months has furnished me considerable amusement. They are so serious looking and apparently motionless except when they turn their heads completely around to stare at one from behind. In this ludicrous position one might imagine that Mother Nature had put their heads on backward. The parent Owls are usually near their young when they are out on these "airings." Occasionally, when one goes into the woods at dusk in the late spring evenings he is reminded of the presence of a Screech Owl brood by the old ones swooping down at him and uttering peculiar noises as they glide by his head. On these occasions the Screech Owl displays an amount of aggressiveness I have not found in his nature at other times. On many nights, in the summer or fall, Screech Owls have come and perched on the roof of our house or sat in the eave troughs, where they give their calls, as if they were somewhere deep in the woods.

The occurrence of the Barred Owl, in the immediate vicinity of Winthrop, is rather rare, but this is doubtless due to the lack of any dense timber within several miles. I usually make one record of this species each year, but not oftener.

My first record of the Barn Owl is April 13, 1922. That morning, when I went into the silo to throw down the supply of ensilage for the day, I found the Barn Owl sitting on one of the timbers which support the roof, about twenty feet above me. Although considerably alarmed at my noisy work below, the Owl did not fly out, but perhaps this was because it could not find the place where it had entered. The bird remained there all day; a pair of pigeons which had their nest inside were afraid to come into the silo. According to Anderson's "Birds of Iowa" (1907), the Barn Owl "very rarely appears north of the middle line of the state."

March-April, 1922.

NESTING HABITS OF A GREAT HORNED OWL

O. J. MURIE, FAIRBANKS, ALASKA

For a number of years I had known that a pair of Great Horned Owls had a nest in a patch of heavy woods about four miles south of Moorhead, Minn., but I had never had the time to hunt it up.

In the spring of 1920 I determined to find it. April 15 was the first opportunity I had to spend much time in that locality. On that day I began searching the woods, tacking back and forth, watching closely for any suspicious behavior of the owls. The woods are composed principally of elms, some of them of considerable size, boxelder, a stray cottonwood on the bank of the Red River, a good many basswoods, and here and there a grove of white oak. In the edge of the woods were frequent plum thickets. This type of woods extends in a comparatively narrow belt along the banks of the Red River, with the cultivated prairie extended away in the distance on either side.

Presently an owl flew away before me, from tree to tree, and after a little, hooted. I flushed it several times, endeavoring to learn from its actions in which direction it had the nest. I changed direction a number of times and once it performed in a manner clearly meant to entice me away. It lowered its head and glared at me from its distant perch. Then, extending its wings, it commenced to wobble and flutter on the limb as if it were about to fall. I moved toward it and it flew on, and as I continued in that direction the bird became quiet. I therefore returned to the locality where the owl had performed, and presently found two owl feathers on the ground. I heard the owl hooting, and glancing up in a big elm, spied an owl's tail projecting over the edge of a broken stub. The first owl now became greatly excited, came much nearer and repeated the previous performance, apparently having great difficulty retaining its balance, with elaborate flapping and swaying to keep on its perch, in a very realistic manner. I left without disturbing the brooding bird, intending to return later to secure photographs.

On the 18th I returned to the nest, to find a flock of crows worrying one of the owls. While climbing a small tree nearby, with the camera, the brooding owl flew off and the crows promptly attacked it. Neither of the owls, however, paid much attention to the crows this time, but watched me intently, utter-

ing irregular, strange hoots, differing from the usual, characteristic call of this bird. Upon climbing to the nest, about fifteen feet from the ground, I found a shallow depression in the stub of a big limb, in which lay three owlets. As usual there were three sizes, the largest about twice the size of the smallest. The runt was downy, but the other two were beginning to get their feathers. Around the little owls lay five large Brown Rats, a field mouse (*Microtus pennsylvanicus*) and a Least Weasel (*Rirossus*). The head and sometimes the shoulders were eaten off all these animals except the weasel, which was intact and made a good specimen in my mammal collection.

April 24 I again went to the nest. The owls were much concerned and ventured quite near. As I was climbing to the nest, on a slender pole, I received a heavy blow on the side of the head and my hat flew off. This actual attack on the part of the owl was unexpected and I slid to the ground for my hat, before continuing the climb. I found one ear bleeding. I watched the owls carefully as I climbed the second time. In the nest were two brown rats, beheaded, and the hind quarters of a cotton tail. The parent birds continued hooting, snapping their beaks and swooping near me.

April 25 I found two brown rats in the nest, without heads. The young were brought to the ground and photographed.

May 10 I found a leg and some flesh of a female Mallard, possibly a tame duck from a farm near by. The young owls were becoming yellowish brown.

May 15 I found an owlet perched on a projection above the nest-cavity. The parents were quite warlike. I climbed to the nest and stooped to look into the cavity when I received a stunning blow in the back of the neck. For a brief instant I felt slightly dazed. I found six punctures in the skin bleeding. I had never thought there would be such weight behind a blow from an owl. The bird swooped at me again, but I was on watch after that and a wave of the hand was enough to turn the bird aside. Again I found two rats in the nest, one of them melanistic. The young owls were brought to the ground and photographed again.

May 16 I found two of the owlets perching above the cavity and one of them fluttered to the ground.

May 23 all the birds had left the nest, and after a little search, the three young owls were discovered in various trees near by. After this date I saw no more of them.

The owl's nest was not tidy. There was no indication of any nesting material or lining, but the cavity was littered with bits of fur, bones and miscellaneous matter in various stages of decomposition, with an unpleasant odor.

NESTING OF THE SANDHILL CRANE, WARNER VALLEY, OREGON

BY DR. A. G. PRILL, SCIO, OREGON

During my visit to this region in May and June of this year I was fortunate in locating the nest of a number of Sandhill Cranes. Nests of this species are by no means common, and require days of traveling through the marshes, and overflow meadows of the valley, to locate them.

The region covered in my investigation, covered an area of 36 miles long by from 5 to 10 miles wide, or about 180 square miles.

Ten pairs of Sandhill Cranes were nesting in this territory, which would mean about one pair of birds to every 18 square miles of territory.

Warner Valley has some half dozen lakes, surrounded by tules and flags, and wild meadow lands, all of which is covered with water, but here and there small islands were found, which were always above high water.

The places selected for the nest of this Crane were generally several miles out in the marshes, and the nests located were all on the top of large masses of dried tules and flags, and grass, which had undoubtedly been piled up in this manner the year previous in harvesting the hay crop.

These masses were generally 5 feet in diameter and at least 12 inches above high water mark, and in the center a slight depression is made upon which the two eggs or young are found. The nesting dates are from May 20 to June 10. Eggs found May 30 were about half incubated.

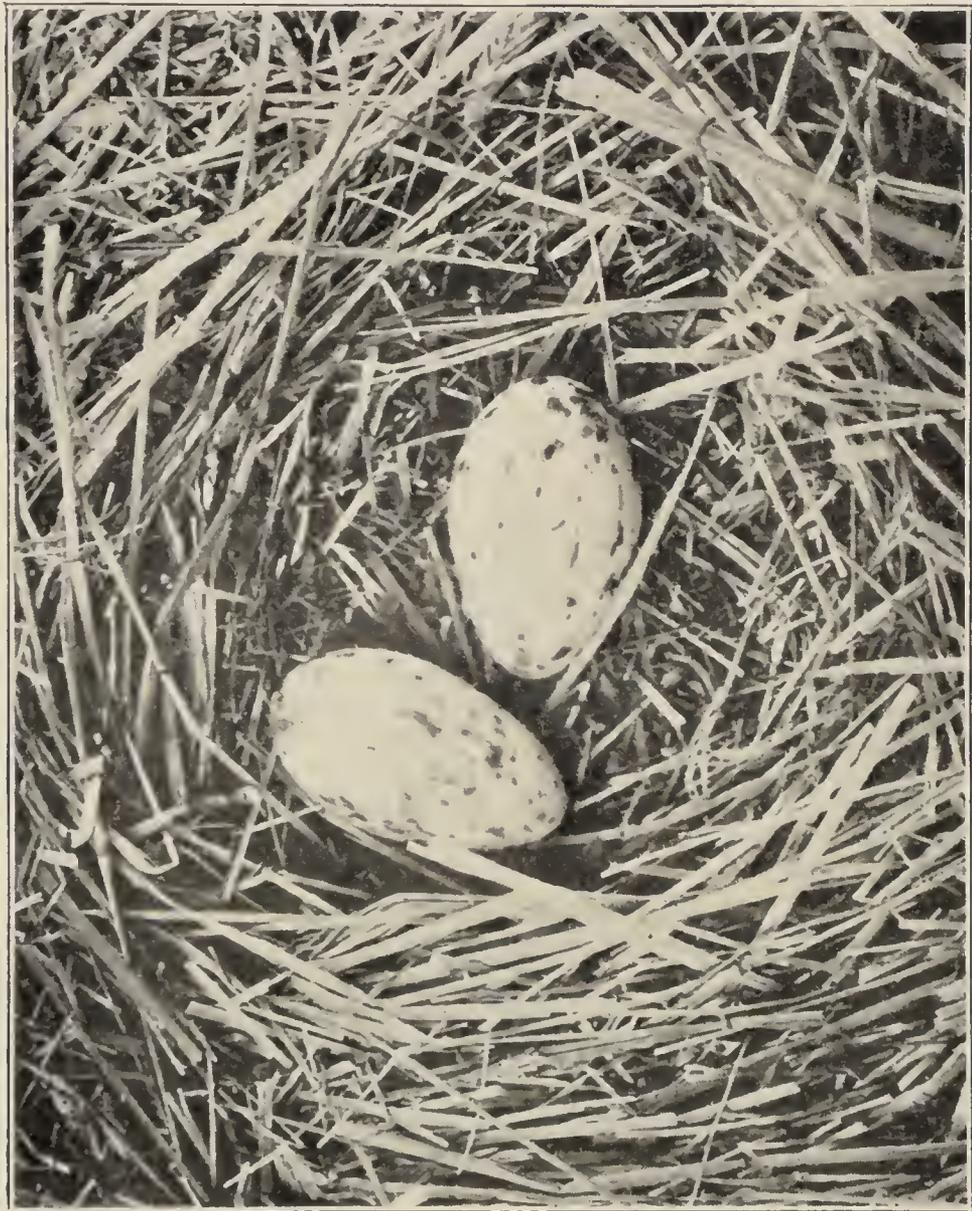
A nest of young found on June 6, containing two young, which were about ten days old, were very spry, but did not seem much alarmed at being handled. They posed readily for the camera and several fine views were secured.

The young at this time were covered mostly with down and were a beautiful silky brown in color, and were just beginning to show the formation of feathers.

At all times, when near the nests, the parent birds keep at a safe distance of several hundred yards and were very hard to approach under any circumstances.

The female kept up a constant call to her young while anyone was near the nest, and this peculiar call of the Sandhill Crane can be heard for miles.

No nest containing more than two eggs or young were found. Residents of the valley told me of the peculiar habit of the birds that when the young reached a certain stage they become



Eggs of the Sandhill Crane

very quarrelsome, to such an extent that their fights result in the death of one or the other of the young and at this time the parent birds separate the young, the male taking charge of one and the female the other, and that thereafter they are not found

together again. I am not able to verify this statement, as all nests found had eggs or young birds only a few days old.

The measurements of the eggs, taken from a typical set, are as follows: 3.75x2.25 and 3.875x2.00.

They are beautiful Oological specimens and the coloring is difficult to describe.

Upon a ground color of buffy cream are blotches, spots and specks of soft shades of brown and lavender, quite heavy and confluent at the larger end.



Two Young, Ten Days Old, Sandhill Cranes

ANNUAL MEETING OF THE AMERICAN ORNITHOLOGISTS UNION AND THE WILSON ORNITHOLOGICAL CLUB AT CHICAGO IN OCTOBER

Chicago, during the week of October 23rd, will be the gathering place of what is expected to be the greatest meeting of bird men ever held in the great interior region. At that time the American Ornithologists Union will hold its first meeting in the Mississippi Valley and, with the exception of one held in California, the first to be held west of Washington.

The officials of The Union have been under pressure and invitation of western ornithologists for some years to hold a meeting at Chicago, and the coming one is a result of renewed invitations on the part of The Wilson Ornithological Club, The Field Museum, The Chicago Ornithological Society, The Illinois Audubon Society and mid-western members of The A. O. U. As chief host, The Wilson Club will hold only a business meeting and will fuse its usual program features into the program of its guest. All courtesies and coöperation possible will be extended by the latter club to make the meeting a notable one and to make the trip well worth while for members coming from a distance. The business meeting of the W. O. C. will be held on the evening of Tuesday, the 24th, and this will constitute the only official session of that organization. The business meeting of the A. O. U. will be held on Monday evening, the 23rd, and the public sessions will follow on Tuesday, Wednesday and Thursday.

A local committee of Chicago men has been appointed to make arrangements and consists of Messrs. Wilfred H. Osgood (Ch.), Percival Brooks Coffin, Ruthven Deane, O. M. Schantz and R. M. Strong. These gentlemen, it is learned, have already scheduled a number of interesting features aside from the program, including the annual dinner, a trip to the unique Sand Dune area on the shore of Lake Michigan, and various optional trips during the latter part of the week. The magnificent new Field Museum of Natural History, on the lake front, will be the place of meeting, and the fine collections displayed therein will be of great interest. The Chicago Academy of Science collections in their museum in Lincoln Park, feature the avifauna of the Chicago area, and these groups are considered models of their kind. The Crerar Scientific Library is particularly rich

in its collection of books and journals pertaining to ornithology and will afford opportunity to visitors to look up many otherwise inaccessible references. As a city, Chicago is a favorite one for conventions and holds much of general interest to the visitor.

A feature of the meeting will be an exhibit of paintings, drawings and photographic studies of birds. The local committee invites correspondence, from those who have meritorious material of the kind, for loan under terms which will guarantee their safe return and without expense. The program is now in process of formation and titles of papers should be sent without delay to Secretary Palmer of The A. O. U. or to Secretary Ganier of The W. O. C.

Bird men from both coasts, the Rocky Mountains, and Canada are expecting to attend and we are urging upon our membership a very full attendance from the central area.

A. F. G.

THE WILSON BULLETIN

Published at Oberlin, Ohio, by the Wilson Ornithological Club.

Official Organ of the Wilson Ornithological Club and the Nebraska Ornithological Union (in affiliation).

Price in the United States, Canada and Mexico, \$1.50 a year, 50c a number, post paid. Price in all countries in the International Union, \$2.00 a year, 60c a number. Subscriptions should be sent to Geo. L. Fordyce, Youngstown, Ohio.

EDITORIAL

We earnestly hope that the call of the Secretary to the Annual Meeting will meet with a hearty response from every quarter. To many of our members this will afford the first opportunity to meet and become acquainted with men of national reputation whom you have known only by name hitherto. It is a good thing for all of us to have this personal touch with workers in the same field. There is a certain stimulus in just meeting and speaking with those whose interests are similar to yours. And as hosts to the American Ornithologists' Union we owe it to them and to ourselves to be present and to participate in the program as we are able. And we owe ourselves a short vacation. This is the time to "liquidate."

The Bird Banders have evidently put in good time and effort this summer. We are more than pleased that so many have gone into this phase of the work. The results of the work will increase in value in a geometrical ratio to the numbers of workers, where stations are so placed that they are in the line of usual movement. Something of the smaller and more local movements will be learned as the work progresses. Mr. Baldwin's contribution to the domestic life of the house wren is a notable example of what may be expected in that phase of banding operations alone. Not the least value of such results is that they are accurate, not assumption. Let the good work go on and the ranks increase.

The editor completed his fourth excursion from Oberlin to the Pacific Ocean with a class of students, using Ford cars as conveyances, last summer. We did not get the Arctic-Alpine nor the Tropical birds on this trip, but we were in all of the other zones, as well as in all of the other ecological formations. The trip took us through Ohio, Indiana, Illinois, Wisconsin, Iowa, South Dakota, Wyoming, Montana, Idaho, Utah, Nevada and California, including a visit to the Black Hills, Yellowstone Park, Bryce's and Little Zion Canyons and Cedar Breaks in Utah, and ten days on the ocean beach near Los Angeles. It was the most successful trip thus far in some ways. There was almost no car trouble, and very few punctures even, and no even near-accidents—that we were aware of. Either the Fords are getting better all the time or else we are learning better how to handle them; perhaps both. At any rate, 200 miles in a full day's drive was easy to cover, and twice over 300 miles was the day's run. We did not drive long hours, but merely kept going at a good pace. As an outing, a trip of this sort, with congenial people, can hardly be beaten.

BIRD BANDING DEPARTMENT

Under the Direction of Wm. I. Lyon, Waukegan, Ill.

WANTED—More Bird Banders, anywhere, everywhere. If you cannot be one yourself make it your duty to catch and tag someone else.

The possibilities of Bird Banding are limitless. It is by far the most fascinating sort of bird-study imaginable. The contributions it can make to the scientific knowledge of birds are of inestimable value. The work is within the reach of all, or at least of all who have a suitable location for a trap; it involves but little expense and requires no great experience and little ornithological knowledge.

The results will increase in geometrical progression as the number of bird-banders increase. And we may confidently expect that more people will actively take up the work as its possibilities become better understood.

R. L. TALBOT.

509 Audubon Road,
Boston, Mass.

NOTES FROM SAULT STE. MARIE

My banding experience this far has been partly good and partly bad, the bad largely due to lack of time.

I have had a flock of Evening Grosbeaks (*Hesperiphona vespertina vespertina*) regularly at my feeding station every winter since the winter of 1915-16. Last year the first of the flock arrived August 24, numbered 35 to 40, the last two leaving May 25. For some reason the birds were very scary so I did not try to band any until early in March. I had no success. The birds did not mind the trap at all, perched all over it, pecked all around it and in the entrance, but would not go in. Only one bird got into the trap and that was one day when I was out of town, so it was let go without banding. I have had a drop trap made and hope to have better success when the flock returns.

Dr. Christofferson, my associate in bird work, and myself have again located the Evening Grosbeaks in the eastern part of the Upper Peninsula of Michigan in summer. The first reports of the birds being here in summer came to us in 1920. On investigation we found the reports correct. We checked the birds in the same localities last year and again this year. The nearest point to the Soo is about 35 miles to the west.

A colony of Common Tern (*Sterna hirundo*) nest every year on a low lying island in Munuscong Bay, 25 miles southeast of the Soo.

In 1920 we visited the island, May 29, and found 52 nests, 86 eggs; June 24, 72 nests, 28 young, 148 eggs; 1921, May 28, 105 nests, 234 eggs; June 16, 1922, 15 eggs, all young out of nests; May 28, 39 nests, 75 eggs.

The nests were more scattered than usual, probably because the birds had been disturbed. We found the shells of over two dozen eggs near a camp fire.

As on June 24, 1920, there were young just hatched and eggs in the

nest. Our visit of June 26, last year, was made with the intention of banding the young, but the birds were gone. This year we went earlier, June 18, but again we were too late. However, this visit was not without results. May 28 we found quite an elaborate Herring Gull (*Larus argentatus*) nest on the top of a washed up stump. Three eggs were in the nest. June 18 the nest contained one young Gull and one egg. We banded the young Gull.

When down on the first trip we saw ten Black Tern (*Hydrochelidon nigra surinamensis*) flying. Looked for nests but there were none. June 18 we located five nests, all on floating mats of reeds and very crude affairs, at most but the pulling together of a few pieces of reed.

1 nest, 2 young and 1 egg

2 nests, 3 eggs

2 nests, 2 eggs

We also found two nests, Sora Rail (*Porzana carolina*). One with one egg, the other with ten.

A Least Bittern (*Ixobrychus exilis*) nest with five eggs.

Nine Red-winged Blackbird (*Agelaius phœniceus phœnicus*) nests. One with two young, two with four eggs, two with three eggs, one with two eggs, one with one egg, and two just completed with no eggs.

Two pairs of Black Duck (*Anas rubripes*) and a pair of American Bittern (*Botaurus lentiginosus*) were around and nesting, but we could not locate the nests.

We also saw three Red-backed Sandpipers (*Pelidna alpina sakhalina*), the first we have seen in this locality for over twenty years.

A pair of Bonaparte's Gulls (*Larus philadelphia*) were flying around the island May 28 and 29, but had evidently proceeded on their journey north. They were not around June 18.

My list of birds banded thus far this year is as follows:

Cedar Waxwing (*Bombycilla cedrorum*)—One young just out of nest.

Herring Gull (*Larus argentatus*)—One fledgling.

Killdeer (*Oxyechus vociferus*)—One young.

Pine Siskin (*Spinus pinus*)—Three, two old and one young.

White-throated Sparrow (*Zonotrichia albicollis*)—Eight.

Slate-colored Junco (*Junco hyemalis hyemalis*)—Thirteen.

Song Sparrow (*Melospiza melodia melodia*)—Fifteen.

Purple Finch (*Carpodacus purpureus purpureus*)—One hundred and eighteen.

One repeat on ten Purple Finch, two Song Sparrows, one Slate-colored Junco, one White-throated Sparrow.

Two repeats on six Purple Finch and one Song Sparrow.

Three repeats on two Purple Finch.

I would have done better but ran out of bands May 4 just as the White-throated Sparrow migration was well under way, and did not get a new supply until June 25. I again ran out July 18, but started again July 22, cutting down No. 3 bands, which I find work quite satisfactorily. I fortunately had a supply of the No. 3 on hand, gotten in expectation of banding the young Common Tern.

Running out of bands had one advantage. For four or five days after I ran out, May 4, banded Purple Finch were in and out of my win-

dow feeding box regularly. I then noticed there were no banded birds coming in to feed, nor have I since had a single repeat on any of these numbers. Evidently the first Purple Finch to arrive moved on and were not the ones here through the summer and nesting

I have trapped and killed a large number of English Sparrows, kept tab for four weeks, June 21 to July 19, number 331. They were almost all young birds and females; got only three old ones in the lot.

A Purple Finch acts very differently from an English Sparrow when trapped. The Sparrow has one eye on you and the other is looking for a means of escape. If in the outer part of trap as you approach it almost at once finds the hole and is in the back end of the trap. A Purple Finch in the outer part of trap is so busy keeping it's eyes on you that it never sees the hole and sometimes it is almost impossible to get it to go through. In fact, if there is only one Finch in the outer part, I very often lift the trap and catch it in my hand. An English Sparrow would be out almost the moment you lifted the edge of the trap from the ground. Another difference I noted is that a Finch keeps flying back and forth, particularly around the top half of the trap, which is not protected with fine mesh screen, and, if in the trap any length of time, frequently knocks the skin off above the bill until the base of the upper bill is raw. I have yet to find an English Sparrow with a raw or bloody bill.

Usually I band morning and evening, as I seldom get home for lunch. Although I always open the back door of each trap, when I leave in the morning, I frequently find Purple Finch in the traps when I return. They get in the outer compartment, but do not find their way through the hole to the rear where the door is open.

If my supply of bands doesn't run out again I hope to do better for the balance of the year than I have done thus far.

The Juncos and White-throats always go through in force, both spring and fall, and I have always had large flocks call as they are passing through, in addition to those that nest in this locality.

I am running two traps, one a regular bander's trap with openings large enough to admit birds the size of the Evening Grosbeak. The other a regular Sparrow trap with fine mesh screen around the lower half. When I found the Purple Finch had so much trouble in finding the hole into the back compartment, particularly of this trap, I took it to a tin shop and had the hole enlarged, also the entrance, as I found, except the English Sparrow, I got more birds in the bander's trap than in the Sparrow trap.

Sault Ste. Marie, Mich.

M. J. MAGEE.

July 28, 1922.

NOTE.—We banded about twenty-five Purple Finch at Waukegan just before they went north. We also were interested in their fighting ability. They were so ready to fight, in fact, that they would keep it up after we had opened our hand, apparently more interested in fighting than in escaping, and frequently when one secured a good hold on our finger he could be lifted up clear of the hand, where it would hang quite an instant before it would realize it was free. We tried to obtain a picture of one in that position but did not succeed.

Sault Ste. Marie and Waukegan Purple Finch records show the need of more banders along the lake shore between these stations, so that there would be a chance for concentrated work on this species. If you know of any bird workers anywhere on the shores of Lake Michigan try to interest them in helping this district get started.

Dr. Landsborough Thompson's article in the July, 1921, "Ibis" criticized the "promiscuous ringing" method of placing bands, saying that the work would be more valuable if the various banders would concentrate all their efforts on a few especially worthwhile species and would not band all birds.

This article brought forth a great deal of protest in the March, 1922, "British Birds." The protests pointed out that the "promiscuous ringing" method, which is the method used in the United States, creates more interest among the collaborators and is consequently responsible for the placing of a larger number of bands than would be placed under any other system.

The same issue gives the total results of their "marking scheme," both for the year of 1921 and for the whole period of their existence, 1909 to 1921. The 1921 summary shows a total of 8997 rings (bands) placed, while the grand total is 105,435. Mr. A. Mayall heads the list for 1921 with a record of 1408, while two close seconds are credited with over 1000 apiece.

Mr. L. R. Talbot's article in the July, 1922, "Auk" proves how the contagious effect of Bird Banding is liable to act on a person. He was changed from a novice to a veteran in less than thirty days and now he is convicted for life.

Mr. S. Prentiss Baldwin was unable to go to his usual trapping station at Thomasville, Ga., this year, so Mr. Talbot went there to carry on that very important work. In thirty days he had placed 313 bands, taken 43 returns, and including repeats, had handled a total of 1804 birds, covering seventeen species, as follows: 258 Chipping Sparrows, 12 Cardinals, 7 White-throated Sparrows, 5 Juncos, 5 White-eyed Towhees, 4 Blue Jays, 4 Florida Blue Jays, 4 Brown Thrashers, 2 Field Sparrows, 2 Towhees, 2 Red-bellied Woodpeckers, 1 Mourning Dove, 1 Hermit Thrush, 1 Myrtle Warbler, 1 Palm Warbler, 1 Song Sparrow. Returns, 29 Chipping Sparrows, 5 Brown Thrashers, 4 Cardinals, 3 White-throated Sparrows, 1 Blue Jay and 1 Myrtle Warbler.

Of the return records, by far the most interesting and most important is that of a Brown Thrasher banded by Mr. Baldwin in 1915, and taken again in 1916, 1917, 1920, 1921 and in 1922.

The "Auk" of July, 1922, has an interesting article by F. C. Lincoln on "Trapping Ducks for Banding Purposes," covering the work of Mr. H. S. Osler of Toronto, in his activities on Lake Scugog, which is about sixteen miles north of Lake Ontario.

During the autumns of 1920 and 1921 Mr. Osler trapped 600 ducks, covering four species, from which there have been some interesting returns.

Probably the most interesting case among Mr. Osler's duck records is that of a Blue-winged Teal, No. 4576. This little duck was banded on September 24 in company with another of its own kind and eight or ten Black Ducks. Two months and seven days later it was killed by a hunter in the Caroni Swamp, near Port of Spain, Island of Trinidad. The flight made by the bird must have been close to 3,000 miles.

For many years it had been known that some of the Blue-winged Teals and certain other ducks that breed in North America wintered in South America. The presence of this species on the Island of Trinidad had been particularly noted, but there had been no information available to show from what part of the northern continent the birds came.

The record of this individual is, therefore, of decided interest and value. The band was returned to the U. S. Biological Survey by the American Consul through the State Department.

Trapping during the nesting season has again demonstrated the efficiency of the flat traps, and it brings to mind some of the early work with them at Waukegan, Illinois. The first all-wire trap was made about twelve inches high and almost at once the birds began to injure their heads by jumping up against the wire. The trap was, therefore, cut down to four inches, a height which proved to be just right, and which is still used in all our traps.

A good trapper is always changing or renewing his bait, for the same rule applies to birds as to animals, and one must be constantly on the watch to keep the bait or lure tempting.

In the case of birds you must frequently scrape the ground clean under the traps and begin anew. We clean the ground or floors at least once a week, using a sharp hoe and a large knife, cutting all the grass very short near the trap.

It is necessary to clean oftener in rainy seasons, as the bread and crackers sour, the fruits decay, and the grains and seeds sprout closely together and become sour and moldy.

Another trapping rule is to change the kind of bait. Change from white bread to graham crackers to corn bread well sweetened. In winter fried cakes are very good, chickadees being fond of them.

Sunflower seeds bring many birds in fall and winter, but our summer birds are not fond of them, and they sprout and sour quickly.

In fall cut pears are good, but should be renewed daily.

Mulberries are very good in season.

Cranberries are bright and attractive and keep well in cold weather, making a very good winter bait.

Coral berries or Indian currants make a good bait in winter also. They worked especially well for us in attracting Purple Finch.

The principle bait after all, however, is Perseverance and constant watchfulness.

BIRD-BANDING ON BONAVENTURE ISLAND

As a member of an expedition from the Milwaukee Public Museum the writer spent the month of July, 1922, on Bonaventure Island, one of the Canadian Government's great Bird Sanctuaries, in the Gulf of St. Lawrence. Very little time was available for bird banding, but a short account of what was done and of the possibilities of this work here may prove of interest.

Gannets and Murres nest by the thousands on the great cliffs of this island, on ledges that may be easily reached by the use of ropes from above. Razorbill Auks, Puffins, Black Guillemots, Herring Gulls and Kittiwakes also occur in large numbers as well.

The writer placed over two hundred bands on young Gannets, only those with the tarsus as large or larger than in the adult being banded. The large young, though still in the nest and covered with down, have large fleshy legs, considerably larger than their parents. In such cases the bands should fit snugly so that they will not be too loose when the bird becomes adult.

The following methods were found the quickest and most satisfactory. Fifty of the large size Flat-strip bands were cut to approximately the proper length and the numbers entered in a small note-book. Then they were shaped around the index finger and opened to allow them to slip on readily. Filling convenient pockets with the prepared bands and equipped with sharp-nosed pliers and small cutters we are ready to start work.

It may be stated right here that great care and proper judgment must be used to prevent the young Gannets falling off the ledges. Choosing ledges of medium width and working along them from the outside rather than along the rock, moving deliberately and spending no more time in one spot than is absolutely necessary to properly adjust the band, scores may be banded without a single one coming to grief.

Most of the young stick to the nest, prepared for battle and their sharp, powerful beaks inflict many scratches and wounds on the hands. Some might prefer to use gloves, but the bands can be fitted faster and more accurately with the bare hands. Making a feint with the foot to attract the victim's attention he is quickly grasped by the back of the head and thrust between the legs, head to the rear. The band is now quickly adjusted and the bird released almost before he has had time to realize what has happened. True, he has pecked desperately at the seat of the bander's trousers, and perhaps coughed up a mackerel or two meanwhile, but no damage is done. The bander should possess a strong stomach and when the ledges are slippery after a rain, be dressed in oil-skins from head to foot. After the day's work is done the accumulation of red clay, guano, and half digested fish can be washed off. Occasionally, as one works along the ledge, an adult refuses to desert her offspring, when she also may be put through the mill, care being used to avoid her dangerous bill.

Adult Murres and Gannets can be netted easily with an ordinary long-handled net and in this way the most valuable work could be done.

In fact the banding possibilities in such a colony are almost endless, but the work should only be entrusted to persons having the interest of the birds at heart. Adults must not be kept from their young more than a few minutes at a time, and no banding should be attempted on cold, wet days. Unnecessary walking too and fro on the ledges should also be avoided.

William Duval, descendant of the original owner of the Island, is Honorary Game Warden, representing the Government on the Sanctuary. He is well informed as to the proper approaches to all ledges where the various species nest and may be secured as guide by visiting Ornithologists and bird lovers. Recently Mr. Duval has taken up bird banding and expects to carry on the work there and watch for returns. Birds wearing bands can subsequently be captured and examined. This should be especially true of the Gannets as their bands could be noticed as they stand on the ledges.

Much can be learned by banding in these great sea bird colonies. Whether they nest on the same ledges year after year, how great an age they attain, how far they roam in winter, and whether they mate for life, are a few of the things to be learned. And who knows? perhaps the status of the Ringed Murre, which occurs in fair numbers here, may finally be cleared up in this manner.

Anyone desiring to band birds in Canada should first communicate with the Dominion Parks Branch, Department of the Interior, Ottawa, Canada, in regard to permits. Mr. Hoyes Lloyd, who is charged with the enforcement of the Migratory Bird Treaty there, is an enthusiastic bird bander, and has placed many bands in Ottawa and vicinity this past summer.

H. L. STODDARD

Public Museum, Milwaukee, Wis.

NOTES—HERE AND THERE

Conducted by the Secretary

President T. L. Hankinson, of The Wilson Club, spent part of the months of August and September in North Dakota, at the Biological Station on Devil's Lake. Professor Hankinson is making some studies for the North Dakota Natural History Survey.

The yearbook for 1921 of the Milwaukee Public Museum is at hand and is replete with interesting articles throughout its 100 pages. Articles on collecting trips for birds and bird group material are included, from the pens of Messrs. Herbert L. Stoddard and George Shroobree of the museum staff. A number of photographs illustrate the nesting of the Duck Hawk, Double-crested Cormorant, and Great Blue Heron, in Wisconsin.

Revised articles of agreement have been concluded between The Wilson Ornithological Club and The Nebraska Ornithologists' Union. The original affiliation, which was consummated in 1915, has been revised to conform to the recent increase in dues.

Rev. W. F. Henninger has immigrated to Brazil from his former home at New Bremen, Ohio. Rev. Henninger is located at Cachoeira in the State of Rio Grande do Sul and will doubtless experience much pleasure in becoming acquainted with a new avifauna.

Bird-Lore for July-August, reviews The Wilson Bulletin with pleasant commendation on its improved appearance, size and quality. We are very much appreciative of this friendly mention and, together with a return of the compliment, we wish our worthy contemporary many more years of success and prosperity.

Mr. Ben J. Blincoe, formerly of Bardstown, Ky., is now located at Dayton, Ohio. Bird-men of "The Blueglass State" are hoping that their loss will not be a permanent one.

Dr. Wilfred H. Osgood, Curator of the Department of Zoölogy of the Field Museum of Natural History at Chicago, has recently reorganized and augmented the staff of that department. The division of ornithology includes Dr. C. E. Hellmayr, Associate Curator; Mr. John T. Zimmer, Assistant Curator; Mr. Colin C. Sanborn, Assistant. Mr. Boardman Conover is a volunteer associate, and Mr. R. Magoon Barnes, whose fine oölogical collections will be deposited in the museum, has been appointed Curator of the division of Birds Eggs.

Dr. W. S. Strode, formerly of Lewiston, Ill., and one of the "old school" bird men, has taken up residence in California at Hollywood. According to The Oölogist, Dr. Strode has "struck oil," and it may be presumed that henceforth he will be able to indulge in his several hobbies to the fullest.

One of the recent rare accessions to the New York Zoölogical Park is a Duck-billed Platypus, the rare egg-laying Australian mammal which is usually spoken of as half bird, half beast. It is twenty inches in length

and, in spite of its 9,000-mile journey, at last reports is getting along nicely. This is said to be the first living specimen brought to this country in satisfactory condition.

The asphalt lakes of Rancho la Brea and at McKittrick, California, are continuing to yield splendidly preserved skeletons of the early birds of that area. It is apparent that the birds were entrapped and became submerged while the lakes were newly formed by the escape of crude oil. As the volatile oils evaporated the mass gradually became asphalt and the bird remains were thus perfectly protected. Recent articles in *The Condor* by Dr. Loye Miller give much interesting detail, including the fact that many of the remains are of birds of prey and vultures. It is not difficult to conjecture how such birds become trapped in the oil while trying to make a meal off some luckless victim which had preceded them.

Hon. R. M. Barnes was a visitor to Middle Tennessee during the last week in June, returning by way of Nashville. A day afield had been planned by himself and the writer, but an almost unparalleled sequence of unlucky incidents, involved by a cross-country auto trip, prevented him from arriving with more than just enough time to catch his home-bound train.

The third Asiatic expedition of the American Museum of Natural History has just completed the first of five years of investigations in central Asia, with most interesting results. The known presence of fossil remains in the Rocky Mountains similar to those of western Europe had led to the logical theory that they must have come from some point of distribution midway between. This theory is apparently being borne out, since the expedition is finding the same fossil remains in the Gobi region of Mongolia. Remains of the largest known prehistoric land mammal are included among the finds. Asia has been spoken of as the cradle of the human race, and new interest is awakened in the thought that here may be discovered the forbears of all our early birds and mammals, including too, perhaps, some real "missing links."

The Chicago Ornithological Society has met regularly during the past year and has accomplished some very credible results. Perusal of a list of papers presented show that its members have been afield dilligently and have given their fellow members the results of their observations.

A new work on the birds of Massachusetts is in preparation, according to an announcement made by the author, Mr. E. H. Forbush, Director of the Division of Ornithology of that state. The illustrations for the two volumes propped are to be in color and will be from the brush of Mr. L. A. Fuertes. The publication has been well provided for by the state and the cost to purchasers will be nominal. The ability of its author assures its excellence.

The Alaskan legislature pays a bounty of fifty cents each on all eagles killed. It is claimed that they kill many kinds of mountain goat and sheep as well as other game.

A national movement has been set afoot to commemorate on February 3, 1923, the one hundredth anniversary of the birth of Spencer Fullerton Baird, one of our pioneer ornithologists, whose death occurred in

1887. It has often been said that Professor Baird did more to harmonize and coördinate the work of the ornithologists of his time than any one who lived before or after him. While stationed at Washington, during the period following the Civil War, he carried on a voluminous correspondence with observers throughout the land and built up an interest which culminated in the founding of the U. S. National Museum. This work was done largely before the advent of the numerous bird journals which sprang into existence throughout the eighties and early nineties. A permanent and appropriate memorial will be decided upon by a committee upon which The Wilson Club will be represented by Dr. Lynds Jones.

The Outdoor League of America is the name of a very comprehensive organization recently launched at St. Louis by lovers of nature interested in its conservation and perpetuation. The subject of bird reservations was among the objects outlined for its activity. Invitations had been extended to all organizations interested in the great outdoors and The Wilson Club was ably represented by Mr. Otto Wildman of St. Louis.

Messrs. Herbert L. Stoddard and George Shroobree of the Milwaukee museum, spent the month of July on Bonaventure Island in the Gulf of St. Lawrence. They were engaged in securing material for new sea bird groups for the museum and in making motion pictures of the wealth of sea bird life to be found there.

Attention is called to the announcement on another page of the coming annual meetings of the American Ornithologists' Union and of The Wilson Club, in Chicago, during the week of October 23. It is hoped that W. O. C. members will turn out in record numbers. There will be no meeting during Christmas week as heretofore held.

FIELD NOTES

BREEDING OF THE BARN SWALLOW IN TENNESSEE

The summer range of the Barn Swallow (*Hirundo erythrogastra*) is not generally known to extend as far south as Tennessee. Various local lists from this state, as well as Louisiana, Mississippi, Alabama, Georgia, and South Carolina, fail, as far as I am able to ascertain, to mention instances of its nesting. In Arkansas, Howell's list mentions one old record of its having bred at Clinton, while in North Carolina Pearson mentions but three breeding records known for that state. In Kentucky, which lies north of and adjacent to Tennessee, I have knowledge of its being a fairly common breeder at several points.

My own observations of its breeding in this state are confined to the immediate vicinity of Nashville, where perhaps a half dozen colonies are now, or have been, in existence. The Nashville area is essentially a farming district and the extensive meadows and large barns that go with stock raising would seem to be well adapted to the requirements of this species. However, the bird must be considered as relatively scarce. Two of the four colonies now in use consist of two or three pair, another

of half a dozen, and the fourth, and perhaps the longest established, about twenty-five pairs.

The first colony of which I have record was observed here twenty years ago by my friend, Dr. Harry Vaughn. It was located in a small barn on the campus of Vanderbilt University, then in the suburbs, and consisted of five or six pairs. This colony has long ago ceased to exist. In June, 1917, I noted several Barn Swallows going in and out of an old windowless dwelling which was standing in three feet of water caused by the construction of a large artificial lake. I waded to and into the building and found two nests containing young birds. On May 17, 1918, five pairs were found to be nesting here, two nests containing five nearly fresh eggs and the others held incomplete sets. This colony was seven miles south of Nashville. The following year four pairs made their nests in the building and as usual remained about the lake throughout the summer. During the ensuing winter the old house was removed and the colony was left without a home. However, two pairs were found to have taken up quarters, the next spring, in a large barn two miles further south, and it is not unlikely that they were some of the birds which had been evicted from the dwelling in the lake. This small colony was again in evidence this year.

In 1920 and 1921 two or three nests with eggs were taken from as many localities by boys and in each case the colonies were said to consist of two or three pairs. The localities were within a radius of ten miles of the city.

In July, 1922, I discovered by far the largest colony and one which has apparently been in existence for many years. It was located near Belleview, twelve miles southwest of Nashville, on an extensive stock farm comprising hundreds of acres of pasture lands, a number of barns of all sizes and ages and, most essential to the joy of the swallows, a large stock pond. This colony has been carefully protected by the operator of the farm. In one large old barn, at the pond, were five nests, constructed against the sides of the joists supporting the hay loft and twelve feet from the ground. Another and smaller barn, however, seemed to be the center of activity, and upon investigation it was found to contain about twenty nests.

The ground floor of the barn was used as a shelter and feeding place for cattle, the end being open, and overhead was a hay loft. All of the nests were built on the "bridging," used to stiffen the joists supporting the hay floor, and were within from seven to eight and a half feet of the dirt floor. When I entered the barn it was full of cattle which had sought refuge from the midday sun, and the swallows flew in and out, within a few inches of their backs, apparently unconcerned at their presence. From most of the nests the young had already been fledged, though four still held young, and two held eggs. The latter were five and three respectively and incubation appeared to be advanced. Outside some fifty or sixty swallows skimmed the pasture, but were thickest near the shed where flies were thick. They appeared entirely fearless of my presence, constantly flying within a few feet of me.

Nashville, Tenn., Sept. 1, 1922.

ALBERT F. GAINER.

A MIDNIGHT SINGING CATBIRD

A short time ago I heard, for the first time, a Catbird's midnight song. It occurred to me as being so unusual that I made a note of it.

I returned home just at midnight on this occasion, and was in the act of running my car into the garage, when the Catbird's song came to me. The bird was singing in some trees not far away and, although it had rained a little earlier in the evening, the moon was shining at the time. It seemed to me that it sang with all the enthusiasm that characterizes its daylight repertoire, but of that I could not be entirely certain. The notes were interspersed with the usual *news* of the Catbird.

FRED J. PIERCE.

Winthrop, Iowa, June 6, 1922.

A GOLDFINCH'S PRICKLY HOME

In going through my 1920 notes I find the following paragraph, on the Goldfinch's nesting, which may be of interest to readers of the Wilson Bulletin:

"While cutting a patch of bull thistles in the latter part of August I discovered a Goldfinch's nest in one of the largest ones. The nest was placed in a crotch formed by the prickly branches and contained five eggs. Though an unsightly object, to say the least, the big thistle was allowed to stand, and a watch was kept of the nest. Three eggs hatched August 27 and the remaining two August 28. The thistle probably provided a good place in which to build a nest, but as a safe home it was almost a failure. On windy days the young were tossed about in much the same manner as the crew of a rowboat would be on the ocean. On several extremely windy days there was constant danger of the youthful mariners all being thrown out of their pitching ship, and to relieve my own mind, as well as theirs, I firmly anchored the thistle to the ground with a cord. Three young left the nest September 11 and the other two left it the following day. This seemed to me a rather late nesting date for the Goldfinch."

FRED J. PIERCE.

Winthrop, Iowa.

[In 1899 I found a nest of Goldfinches in a patch of bull thistles on September 4, near Grinnell, Iowa. This nest contained four fresh eggs on that date. In twelve days the eggs were hatched, and after two weeks in the nest the young were strong enough to leave the nest and its vicinity.—Ed.]

A MID-APRIL BLIZZARD AND ITS EFFECT ON BIRD-LIFE

Unseasonable snowstorms probably cause more discomfort to bird-life than any other element our migrating birds are forced to face. The birds' sense of migration tells them when their northern homes are ready for them and they hasten there, but occasionally the weather man plays a contemptible trick by changing the order of things, and the birds have to suffer.

This was what happened in this part of Iowa in mid-April, 1921. It rained all day April 15, and that evening, with much hard thunder and

lightning as a curtain-raiser, it commenced snowing, and continued through the night; all the next day we were in the grip of an old-fashioned Iowa blizzard. It was worse than any storm we had received during the preceding winter. With snow nearly a foot deep on the level, drifts three to six feet deep a common occurrence, and in the blinding snow as well (which was very wet), the birds were in a poor position to secure food.

Early on the morning of the blizzard, April 16, a number of Prairie Harned Larks, with a few Vesper Sparrows and Slate-colored Juncos, came about our farm buildings in their apparently unsuccessful search for food. I gathered up several shovels of hayseed from the barn floor and scattered it upon the nearby snow. They began working on it at once and could hardly be driven away from it. Of course, it was soon buried by the snow, but by replenishing the supply frequently, they had food most of the day.

That afternoon I made a survey of a nearby wood to ascertain to what extent the blizzard was affecting bird-life. Robins were humped up in the trees and bushes. A Black-crowned Night Heron, snow-bound, sat dejectedly in a tall tree. I saw a Vesper Sparrow with a large chunk of snow stuck to its tail, which by its weight rendered that member practically useless. My greatest surprise came when I found a number of Myrtle Warblers. During the period that I have kept migration records I have never known them to appear before the latter part of April, but the advanced spring doubtless accounted for their early arrival. Though their plumage was wet and ruffled, they twittered cheerfully as they searched for food among the fascicles of fresh tamarack leaves, quite unmindful of the snow that fell heavily all around them. Kinglets worked by their side.

That night Robins, Phœbes, and Vesper Sparrows came in through the open doors of the log-house and wood-house to seek protection for the night.

The next day, Sunday, April 17, dawned bright and fair and in a short time the sun had restored the snow-covered world to a more cheerful state. The green earth eventually appeared and the birds went about their duties with their accustomed vigor, apparently none the worse for their brief exposure to one of Iowa's extremely rare mid-April blizzards.

FERD J. PIERCE.

Winthrop, Iowa, April 18, 1921.

WILSON THRUSH IN ASHTABULA COUNTY, OHIO

On May 7 of the present year I saw the first Wilson Thrush noted for the season. On May 21 I wandered further than usual and entered a thick swampy underbrush, in the township of Plymouth, Ashtabula County, Ohio.

The day was fine. I became tired with my long walk and sat down to rest on an old log near a small pond of water. An abundance of birds were to be seen. Presently the stillness was broken by the sweetest bird music I have ever heard. It was a Wilson Thrush perched on a mossy

stump in plain sight. Presently two others joined in. It was a time to be long remembered. On June 25 I again visited the place and heard the Wood Thrush sing. Back some distance in the marsh in the fork of a small tree I found a nest containing three young birds, nearly ready to fly.

I picked one up to look at when it set up a great cry. To my surprise two adult Wilson Thrushes, in great excitement, rushed to the rescue. Since June 25 I have visited the place several times and always found some of the thrushes about. This is the first time I have found this bird nesting in Ohio.

The finding of the nest of this thrush makes me 103 species for this county.

S. V. WHARRAM.

[This thrush nests regularly, but in small numbers, in the vicinity of Oberlin, Lorain County, Ohio.—Ed.]

COMMUNICATIONS

Taunton, Mass., Sept. 13, 1922.

TO THE EDITOR OF THE WILSON BULLETIN:

Realizing that no one man can know all there is to know about all the birds and that the completeness of the Life Histories of North American Birds depends on the coöperation which the author receives from others, I wish to make this report of progress and appeal to your readers for contributions, trusting that you will find the space to publish it at an early date.

Two volumes have been published and the third, containing the Petrels and Pelicans and their Allies, is printed and should soon be out. The manuscript for the fourth volume, containing the Ducks, up to and including the Ring-necked Duck, is now in Washington in finished form and ready for publication. It is not too late to add to this, when I correct the galley proof, any notes of importance on habits or distribution and not too late to substitute any particularly fine photographs for those that I have already selected.

I am now at work on the fifth volume, which will contain the remainder of the Ducks and the Geese and Swans. I expect to finish this during the winter and send it to the publishers in the spring. The life histories are practically all written, subject to revision, but the photographs have not been selected.

I have no notes on the courtship of the American and White-winged Scoters or of any of the Geese, except the Canada, or any of the Swans or Tree Ducks. I have no nesting photographs of Harlequin Duck, Barrow Goldeneye, any Geese except White-fronted and Canada, any Swans or any Tree Ducks. I should be glad to receive contributions of notes or photographs to fill in any of the gaps referred to above. Or I should be glad to correspond with anyone who has anything else to offer. I am, of course, well supplied with photographs illustrating nests, eggs and young of all the common species, but there are many gaps still to be filled. I am trying to read everything that is published on American birds, but I have no access to private notes, that have not been published, unless they are sent in as contributions. I shall soon begin work on the sixth volume, which will contain the Herons and Rails and their Allies. Contributions for this would be welcome at any time. Contributors will receive full credit for whatever material they send in and, if it is the material that I can use, their names will be placed on the mailing list to receive the volumes when published.

Those who have seen the earlier volumes can understand what is wanted. Hoping for some generous coöperation, I am,

Very truly yours,

A. C. BENT.

Taunton, Mass.

The "Blue Bird"

Is now published monthly, the year 'round, with new and interesting departments, features and contests, and AT NO ADDITIONAL COST TO SUBSCRIBERS.

Official organ of The Cleveland Bird Lovers' Association.

SEND 20c FOR SAMPLE COPY

Annual Subscription \$2.00

Agents Wanted Everywhere

THE BLUE BIRD

1010 Euclid Ave., Cleveland, Ohio

The Oologist

Birds - Eggs - Nests - Taxidermy

The Oologist is the only magazine published in America devoted to the interests of those making collections of Birds, their Nests and Eggs. For thirty-seven years it has been the recognized medium for the exchange of ideas along these lines and its columns teem with advertisements of this character, solely for exchange. It is the second oldest bird journal in America and indispensable to those engaged in either the amateur or scientific study of birds.

Subscription, fifty cents per year, with a free exchange notice. Sample copy free. Address The Oologist, Lacon, Ill.

JAN 26 1923

13,814

Vol. XXXIV. No. 4

December, 1922

THE WILSON BULLETIN



OFFICIAL ORGAN OF

The Wilson Ornithological Club and The
Nebraska Ornithologists Union

Entered as Second-class Matter, July 13, 1916, at the Post Office at Oberlin, Ohio, under Act of March 3, 1879.

CONTENTS

LIFE HISTORIES OF VARIOUS SPECIES	By Ira N. Gabrielson	193-209
BREEDING OF THE GOSHAWK	By J. A. Farley	210-214
SKETCH OF THE WILSON CLUB	By Thomas L. Hankinson	215-217
WARBLERS OF CHARLENOX COUNTY, SOUTH CAROLINA	By E. Von S. Dingle	218-220
RANDOM NOTES FROM ARKANSAS	By H. E. Wheeler	221-224
EDITORIAL		225
BIRD BANDING DEPARTMENT		226-233
FIELD NOTES		234-240
NOTES—HERE AND THERE		241-243
ANNUAL MEETING AT CHICAGO		244-245
INDEX		249-254

THE WILSON BULLETIN

Published quarterly, March, June, September and December, as the official organ of the Wilson Ornithological Club and the Nebraska Ornithologists' Union, and edited by Dr. Lynds Jones, assisted by a board of five members.

All articles and communications intended for publication and all books and publications for notice, should be sent to Dr. Lynds Jones, Spear Laboratory, Oberlin, Ohio.

The subscription price is \$1.50 a year, including postage, strictly in advance. Single numbers, 50 cents. Free to all members not in arrears for dues.

Subscriptions should be addressed to the Treasurer, and applications for membership to the Secretary.

OFFICERS FOR THE YEAR 1923

President—T. L. Hankinson, State Normal School, Ypsilanti, Mich.
Vice-President—Dayton Stoner, 603 Summit St., Iowa City, Iowa.
Secretary—Prof. Gordon Wilson, 1434 Chestnut St., Bowling Green, Ky.
Treasurer—Wm. I. Lyon, 124 Washington St., Waukegan, Ill.

EDITORIAL BOARD

Lynds Jones, Editor-in-Chief
Oberlin, Ohio

Wm. I. Lyon, Waukegan, Ill.; Gordon Wilson, Bowling Green, Ky.; T. C. Stephens, Sioux City, Iowa; Dayton Stoner, Iowa City, Iowa;
M. H. Swenk, Lincoln, Neb.

Published Quarterly at Oberlin, Ohio



Mourning dove brooding

THE WILSON BULLETIN

A QUARTERLY JOURNAL OF ORNITHOLOGY

VOL. XXXIV

DECEMBER, 1922

NO. 4

OLD SERIES VOL. XXXIV. NEW SERIES VOL. XXIX

SHORT NOTES ON THE LIFE HISTORIES OF VARIOUS SPECIES OF BIRDS

BY IRA N. GABRIELSON

A few notes on the Migrant Shrike, intended to appear with this paper, were in some way separated and published in the Wilson Bulletin, Vol. 33, page 67.

During a number of years of studying the life history of birds, particularly that part correlated with the breeding season, a quantity of short notes and uncompleted studies of nest life have accumulated. It is proposed to publish them under the above title. Our knowledge of the intimate life history of even the commonest species of birds is far from complete and it is hoped that these fragmentary notes may encourage others to make complete studies of these and other species of birds.

KILLDEER (*Oxyechus vociferus vociferus*)

Although the Killdeer is perhaps the most common shore-bird in the United States little has been published concerning its behavior. I have a few notes on courtship and nesting that were made in northwestern Iowa.

The behavior during courtship was witnessed on several occasions. On April 6, 1910, I came upon a pair going through this performance. The male had taken his station some distance from the female and at intervals whirled rapidly about uttering a curious stuttering note as he did so. Every few seconds the female advanced a few steps toward the male but when he stopped to observe the effect of his display she quickly turned her back and appeared perfectly indifferent. This was repeated several times until the female suddenly flew away.

In this region the favorite nesting place was at the base of a hill of corn. As a usual thing little or no attempt was made to build a nest—a few pebbles and bits of corn husks being the usual type. This material is seldom concentrated into a nest but is scattered over an area of one or more square feet, the eggs being deposited on the ground at some point within this area. In many instances the parents show little concern for the nest,

contenting themselves with giving the alarm note once or twice as they fly away.

On June 14, 1910, a rather unusual nest was found. It was placed in a small depression and carefully lined with shredded corn husks. It was situated near a hill of corn and contained at the time of discovery, 3:00 o'clock p. m., three eggs. On passing the nest at 7:00 p. m. of the same day I was rather surprised to see that the fourth egg had been laid in the intervening time. Twenty-five days later (July 9) at 8:00 a. m. one egg had hatched and by 1:30 p. m. all the young were out and the shells gone from the nest.



Movable blind used in studying birds' nests

It was impossible to approach the nest on foot without alarming one or the other of the birds, as one was always on guard some distance away. At the appearance of a person walking the one on guard would fly in a circle about the nest giving the alarm, at the first note of which the one on the nest ran rapidly until some distance away and then took wing to join its mate in circling about the intruder. A man plowing corn was viewed

with absolute indifference by both birds, the team often passing down the row next to the nest without disturbing the sitting bird. At an alarm, however, both birds flew about the field unless the intruder persisted in approaching the nest. In such a case one of the birds dropped to the ground near the person, invariably on the side away from the nest, and fluttered about apparently in the greatest distress. The attitude most frequently assumed was as follows: one wing was held extended over the back, the other beat wildly about in the dust, the tail feathers were spread and the bird lay flat on the ground constantly giving a wild alarm note. This performance continued until the observer came very near when the bird would rise and run along the ground in a normal manner or at most with one wing dragging slightly as long as pursuit was continued. If the observer turned back toward the nest, however, these actions were immediately repeated. When the parents had succeeded in luring the intruders about one hundred yards they seemed to be satisfied as they then flew away. However, the above actions could be witnessed indefinitely by returning to the nest after being led away.

The young were very active and exceedingly adept at hiding almost as soon as they were out of the shell. Their mottled coloring rendered them almost invisible when they squatted in the rough ground of the cornfield. They remained in the vicinity of the nest until July 16, after which the parents led them to the shores of a near-by pond.

THE FEEDING OF NESTLING MOURNING DOVES (*Zenaidura macroura carolinensis*)

During the spring and summer of 1915 the writer, while engaged in studying the habits and behavior of nestling birds, erected blinds at several nests of the Mourning Dove in an effort to learn something of the feeding activities. With one exception these attempts were largely failures. In central Iowa, where this work was undertaken, nearly every farm yard had its quota of these birds nesting in the groves and consequently no difficulty was experienced in finding nests to observe.

Although the first blind was erected on June 2, and such time as could be spared from other duties spent in watching this nest, no results were secured. A second nest was tried with similar results, but better fortune attended the third attempt.

At all three nests the general behavior was much the same. During the time they were under observation one or the other of the parents brooded almost constantly while the one off duty was generally to be found sitting within a few yards of the nest except when feeding. The parent usually left the nest as any one entered the blind and often remained away for a half hour or more. On returning the bird usually alighted some distance from the nest and slowly approached with mincing steps often taking five minutes or more to reach the nest.

At one nest one bird sat on the nest while the other occupied a branch directly over it. Both of these birds were very nervous and at the least movement or noise from within the blind both fluttered to the ground and went through the familiar performance used by many birds to draw intruders away from their nest or young.

At the third nest the birds were much less suspicious, and after spending some time for three different days the method of feeding was observed. On July 4 the nest was watched for five hours. The only action that occurred during that time was the relieving of the brooding bird after the first three hours.

On July 6, when the blind was entered at 5:30 a. m., the adult left the nest and did not return until 7:15 a. m., when it came into the nest tree and very deliberately began to walk toward the nest. Ten minutes were taken in covering a distance of as many feet. This bird had a peculiar habit of settling on the nest which may or may not be the usual thing among mourning doves. When within two or three feet of the nest the parent began to ruffle the feathers and roll the body from side to side, continuing this performance until the nest was reached. Two or three more rolling movements to settle comfortably on the nest followed, after which the bird became motionless save for an occasional slow turning of the head. Life at a mourning dove nest became exceedingly monotonous for the observer, but settling down for a long wait I determined to stay all day if necessary to see the feeding operation. Fortunately this was not necessary as at 7:30 a. m. a squab backed toward the blind and getting from beneath the parent raised its head and mutely begged for food. The adult (presumably the female) responded immediately by opening her beak and allowing the nestling to thrust its beak into one corner of her mouth. She then shut her beak on that of the nestling and after remaining motionless for a short time began a slow pumping motion of the head. The muscles of her throat could be seen to twitch violently at intervals, con-

timing about a minute, when the nestling withdrew its beak. The other nestling then inserted its beak and the process was repeated, 15 seconds elapsing before its beak was removed. With intervals varying from 5 to 10 seconds (watch in hand) four such feedings, two to each nestling, occurred. The nestling not being fed was continually trying to insert its beak in that of the parent and at the fifth feeding both succeeding in accomplishing this at the same time. The nestlings' beaks were inserted from opposite sides of the parent's mouth and remained in place during the feeding operation although I could not say whether or not both received food. While being fed the nestlings frequently jerked the head from side to side and also followed the motion of the parent's beak by raising and lowering themselves by the use of the legs. They were not more than five days old but had better use of their muscles than the young of passerine birds at from eight to ten days of age. The entire process described above occupied about six minutes, after which the nestlings crawled back beneath the parent.

Shortly after making these observations an interesting article on the rock dove which appeared in the *Auk* * attracted my attention. In this article the account of the feeding process is as follows: "The feeding of the young with the so-called 'pigeon milk' by both parents is an interesting phenomenon. The adult thrusts its bill deep down into the sides of the bill of the squab, vibrates its wings and works its neck muscles in a pumping manner. The squab, when not actually engaged in the feeding process, waves its wings and calls in beseeching, whistling notes for more."

Apparently here were two radically different methods of feeding practiced by two closely related species, but this discrepancy may be explained by the following quotation from Tegetmeier.† "To receive nourishment the young thrusts its beak into the side of the mouth of the old bird, in such a position that the soft food which is disgorged from the crop of the parent, with a sort of convulsive shudder, is received into the lower mandible or jaw which is widely expanded to receive it. It is singular that so simple an action as this should have been so greatly misrepresented as it has been by many writers. Even so

* Townsend, Chas. W., M.D. Notes on the Rock Dove (*Columba domestica*), *Auk*, Vol. XXXII, July, 1915.

† Tegetmeier, W. B. F. *Z. S. Pigeons; their structure, varieties, habits and management*. London, 1868.

good an observer as Yarrell described in his 'British Birds' the old pigeons as feeding the young by placing their beaks in the mouths of the little ones, and overlooked altogether the beautiful adaptation of the broad spoon shaped lower jaw to the habits of the animals."

It is evident that there are errors of observation present or that the doves have two different methods of feeding the squabs, possibly at different periods of the nest life. My own experiences with the Mourning Dove lead me to believe that Tegetmeier's account is correct. However, I call attention to it here with the hope that some one who has the opportunity will get at the facts of the case.

DOWNY WOODPECKER (*Dryobates pubescens medianus*)

Although I made many efforts to find a woodpecker's nest so situated as to permit close-range study, some condition necessary to success was always lacking.

The nearest approach to achievement was with a pair of downy woodpeckers. However, the factor here working against success was that the young left the nest before the study was fairly under way.

This nest was located about fourteen feet from the ground in an old gnarled boxelder tree. It contained at the time of discovery, June 2, 1915, four well-developed young. As soon as the nest was located a blind was erected and observations were started and carried on for an hour. On June 3 the study was continued but after two hours, when an attempt was made to move the blind closer, the young left the nest. During the three hours the nest was under observation the four young were fed 48 times, 21 by the female bird and 27 by the male. The young were very noisy and during the absence of the parent kept thrusting their heads out of the nest opening, screeching all the time. As one of the parents approached within sight the noise redoubled until one was fed.

Little was learned regarding the nature of the food. The distance of fifty feet was too great even with glasses to identify the food carried in the beak although it was practically always visible. Twice the male, foraging on a nearby tree trunk, was seen to catch spiders and on four different occasions a shiny brown larva was seen protruding from the beak of a parent bird as he scrambled along a branch of an oak within ten feet of the blind.

Both parents had stereotyped routes of approaching the nest and rarely deviated from them. This was to be expected as they had been feeding the young at the time these observations were made, practically the normal time for the nestlings to remain in the nest, and they therefore had opportunity to establish regular habits.

Attempts were made to study nests of red-headed woodpeckers and flickers but because of unfavorable location little result was secured. A flicker's nest situated near enough to the ground to make blind work feasible was found. The nest, however, was beside a street in the city limits and interruptions were so frequent that the work was given up. By watching an hour one morning from across the street we found that the female remained on the nest almost constantly. During the hour the male came, entered the nest with the female five times, remaining from three to five minutes at each visit. He was evidently feeding by regurgitation as no food was ever visible in the beak. After the young birds left the nest the pair were frequently noted feeding the young by a regurgitative process. This continued for at least two days.

The parent usually alighted upon the tree above the fledgling to be fed and the "pumping" was a comparatively easy process although always accompanied by considerable muscular effort. Once the male alighted below a youngster hanging nearly head down on a small tree trunk and the contortions resulting from the attempt were amusing to an onlooker though doubtless a very serious matter to the actors. Whether the youngster received any food or not I cannot say.

WOOD PEWEE (*Myiochanes virens virens*.)

During the spring and summer of 1915, while engaged in securing photographs of birds and nests for nature work in the schools, I was able to make a few notes on some of the birds while waiting for suitable poses and views.

Among the most interesting of these birds was a wood pewee, whose nest, discovered on June 30, contained three eggs. It was saddled on a long straight limb of an elm perhaps fifteen feet from the ground and about the same distance from the trunk of the tree. The only foliage on this branch was a spreading spray of leaves several feet beyond the nest. One would think that a nest so located would be easily discovered but such was not the case. While conspicuously located it was cunningly

woven onto the branch and so thoroughly covered with lichens that I could scarcely believe it was a nest even after seeing the bird alight upon it. From below it looked to be simply a lichen-covered knot or a small fungous growth upon the limb and only after we were on a level with it did it seem at all conspicuous.

On returning to this piece of woodland, July 13, this nest was found to contain two newly hatched young. At this time the limb was sawed off and lowered to within three feet of the



Wood Pewee brooding newly hatched young

ground and firmly fastened to strong stakes. When we returned several hours later we found one of the parents brooding contentedly on the nest. We were regarded with absolute indifference as we approached to within six feet to take a photograph. Altogether four hours were spent in the blind erected at this nest and seven feedings were recorded at this time. The weather was hot and the nestlings newly hatched, consequently, brooding and shade were of more importance at this stage of the nestling period than later when the growing birds need relatively great quantities of food. The minute insects brought could not be identified.

The blind was entered at 7:45 the next morning and immediate preparations for taking photos were made. The brooding bird

was not disturbed by my entrance into the blind but as the camera lens appeared in the opening of the blind she left the nest and dashed repeatedly at the lens, snapping her mandibles vigorously. This continued for several minutes before she finally returned to the nest. At intervals during the morning she renewed her attack on the lens but aside from this paid no attention to either the blind or my movements.

The female brooded regularly throughout the morning, usually staying from twenty to thirty minutes between trips for food. In the early morning hours while the nest was shaded the brooding bird sat closely on the nest. As the sun struck the nest during the heat of the day the parent stood in the nest with partially extended wings and open mouth.

Several times the brooding bird left the nest to dash out after a passing insect, sometimes succeeding and sometimes failing in capturing it. On every occasion of feeding the nestlings, the legs and antennae of small insects, largely dipterous, were visible in the beak of the parent bird.

Both birds were quiet about the nest and apparently absolutely unafraid of either the blind or a person. Several times in watching various species of birds I have noticed the same absolute lack of fear in individuals and it has always been correlated with the same period of the nest life, namely, the first twenty-four to forty-eight hours after hatching. It seems that at this time the brooding instinct reaches the stage of highest intensity during the nestling period and almost, if not quite, completely inhibits the instinct of fear. The following species of birds, which in my experience are usually among the most timid and retiring, have exhibited this same behavior: King Rail, Least Bittern and Pied-billed Grebe. The bittern and the rail allowed me to touch them and pecked at my fingers like an angry hen. Such birds as the chickadee, robin, bluebird, and others more familiar with human beings also have frequently allowed unusual liberties to be taken with them at this period.

BRONZED GRACKLE (*Quiscalus quiscula aeneus*)

Although one of the most common birds in Marshall County the Bronzed Grackle was by no means the least interesting. Every coniferous grove for miles around Marshalltown contained its breeding colony of grackles.

A nest in one of these colonies located close to town was chosen for the work of securing photos of the feeding activities

of the grackles. The nesting grove consisted of spruce, white pine, cedar, apple, and plum trees with a hedge of mulberries on the north. It contained approximately thirty nests, sixteen of which were occupied on May 30, the date on which the work was started.

Attention was first attracted particularly to this colony by the curious and unusual feeding habits of the birds. Instead of foraging closely about the orchard, barn yard, and near-by fields,



Bronzed Grackle male feeding young

as is the common habit of the species in this locality, a steady flight of birds was noted leaving the colony and an equal number were noted returning in another flyway loaded with food for the nestlings.

On investigating the reason for this, a very interesting state of affairs was discovered. The nesting grove under consideration was located on a slight knoll facing the northeast about three quarters of a mile from the Iowa River. At this time, however, the river was out of its banks with flood water and had spread out over the lowlands to within a quarter of a mile of the grove. At the point towards which the Grackle flight was directed was located a blue-grass pasture nearly level but con-

taining numerous little elevations of a few inches above the remainder of the land. The water was just deep enough to cover the grass on the lower parts but to leave the tops of the vegetation on these slight elevations still above water. This condition obtained over a strip of approximately a rod out into the pasture. This high water had caused a great migration of cutworms, earthworms, crickets, spiders, tumble bugs, ground beetles, and other insects into the short grass on these little knolls. From one of these little points containing slightly less than one square foot I secured thirteen earthworms.

It was in this territory that the Grackles were feeding. Not only Grackles but Robins, Meadowlarks, Cowbirds, and Green Herons were busily feeding on these refugees. It was rather surprising to me to see such birds working in the shallow water but the flood had provided a bountiful harvest and the birds were making the most of it. A strong wind was blowing from the northeast and both grackles and robins feeding from the grove flew close to the ground on the outbound trip while on the return they rose high in the air and came sailing in with the wind. The two movements were practically continuous and gave the birds the appearance of flying in a giant elipse.

To obtain some idea of the number of trips made by the parents, attempts were made to count the birds returning laden with food. During one hour, from ten to eleven in the morning, 53 Grackles entered the eastern half of the grove. From 12:15 to 1:15 p. m. two observers, each watching half the side of the grove facing the river, counted a total of 217 birds returning from this feeding ground carrying food to the young. This is an average of over three to a minute and as there were sixteen nests with young, or a total of 32 parents feeding, each parent must have made about six trips per hour.

All the nests in this colony were of similar construction. If in conifers, they were among the short branches near the tops, while in the plums they were built wherever a suitable fork was found. The nest consisted of a foundation of small sticks, a body of corn husks and morning glory stems and a lining of fine grass, root fibers, wool, and feathers.

A blind was placed in position at a nest seven feet from the ground in a plum tree on May 30 at 11:00 a. m. At 1:00 p. m. I entered the blind and found the parents somewhat nervous so only remained about two hours. Only the female summoned up

courage to feed during that time and she fed both nestlings each trip but the last. Eleven minutes after entering the blind the female appeared carrying two earthworms and two or more unrecognized insects. After hopping nervously about from limb to limb above the nest she hurriedly fed both nestlings and left. At the sixth feeding she carried seven cutworms in her beak and fed them one at a time to the two nestlings. On the last feeding she came three times and thrust her bill into the nestling's mouth apparently without feeding. On the fourth return she fed one nestling, and the fifth time returned and gave the remainder of the food to the same one.

On May 31 I watched this nest from ten o'clock until three, during which time the young were fed 26 times, the male feeding nine and the female seventeen times. On two occasions the parents arrived at the nest simultaneously to feed.

During the thirty-three feedings observed in the seven hours' watching, 12 earthworms, 9 crickets, 60 cutworms, 2 spiders, 2 kernels of corn, and 7 or more unknown insects were fed to the nestlings. It is understood, of course, that there may have been other material fed, but that these numbers were actually counted. The term "cutworm" is rather broad, but the word is here used to cover the dull greasy-looking caterpillars usually known to the farmer as cutworms. The grackle's habit of carrying worms crosswise of the beak made it comparatively easy to count them at this nest.

When we returned here on the morning of June 1 we found the nest destroyed and our blind torn down, evidently the work of boys, from footprints about the place.

During the second day at the nest both birds became very tame and unsuspecting and the male frequently indulged in a curious half song accompanied by an odd acrobatic performance. I have frequently seen this performance at a distance and can not suppose that it is anything new, but at a distance of two feet it impressed me as most ludicrous. The following excerpt from my notebook for that date is evidence of the impression it made at the time: "The song is brought out by jerking open the wings and tail and jerking the body upwards as if trying to fly when stuck fast. The resulting hump much resembled, I imagine, the one given by Mark Twain's famous frog in his historic buck shot laden performance."

YELLOW WARBLER (*Dendroica aestiva aestiva*)

During the spring of 1915, while attempting to secure photographs of birds for school work I had my blind at two yellow warbler nests without succeeding in getting any very good negatives. The color of the birds seemed to be the great drawback to securing good results, as in most negatives they appeared practically indistinguishable from the dark green background of the leaves. I did, however, succeed in securing a few notes on their behavior at the nest.

Nest No. 1 was discovered on June 13 and contained at this time four eggs. The nest was located in one of a row of gooseberry bushes and was approximately two feet from the ground. June 20 the eggs were hatching and on June 21 the blind was erected, observations starting at 9:00 a. m. on the morning of June 22. This nest was watched for two hours on June 22 and one hour on June 24. When I returned to the blind on June 28 the young had disappeared. During these three hours the male fed the young ten times, the female came fourteen times, and four times while I was busy with the camera I failed to note the sex of the parent or material fed. Both parents were nervous, active little folks and except for their fortunate habit of carrying things in the tip of the bill I would have been at a loss to learn anything of the material fed. When feeding the small green larva, so common at this season of the year, they carried many of them by one end, the other end dangling loose. Apparently nothing else was carried at these times as I could see through the parted mandibles behind the larva. On one visit the male came with seven of these larvæ hanging from his beak. He tried to ram them all down the throat of one nestling at one time but failed in this and had to give them in three instalments. Usually the larvae were picked from the bushes in the immediate vicinity of the nest and brought in one or two at a trip. Forty-six recognized objects were fed in 28 visits, including 30 green larva, 3 winged insects, 2 spiders, and 11 or more small, much crushed objects which I could not recognize at all.

Several times the male gave the worms he brought to the female who in turn fed them to a nestling. The male was much the more timid of the two in this pair of birds. He made seven attempts to approach the nest on his first visit on the morning of June 24, while the female sat on the nest brooding. On such an occasion the female awaited the approach of the male with the food with open mouth and quivering wings. Her behavior

very closely resembled that of a fledgling bird awaiting the arrival of a parent with food.

Nest No. 2 was discovered when hardly finished on June 13. On the 16th it contained two eggs and on the 18th four eggs. Incubation had commenced on the 18th as I saw the male feeding the female on the nest several times. These eggs hatched on June 29, making the incubation period about eleven days. Only two of the eggs hatched, the other two remaining in the nest for some time.

On June 30 the blind was erected and an attempt was made to use it the same day. The birds, however, proved so wild I gave it up and it was not until July 3 at 3:30 p. m. that anything could be accomplished. In direct contrast with the other pair of warblers, the female at this nest was wild and nervous, the male feeding twenty-four times and the female ten during the three hours the nest was under observation. The male had fed eleven times before the female became enough reconciled to the blind to feed the young. During this time the young were fed thirty-four times, during which 26 green larvae, 11 small winged insects, 1 spider, and 7 unrecognized objects were fed to the young. As remarked in discussing the first yellow warbler nest the habit of carrying food in the tip of the bill was marked and made it comparatively easy to identify larvae. At both these nests there was a great abundance of small dipterous insects and small larvae within a few inches or feet. This may have had some influence on the quantity of food carried on each trip by the parent as I have noted other warblers with beaks fully loaded coming to the nest. At these nests there were few times when more than one insect was carried.

The excreta at both nests was disposed of either by swallowing or carrying away and the nests were kept scrupulously clean.

REDSTART (*Setophaga ruticilla*)

On June 26, 1915, while camping on Mormons Ridge north of Marshalltown, Iowa, I discovered a redstart nest containing one egg. This was a dainty nest woven of grass, hair, and rootlets in a fork of a hazel bush about four feet from the ground. On each of the two succeeding days, June 27 and 28, an egg was laid and on the afternoon of the latter date incubation commenced. I watched the nest for three hours on the afternoon of the 28th. During this period the male came once to feed the

female and sang at the nest for some time before taking his departure.

On July 13 I returned to Mormons Ridge and found three young about three or four days old. I immediately erected a blind at the nest and returning at four in the afternoon found the parents still making more or less fuss over the blind. I returned at 7:50 a. m. on the morning of the 14th and staid until 11:40 a. m. During this time I succeeded in exposing many films but failed to secure good negatives.

During the five and one-half hours that I watched the nest the nestlings had 30 feedings, 10 of which were made by the female and 20 by the male. I found it impossible under the conditions at this nest to identify much of the food except in a very general way. The bushes simply swarmed with minute insects, mostly dipterous, and small green larva, a large portion of which were geometrids. Twenty-two winged insects, sixteen larvae, one fly, and one spider were recognized during the thirty feedings, and on three occasions when the young were fed I could make out nothing as to its character.

Of the two parents the female was much the more shy and timid. The day was hot and the nest partially exposed to the sunshine. The male seemed to realize the necessity for brooding the young. Several times he chased the female through the bushes scolding angrily until she settled on the nest. I can not say whether he was really trying to force her to brood the young but his actions had every appearance of such an effort. The female was manifestly much worried by the blind while she was brooding. At first she twisted and turned continuously, but toward the end of the observation she became more quiet.

The male at this nest displayed a greater freedom from "nerves" than any male bird I ever watched. When feeding he came boldly to the nest after the first two trials. The click of the camera, which was sufficient to send the female from the nest in headlong panic, merely caused him to lift his head and stare into my face through the peep-hole in the blind, which was eighteen to twenty-four inches away. It was very evident that he saw nothing to fear in the muslin blind or the clicks that emanated from it and that he could not understand the absurd behavior of his wife. She gradually became reconciled to the situation when she saw no harm coming to her mate.

The actions of the two birds, however, were very interesting and I only wished it were possible to remain longer.

ROBIN (*Planesticus migratorius migratorius*)

During the course of several years' study of nestling birds and behavior of parents at the nest I had occasion to work at two robins' nests. The first one was a full day study at Sioux City, Iowa, and the second a period of ten hours spent over several days securing photographs. During this time notes were made on the behavior of the birds.

Nest No. 1 was located in an apple tree about eight feet from the ground. It was in all respects a typical robin's nest both in structure and location. It was necessary to build a platform for the blind in order to see into the nest. The special purpose of the study was to determine if possible the amount of fruit fed to the young under favorable conditions. Within twenty yards of the nest tree lay a 2-acre field of strawberries and the edge of a 20-acre cherry orchard a hundred and fifty yards away, both containing an abundance of ripe fruit. The two nestlings were well grown, in fact almost ready to leave the nest. The nest was under observation from 4:20 a. m. until 8:00 p. m. on June 30, 1913.

During this time the female brought food to the nest 43 times and fed a total of 71 objects to the young. On ten occasions she fed both young from the supply she carried. Nestling No. 1 was fed 27 times and No. 2, 26 times. The food was somewhat roughly classified as follows: 15 crickets, 1 grasshopper, 5 maybeetles, 6 other beetles, 1 bug, 10 cutworms, 4 other larvae, 22 earthworms, and 7 or more insects so badly mutilated as to be unrecognizable. As many as four earthworms were counted dangling from the beak on one trip. It is not desired that this be considered the maximum number but rather the minimum. In other words, out of a mass of worms carried four were actually distinguished out of possibly a greater number.

The female did all the feeding, the male spending his time in the tops of nearby trees, singing. The young were well feathered out and the nest well shaded, which may account for the fact that there was no brooding while the nest was under observation.

Early in the afternoon a farmer started plowing a piece of ground about 150 yards away and the female at once commenced to visit this land to pick up the earthworms exposed by the plow. She continued to feed earthworms as long as the plowing was carried on.

The amazing thing to me in this day's observations was the

fact that no fruit was brought to the nestlings, although strawberries and cherries, both fruits for which the robins have a fondness, were convenient. I often saw adult robins feeding on the two fruits but this bird never brought any fruit to the nestlings.

Nest No. 2 was discovered June 5, 1915. It contained four eggs which hatched on June 10. The blind was erected on the fifth some distance away and moved nearer a few feet at a time, so that by the time the eggs had hatched the parents were quite reconciled to its presence. To facilitate moving, it was put upon an open top buggy and moved about not only to this nest but to several others in the vicinity.

This nest was under observation 11 hours and 45 minutes during five different dates as follows: June 11, 3 hours and 20 minutes; June 12, 2 hours and 20 minutes; June 16, 1 hour and 50 minutes; June 17, 2 hours and 15 minutes; June 18, 1 hour; June 21, 1 hour.

This nest was in an apple tree in the midst of an orchard. Mulberry trees and raspberry bushes were near by, but at no time while I watched did the parents feed any fruit to the nestlings. The female was frequently seen feeding on the mulberries and a flock of goldfinches were noted once feeding on the ripening fruit.

During this time the nestlings were fed 34 times by the male and 19 times by the female, a total of 53. This difference was not due to any timidity on the part of the female but to the necessity of brooding the young. During the 53 feedings 8 cutworms, 46 larvae of various kinds, some of which may have been cutworms, 38 earthworms, 1 maybeetle, 2 other beetles, 1 grasshopper, 3 crickets, and 13 unrecognized forms were detected out of a probably greater number. On 28 visits only one nestling was fed, on 19 two were fed, and on 7 the entire brood of three shared in the load of food carried.

The robins secured most of the food in a cornfield a few yards away—picking up the earthworms and cutworms exposed by cultivation on three out of the five days. At other times they foraged in the garden and about the orchard.

The excreta was carried away eight times and devoured a like number.

On June 11th the female brooded 1 hour and 55 minutes out of a total time of 3 hours and 20 minutes the nest was under observation. On the 12th 46 minutes were spent in brooding out

of 2 hours and 20 minutes; on the 16th 1 hour and 23 minutes out of 1 hour and 50 minutes; on the 17th, 56 minutes out of 2 hours and 15 minutes; and on the 18th, 13 minutes out of 1 hour.

On the 21st the young left the nest. The parents at this nest were exceedingly business-like in the care of their young. They paid little or no attention to the blind and carried on their activities in a regular stereotyped style. Both had a regular method of approach to the nest.

BREEDING OF THE GOSHAWK
(*Accipiter atricapillus*)

AT PETERSHAM, WORCESTER COUNTY, MASSACHUSETTS,
AND OTHER BIRD NOTES FROM PETERSHAM

BY J. A. FARLEY

I take pleasure in reporting the breeding of the Goshawk (*A. atricapillus*) last spring in Petersham, Massachusetts. This is the first record of the breeding of the Goshawk (*A. atricapillus*) in the state. Such an event has long been looked for as individuals of the species have been seen in summer more than once in the past in Massachusetts. The last summer record of the species was by Mr. Gerald H. Thayer who saw an immature Goshawk, August 15, 1900, in Berkshire County this state. (*Auk*, XIX, 1902, p. 296)

The two young birds in the Petersham Goshawk's nest were taken alive, in the down, May 22, 1902, by Mr. J. Nelson Spaeth of the Harvard Forest at Petersham. The nest had been reported to Mr. Spaeth who visited it first on May 20 when the two, downy, peeping young could be seen from the ground. The nest was high up in a tall white pine, and was a large affair composed of sticks mainly. The startled adult hawk betrayed the nest by flying from it. Only one adult hawk was seen and this bird uttered shrill cries in the woods when the nest was climbed to, but did not come near. The two young Goshawks in their natal down were photographed May 26; and again June 5, in their juvenal plumage. The first picture shows well the mixture of natal down and juvenal feathers sprouting through it—particularly the quills and other feathers of the wing; the second, the juvenal plumage with some of the natal down still adhering, especially on and around the head. One of these young hawks became partly paralyzed and died some time later, but the other lived until July 12.

I saw this bird July 1-4 at the Harvard Forest school, in Petersham. It was confined in a cage in the back yard. When I saw that this very young but practically full-grown Goshawk was in complete *juvencal* dress, I inquired immediately as to its antecedents and learned the facts just related. Although in fine feather and in apparent good health and spirits when I saw him, this young bird died shortly after my visit to Petersham—on July 12, as has been said. The bird was forwarded in the flesh to me, and a skin was made which is now, through the kind offices of Hon. Herbert Parker, in the Thayer Museum at South Lancaster, Massachusetts.

The juvenal plumage of a Goshawk at this age (probably about 2½ months) and born in Massachusetts may be worth a few words of description. The bird was full-grown, but some of its claws were dulled owing to contact with the ground in its cage; length almost 2 feet; length of tail (estimated) 10-11 inches. The bird was not in good condition for the determination of sex, but may have been a female. The cervix is almost tawny and so is in strong contrast to the darker scapulars and interscapulars which are, however, edged with a diminished shade of this same color. This beautiful edging of the feathers of the back extends also all over the wing-coverts; the secondaries in their perfect array are light (almost whitish) tipped; the large, long tertials are the same as the secondaries. The under tail-coverts with their dark "spearheads" are very long—so too the flank-feathers. The buffy suffusion, usual on the chest of young hawks, is rather deep in this specimen and extends well down on the breast.

I am informed by Mr. M. Abbott Frazer, the well-known taxidermist of Boston, of a previous nesting of the Goshawk in Massachusetts which, however, was never recorded. A dozen or more years ago he saw in a small collection of mounted birds in Townsend, Middlesex Co., an adult female Goshawk, together with two badly-blown eggs which were said to have been taken from her nest in that town. Mr. Frazer tells me that he sent one of these eggs by mail to Mr. William Brewster but it was broken in transit. Mr. Brewster kept the fragments of the egg, but never published the record. Mr. Frazer cannot now recall the date which was given him as that of the finding of this nest.

I am glad also to announce the summering of the Winter Wren (*N. hiemalis*) in Petersham. This is the most eastern record of the species in summer in many years in Massa-

chusetts. In 1884 Mr. William Brewster found the bird breeding in Winchendon, another large and very well-wooded Worcester Co. town lying to the north of Petersham and on the New Hampshire state line. There is also the still older record of the breeding of *N. hiemalis* before 1883, in Lynn, made by the late George O. Welch; and the very important and recent record of a nest of this species in Rhode Island, only a few miles from the sea, found by that indefatigable nest-hunter, Mr. Harry Hathaway of Providence. These "eastern" breeding cases of *N. hiemalis* may be wholly accidental; but Winchendon at least has a lot of spruce and balsam, and adjoins Rindge, N. H., another town with plenty of spruce and fir and other northern plants.

Professor R. T. Fisher, director of the Harvard Forest, himself was the first to note the Winter Wren in Petersham. A former member of the U. S. Biological Survey Professor Fisher is ornithologist as well as forester. As director of the Harvard Forest he knows every nook and corner of his 1,775 acres of woods. For the first time in his experience he heard on July 2 of this year the song of the Winter Wren in Petersham. The bird was in a small hemlock swamp in one of the Harvard Forest tracts. On July 3, in company with Professor Fisher and Mr. R. L. Coffin of Amherst, I visited this hemlock swamp where we all saw and heard to our heart's content the Winter Wren as he rummaged around among the fallen trees, stumps, rocks and underbrush. This hemlock swamp has a rocky bottom, more or less, and a sphagnum carpet, and the ground is encumbered with many up-turned trees. It is perhaps one-half acre in extent, and lies in one of the extensive Harvard Forest "tracts," with the foaming East Branch of the Swift river close by. On July 3 the oxalis was still in bloom in this relatively cool place. We noted a 25-foot mountain ash and some black ash, together with mountain maple and yellow birch and more or less rather low and scattering *taxus*.

Professor Fisher tells me that the Pileated Woodpecker (*Phalotomus pileatus abieticola*) is a resident species in Petersham, and that he considers it to be pretty nearly a common bird although never of course abundant. It should be recalled in this connection that about 70 per cent of the large town of Petersham is wooded country and that a good percentage of this is old heavy timber. Therefore, it would be strange indeed if such a timber-loving species as the big "Black Woodpecker" was not a resident here.

On the evening of July 1 I heard a White-throated Sparrow (*Z. albicollis*) singing in the spruce swamp in the rear of the Harvard Forest dormitory. Professor Fisher has noted this summer three other singing "Peabody Birds" at widely-separated points in town. Last year (1921) the species was rather common in Petersham and bred near the Forest headquarters—as it did this season.

There was a breeding pair of Juncos (*J. hyemalis*) this year near Professor Fisher's house and the species was noted also in 1921 in Petersham. Professor Fisher found in 1921 a Junco's nest in the adjoining town of Hubbardston.

The large and well-wooded town of Petersham lies in the northwestern quarter of Worcester County. Like most of this elevated part of the state the town's surface presents a series of broad ridges whose trend is north and south, the general level of the ridge-tops being 1,100 feet while the intervening valleys are at 700 to 800 feet. It is part of the central plateau or upland which stretches across Massachusetts from the New Hampshire to the Connecticut state lines. The famous Harvard Forest in Petersham is in three separate tracts which total 2,068 acres of which 1,775 acres are forested. There is much white pine in this large acreage as elsewhere in this and adjoining towns. There is some spruce in swamps in the Harvard Forest, the largest swamp being in the "Meadow Water" tract; there is a smaller spruce swamp in rear of the Harvard Forest dormitory. Besides white pine there is a good deal of hemlock in town, and some of this timber in the Harvard Forest is old and very large. In the Forest also there are still a few small pieces of virgin timber. Some of the finest white pines, both as to number and size of trees, in the state today grow in the Harvard Forest. There are hundreds of other acres of woods in the town which also contain much white pine. Lovers of trees will be glad to know that the timber in the Harvard Forest is being handled in the most intelligent and progressive way, and that the land in no case is ever denuded. There are some large woodland holdings outside the Harvard Forest tracts, which are in the hands of owners who appreciate both the aesthetic and commercial value of forest trees, and hence do not carry out wasteful cutting methods on their properties. Thanks to the policy of Harvard University and of these individual owners, it results that in Petersham there is a great forested area of the utmost

importance which preserves for the future, as for today, the most beautiful of the natural resources of the state.

Practically all of the small state of Massachusetts, like the rest of southern New England, is Transition country. Of particular interest in this region is the relatively cool, northern area in which Petersham lies, from the fact that it exhibits a rather notable mingling of "northern" and "southern" trees. Thus, in the woods of Petersham grow important trees of the North, more or less typical of the Canadian faunal area, like the red pine, canoe and yellow birches, sugar maple, beech, basswood and a little red and black spruce. On the same ground grow also such rather characteristic trees of the central hardwoods region to the south (more typical, therefore, of southern Connecticut and the Middle States) as the hickory, tupelo, sassafras, pitch pine and various species of oaks, chief of which is, of course, the white oak oftentimes so splendidly developed in Massachusetts east of the Connecticut river. But the trees which dominate chiefly in the woods in this section are those which attain or at least approximate their highest development in central New England—as the white pine, red oak, chestnut (before the blight), white ash and hemlock.

There is not enough of Canadian zonal plant-life in Petersham for the town to be considered in any sense within the Canadian faunal zone. It lies only on its very "ragged edge", so to speak. Nor are the Canadian faunal birds that summer here many. They are few, both as to numbers and species. Nevertheless, such an extensively wooded area as Petersham, much of it of sizable timber, must in the very nature of the case always show interesting things in the bird-line. A case in point is the Pileated Woodpecker, resident here as one would naturally expect this typical woods-bird to be. As one would naturally expect, also, where there is so much white pine, that white pine bird par excellence, the Blue-headed Vireo, is not only common but relatively abundant. Most plentiful always where white pines are most plentiful—the more white pines, the more Blue-headed Vireos, states the case in a nutshell—the song and the delightful minor notes of the Blue-headed Vireo are ever in the ear in the pines of the Harvard Forest tracts and in other "stands" in town. I have nowhere else in Massachusetts found the species so plentiful except in that other white pine country, southeastern Massachusetts, including southern Plymouth Co., but not Cape Cod, where it is also a common woodland bird.

A SKETCH OF THE WILSON ORNITHOLOGICAL CLUB*

BY THOMAS L. HANKINSON

For the advancement of a science like ornithology, it is desirable that all phases of the subject be studied at all times. Taxonomy is necessary to give clearness of reference in dealing with species, and this is necessary for all bird students, whether they be morphologists, embryologists, ecologists, economic ornithologists or simply field observers. Morphology is fundamental to the other subjects. Taxonomy leads naturally to ecology; and each is fundamental to the other, and both are necessary for the understanding of economic ornithology. All of the phases of bird study are closely related to each other, and lines of demarcation are not easily found.

Ornithology has had a very symmetrical growth, which has not been the case with all the other natural sciences. Ichthyology, at least in America, has been quite one-sided in its development. Its technical literature is just beginning to include details of the ways of living fishes, and fish ecology is in its infancy. The literature of American birds on the other hand, is filled with facts concerning the lives of birds from studies of their food, nesting, migrations, songs, and activities generally. All the progress has been rapid, and I think I can safely say that no one large class of animals, certainly of vertebrates, is as well understood as the class of birds.

This remarkable and well-proportioned advancement is due to the large number of bird students and their diversity of interests and to the fact that they have been willing to make concerted efforts in their studies by forming such organizations as the American Ornithologists Union, The Cooper Ornithological Club, and the Wilson Ornithological Club. While it has been the aim of all these organizations to advance ornithology with interest shown in all phases of the subject, there has been some tendency to specialize. The Wilson Club has especially encouraged outdoor ornithology; and it seems to me that this leaning has been a very fortunate one, since the members of the Club have been largely from the central part of the United States, the region where there has been such a remarkable development of agriculture, resulting in the drainage of many swamps, the breaking of virgin prairies, and elimination of vast areas of

*Address of the President at the Fortieth Stated Meeting of the American Ornithologists Union held at the Field Museum of Natural History, Chicago, Illinois, October 24-26, 1922.

woodland and natural conditions generally. There have been, on account of the changes in bird environment, many changes in the bird population. Species have become readjusted to new environments in some cases; some have increased and some have decreased in numbers, and a few have seemingly disappeared, altogether. Data on the bird life during these changes and on the primitive homes of birds in the region is of much value to ornithology, and many of these data have been gathered by the Wilson Club members and permanently recorded in the pages of their Bulletin.

It is outdoor ornithology that attracts the amateur; and professionals come from amateurs. It is important, then, to aid the amateur, and this has been a function of the Wilson Ornithological Club. It has encouraged amateurs to become associate members and to subscribe to the Bulletin and to use its pages for publication of their important observations. With a careful and discriminating editor like Dr. Lynds Jones, there has been little chance of unscientific material getting published; and as far as I can judge no such material has yet crept into the pages of the Wilson Bulletin. Advice as to proper methods of bird study, very useful to beginners, has been given by the Bulletin, especially through editorials. Amateurs need to have their attention called to the value of intensive bird studies to prevent many of them going on thinking that they are exhausting the possibilities of field work when they are naming and listing the species they see on long hikes. They have had good examples of thorough studies of comparatively small subjects through such papers, published in the Bulletin, as, *The Monograph of the Flicker*; *The Broad-winged Hawk*, *The Oberlin Grackle Roost*, and *The Nest Life of the Catbird*. Biography of great naturalists is always stimulating to young naturalists, and the account of the life of Alexander Wilson that ran through several numbers of the Bulletin certainly must have contributed to the enthusiasm of beginners. Amateurs as well as professionals, therefore, have found membership in the Wilson Club of value to them in their work.

The Wilson Ornithological Club has been remarkably successful in obtaining the united efforts of field ornithologists in making special studies, such as distribution through the census method, and migration, through records of occurrences and through the relatively new method of bird banding. At present the Bulletin has a Bird Banding Department, and seven pages in

fine print are given to the subject of bird banding in the June 1922 number of the Wilson Bulletin.

Wholesale bird and egg collecting has not been encouraged by the Wilson Club, and the Club has not interfered with those who have found it necessary to kill some birds for really scientific use. The Audubon Societies have always had a good support from the Club and have found it willing to coöperate with it in all good methods of reducing unnecessary bird destruction. As long ago as 1898, Dr. R. M. Strong in his President's address before the Club said: "I wish to encourage to the fullest extent the active coöperation of the members in the various movements toward the protection of birds, which are now on foot. We can do much by our example and influenceThe whole chapter should constitute itself a committee on bird protection". Later in 1903, an editorial states: "We do not pose as a society of bird protectors, but we expect to exert all our influence toward a sane policy of protection everywhere and at all times."

We are not an organization of "bird lovers", and do not publish a magazine of popular ornithology, although most of the members are interested in the kind of ornithology that is most popular, that is outdoor bird study. The Wilson Ornithological Club is one of real students of birds and stands for scientific ornithology pure and simple. Again quoting from our editor: "While we stand for field study, because we believe that here we can do the most good to the cause, we still hold ourselves plastic enough to enter any field of study and investigation which may promise large results in the increase of knowledge."

In endeavoring to accomplish its ends, the Wilson Club has had a hard struggle. Several times through lack of funds its future has been exceedingly uncertain, and twice it was decided to suspend publication of the Bulletin, but it was proved worthy to live, each time, by forthcoming of aid largely unsolicited from those who seemed to feel the Bulletin essential to ornithology. The rugged road of progress has been followed partly through choice, for it has been the policy of the Wilson Ornithological Club to give members maximum returns in publication for the dues they pay, and practically all the money of the treasury goes to the Bulletin. A reserve fund has not been ventured. The editor has not only given a good part of his energies to the Wilson Bulletin for more than twenty-five years, but he has personally aided in financing it at critical times. Allow me to assure this gathering that any irregularities in the history of

the Wilson Bulletin have not been due to any noticeable ebb and flow of enthusiasm in the Club.

It now appears evident that the critical times for the Wilson Club are all in the past and that it is now recognized by the best ornithologists as a strong factor in the advancement of the scientific study of birds. A piece of evidence of its good standing is the present meeting in Chicago with other important associations including the American Ornithologists Union.

As an officer of the Wilson Ornithological Club, may I close this address with its hearty welcome to the American Ornithologists Union and with the assurance of the pleasure that all the members feel from the Club's being one of your hosts here at Chicago.

LIST OF WARBLERS OF CLARENDON COUNTY,
SOUTH CAROLINA

BY E. VON S. DINGLE

So far as I know, twenty-two species of Warblers occur here (Clarendon County, Central South Carolina), and of these, ten have been found to breed. The list is as follows:

1. BLACK AND WHITE WARBLER (*Mniotilta varia*).

Transient visitant; the earliest records for its arrival are March 29, 1920, and March 20, 1921. It remains until in May, the latest being May 12, 1908. On the return migration (fall), the earliest is July 2, 1909, and the latest record is October 23, 1909.

2. PROTHONOTARY WARBLER (*Protonotaria citrea*).

Common summer resident; breeds commonly. It arrives about the middle of April and I have never seen it after August 19. On June 7, 1919, a nest was found containing five young, nearly ready to leave. The nest, made of cypress leaves, was built in the natural hollow of a small tree, and was eight feet up. On June 19, 1919, a nest containing three eggs was found; the female was incubating. It was one and a half feet up.

3. SWAINSON'S WARBLER (*Helinaia swainsoni*).

Very local summer resident; it is found in heavily timbered swamps where the cane grows in abundance. A nest and three eggs were found on June 10, 1921; the bird was incubating and would not leave until I touched her.

4. WORM-EATING WARBLER (*Helmitheros vermivorus*).

Rare; some of the records are as follows:

1907. September 20.

1908. September 7.

1910. April 29.

1919. April 29.

5. PARULA WARBLER (*Compothlypis americana*).

Some of the records undoubtedly refer to *Compothlypis americana usnaca*, but no attempt was made to separate the two.

The Parula Warbler is an abundant summer resident wherever the "Spanish" moss grows. It always arrives in March, the earliest record being March 19, 1909. The latest is October 2, 1921.

6. CAPE MAY WARBLER (*Dendroica tigrina*).

One record; a male, April 27, 1910.

7. YELLOW WARBLER (*Dendroica aestiva*).

Rare; the records for it are as follows:

1909. May 3.

1921. April 29, May 5.

1922. May 1, May 4.

8. BLACK-THROATED BLUE WARBLER (*Dendroica caerulescens*).

Very common in spring, but rare in fall. The earliest record is April 18, 1908, and the latest May 22, 1909. Fall records are very few, but I recorded it on October 16, 1909.

9. MYRTLE WARBLER (*Dendroica coronata*).

Abundant winter visitant; it is generally first seen during the first week of November, and remains as late as May 2. It is somewhat irregular in its movements.

10. BLACKPOLL WARBLER (*Dendroica striata*).

Uncommon May migrant.

11. YELLOW-THROATED WARBLER (*Dendroica dominica*).

Common in summer; nests in the "Spanish" moss. The earliest record is March 13, 1921. It must be an early migrant, and I have not seen it after August 19.

12. PINE WARBLER (*Dendroica vigorsii*).

Abundant permanent resident and breeder in the pine woods.

13. PALM WARBLER (*Dendroica palmarum*).

Some of the records probably refer to *Dendroica palmarum hypochrysea*. Very common in fall, winter and spring; the

earliest record is September 24, 1921, and the latest is April 22, 1920.

14. PRAIRIE WARBLER (*Dendroica discolor*).

Common in spring and fall, but has been recorded once in June,—June 10, 1922. The earliest record is April 6, 1919, and the latest October 23, 1909.

15. OVEN-BIRD (*Seiurus aurocapillus*).

Common migrant; for the spring migration, the earliest record is April 15, 1921, and the latest May 18, 1908. The earliest date of return is August 19, 1921, and the latest November 15, 1907.

16. WATER-THRUSH (*Seiurus noveboracensis*).

Spring, late summer and early fall migrant. This bird is much less common than it was ten years ago. April 6, 1910, is the earliest spring record and May 26, 1920 the latest; on the return migration, July 7, 1914, is the earliest and September 20, 1907, the latest.

17. LOUISIANA WATER-THRUSH (*Seiurus motacilla*).

Rather rare summer resident; the records are too incomplete to form any idea of its period of stay here. On June 24, 1921, a pair of these birds were observed feeding a young bird on the bank of a stream.

18. KENTUCKY WARBLER (*Oporornis formosus*).

Common summer resident in heavily timbered swamps and wet woods. The earliest arrival in spring is April 28, 1909. I have seen a number of young birds, unable or just able to fly. On June 10, 1921, a nest was found which contained four young.

19. SOUTHERN YELLOW-THROAT (*Geothlypis trichas ignota*).

Some records may refer to *G. trichas*. A very common breeder; it is a permanent resident, as it winters occasionally.

20. YELLOW-BREASTED CHAT (*Icteria virens*).

Fairly common, but very local, summer resident; the earliest date of arrival is April 28, 1908; I have never seen it after July. The only nest I have seen was discovered on June 15, 1921, and contained three eggs; four eggs were laid in all. This nest was built in a small bush in a very accessible place,—among a scattered growth of bushes on the edge of a field. This Chat was remarkably unsuspecting, and allowed me to watch her as she incubated from a distance of seven or eight feet.

21. HOODED WARBLER (*Wilsonia citrina*).

Very common summer resident, arriving occasionally as early as March 29. The latest record is September 10, 1909. The Hooded Warbler is a common breeder.

22. REDSTART (*Setophaga ruticilla*).

An abundant migrant, especially from mid-summer to late fall. The earliest record is March 24, 1911, and the latest spring record is May 22, 1909. July 18, 1908, and October 21, 1920, are the earliest and latest records, respectively, for the fall migration.

Summerton, S. C.

 RANDOM NOTES FROM ARKANSAS.

H. E. WHEELER, CONWAY, ARK.

The following observations on certain birds of this state are given chiefly for their interest from a distributional standpoint. The several references made to the observations of Mr. Arthur H. Howell are taken from his list of the Birds of Arkansas, published by The Biological Survey in 1911.

BLUE GOOSE (*Chen carulescens*)

A crippled specimen of this species dropped into a small artificial lake near Conway, in Faulkner County, early in the spring of 1922 and at this writing (September 25th) was still making himself at home among a flock of domestic ducks. This species is new to Mr. Howell's list.

GREATER YELLOW-LEGS (*Totanus melanoleucus*)

One bird of this species was observed for a day or two during the middle of May (1922) in the same pond as above noted. On May 29 this pond attracted a belated visitor in the shape of a Lesser Scaup Duck.

TURKEY VULTURE (*Cathartes aura septentrionalis*)

A set of two badly incubated eggs was collected from a cliff on the Arkansas River in Faulkner County on June 5th, 1922. Here this pair of vultures has nested for many years though subject to frequent molestation. When exploring the cliffs of Frog Bayou in Crawford County I learned that formerly hundreds of pairs of "buzzards" had formerly nested there, but that a bitter and persistent prejudice on the part of a few individuals

in the neighborhood had been the means of practically exterminating them. There was not a pair left to nest there this season. The boys of the community had dilligently sought out every opportunity to break up every nest, and it is not likely that they will attempt to regain footing in this region again.

It should not be understood however that the species is decreasing in Arkansas.

PILEATED WOODPECKER (*Phlæotomus pileatus pileatus*)

Whenever this species is reported as becoming rare let the reported reporter visit Arkansas. The writer will be glad to show even the man from Missouri. In nearly every heavily timbered section of Arkansas this magnificent species is to be found, and it is not nearly as difficult to observe as the supposedly commoner Hairy Woodpecker. The nesting sites of this species are not so difficult to find, but the birds are gifted in the selection of situations which are ideally inaccessible. For the most part this is a huge "snag" or deadened tree, which cannot be climbed, and which will likely fall before the summer is over.

Six nests have been visited this year (1922) from all of which sets have been collected. One of them contained three eggs, three of them four eggs, and one of them five eggs. In last season's takes there was also a clutch of five. These have been collected from Yell, Pope, Sebastian, and Faulkner Counties.

This bird, often designated by the natives as the "Indian Hen," is now seldom shot for its plumage, and it has learned to be wary of the man with a gun. We have heard the name "Wood-chuck" applied to it, and even more frequently, both in Alabama and Arkansas, the title, "Lord God." It is a mighty "excavator," the entrance to most nests is not only large, but the cavity beneath is deep and very ample.

RED-HEADED WOODPECKER (*Melanerpes erythrocephalus*)

This species, as might be expected, is distributed over the entire state. We have found it abundant in almost every county visited, there being apparently one exception. But while formerly common in Pope County and in all the lower foothills along the mountain streams it does not now seem able to maintain itself in these situations. Not a single bird was observed in a wide belt of country lying north of the Arkansas River and extending through the interior of Pope and adjacent counties. Is the Red-headed Woodpecker becoming a town bird? His favorite

nesting site is a telephone pole or suitably deadened timber in the open fields. He clings tenaciously to a chosen locality, and does not seriously object to association with the English Sparrow who may have taken lodging in an older nest in his "own" pole. The Red-headed Woodpecker generally lays a clutch of five eggs, though rarely six may be taken.

RED-BELLIED WOODPECKER (*Centurus carolinus*)

This beautiful species is common to all the regions visited in Arkansas, but it can hardly be said to be as sociable as it is reported to be. Somewhat inaccessible nesting sites are frequently chosen, and he is still a lover of the deep woods. One nest from which a full set of four eggs was taken was fully seventy feet from the ground, in the dead limb of an immense Post Oak. Five eggs of this species must be considered unusual. The note of this Woodpecker is less harsh than that of the Red-headed but cannot be mistaken even at a distance when one is familiar with it.

CHUCK-WILL'S-WIDOW (*Antrostomus carolinensis*)

This is the most abundant "goatsucker" in Arkansas, and quite generally distributed. It is especially abundant in the lower foothills of the Ozarks. I have found it very common along the Ouachita river in Garland and Hot Spring counties and especially so in Pope county along Big Piney creek. I have collected the eggs of the Chuck-will's-widow at Fayetteville in Washington county, near Conway in Faulkner county, near London in Pope county, and they have been collected near Van Buren and Fort Smith in Sebastian and Franklin counties.

WHIP-POOR-WILL (*Antrostomus vociferus*)

The area to which this species has been restricted must now be greatly extended. A set of eggs was taken this year on Big Piney creek, seven miles west of Dover in Pope county, on May 19th of this year. A splendid photograph of this nest was secured. Though much rarer than its larger cousin it can also be found in all the foothills of the Ozarkian uplift, and doubtless will be reported from the tier of counties along the western border of the state, well down to the Texas line.

RUBY-THROATED HUMMINGBIRD (*Archilochus colubris*)

It has been my good fortune to locate many nests of this little Hummer this season. The behavior of the female will

invariably betray her home. It is easier still to locate the "house" if the birds are building, as in the case of the Blue-gray Gnatcatcher, for the birds keep their territory pretty well cleared of intruding visitors. On one occasion the female Ruby-throat left her nest repeatedly to torment a family of Carolina Wrens, and to pay her respects to a Tufted Titmouse. Otherwise I think I should have never located the tiny nest situated 50 feet above ground, and so thoroughly concealed from view.

With us it would seem that the nesting site most preferred is one over-arched by some large protecting limb, and below the nest there is generally another heavy limb which makes concealment the more complete. The nest is thus placed on a limb protected from the sun above, and observation below, and singularly enough these protecting limbs are such that the wind seldom lashes them against the limb on which the nest is saddled.

SCISSOR-TAILED FLYCATCHER (*Muscivora forficata*)

This species can now be definitely reported as a rather common Summer resident in Western Arkansas. However its range is limited to the small prairies of Sebastian and Crawford counties, and parts of Franklin county. It has not failed to nest almost in the heart of Fort Smith for many years, and it was my good fortune to observe several pairs of these birds on the edge of the city during the week of August 13-19, 1922. Whether the bird has established itself further inland along the western tier of counties is not yet known, but it is certainly not found north of Fort Smith.

(To be concluded in March Bulletin)

THE WILSON BULLETIN

Published at Oberlin, Ohio, by the Wilson Ornithological Club.

Official Organ of the Wilson Ornithological Club and the Nebraska Ornithological Union (in affiliation).

Price in the United States, Canada and Mexico, \$1.50 a year, 50c a number, post paid. Price in all countries in the International Union, \$2.00 a year, 60c a number. Subscriptions should be sent to Geo. L. Fordyce, Youngstown, Ohio.

EDITORIAL

The editor cannot allow the opportunity to pass without expressing his sincere appreciation to our retiring Secretary and Treasurer for the aid they have given him in the editorial work. It has not been merely moral support, but real support in the various functions that make up the work of manufacturing a journal like ours. The Club sustains a genuine loss because they do not feel that they can continue to serve us in this capacity. They have earned a rest. Of course the activities of these two officers have not been limited to the aid given to the editor. The greatly increased membership of the Club, its improved financial condition, and its morale are largely due to their efforts in behalf of the Club. And to the new officers we extend a most hearty welcome. From what we know of them they are worthy successors of two whom it will not be easy to equal.

Our studies of the birds in the winter season have led us to the belief that at this time many birds are rather narrowly limited in their range. Whether this is true of individuals or not can only be accurately determined by banding operations. At this season there is so much danger that a bird confined in a trap for long will either be chilled or frozen, that it seems that the drop-trap is the only sort to use. That is, a drop-trap that is sprung by the person who is watching it. Of course it can be used about the home grounds, but this does not at all meet the need that I am thinking about, although it will accomplish certain results that are valuable. May there be somebody who can go out to where the birds live during the winter, set their drop-traps there, and learn from these operations just what occurs on the outside? That this is a very much needed work no one can question. We would like to see it done. If somebody will volunteer to lift the editorial burden and carry it, we would agree, with keen anticipations, to do some of this sort of banding hereabouts.

BIRD BANDING DEPARTMENT

Under the Direction of Wm. I. Lyon, Waukegan, Ill.

Following is a copy of the minutes of the first activities of the Inland Bird Banding Association.

October 23, 1922.

During the past year I have been corresponding with the Biological Survey in regard to forming a Bird Banding Association in the Mississippi Valley or the Central part of the United States and Canada.

In anticipation of forming such an organization I have written over 100 letters, and have induced at least twenty-five persons to take up bird banding.

As time advanced the logical place to form such Association seemed to be the A. O. U. convention, so I interested Mr. P. B. Coffin, President of the Chicago Ornithological Society to name a committee to promote a dinner for that purpose.

I had letters printed and mailed to about 75 persons who would be interested. I received answers and enough verbal acceptances from the announcement at the A. O. U. meeting so that when dinner time came, 52 were assembled at our first dinner, held at the City Club of Chicago, who signed as follows:—

S. Prentiss Baldwin, Cleveland, Ohio.
 Leon J. Cole, Madison, Wis.
 Mr. and Mrs. Wm. I. Lyon, Waukegan, Illinois.
 Herbert L. Stoddard, Milwaukee, Wis.
 Mrs. Cosie Clark Miller, Racine, Wis.
 Dr. Frederick C. Test, Chicago, Ill.
 P. B. Coffin, Chicago, Ill.
 Henry B. Ward, Urbana, Ill.
 Arthur D. Moore, South Haven, Mich.
 Mrs. Ethel M. Towns, Milwaukee, Wis.
 F. W. Rapp, Vicksburg, Mich.
 Lucy V. Baxter Coffin, Chicago, Ill.
 Harry C. Oberholser, Washington, D. C.
 Frederick C. Lincoln, Washington, D. C.
 Walter B. Barrows, East Lansing, Mich.
 Amos W. Butler, Indianapolis, Ind.
 Myron H. Swenk, Lincoln, Neb.
 A. F. Ganier, Nashville, Tenn.
 T. C. Stephens, Sioux City, Iowa.
 T. L. Hankinson, Ypsilanti, Mich.
 E. H. Forbush, Boston, Mass.
 Lynds Jones, Oberlin, Ohio.
 Althea R. Sherman, National, via McGregor, Ia.
 Dr. W. H. Bergtold, Denver, Colo.
 Theodore G. Ahrens, Ph.D., Baltimore, Ohio.
 Dr. Wm. C. Herman, Cincinnati, Ohio.

Mrs. Wm. C. Herman, Cincinnati, Ohio.
Henry H. Covell, M.D., Rochester, N. Y.
Geo. Finlay Simmons, Austin, Texas.
Mrs. Alice B. Harrington, Boston, Mass.
Dr. A. H. Cordier, Kansas City, Mo.
Mr. and Mrs. Herbert W. Brandt, Cleveland, Ohio.
Miss Katherine McGregor, Cleveland, Ohio.
Edward F. Ford, Grand Rapids, Mich.
Arthur A. Allen, Ithaca, N. Y.
E. J. Sawyer, Syracuse, N. Y.
C. A. Mitchell, Riverside, Ill.
Mrs. H. J. Taylor, Sioux City, Iowa.
Margaret M. Nice, Norman, Okla.
Mrs. C. H. Gleason, Grand Rapids, Mich.
John F. McBride, Chicago, Ill.
Mrs. William M. Levey, Brookline, Mass.
Francis H. Herrick, Cleveland, Ohio.
Cheswell J. Hunt, Chicago, Ill.
Harry Harris, Kansas City, Mo.
Dix Teachenor, Kansas City, Mo.
Alfred Lewy, Chicago, Ill.
C. W. G. Eifrig, Oak Park, Ill.
Flora S. Richardson (Mrs.), Chicago, Ill.
W. D. Richardson, Chicago, Ill.

October 24th, 1922.

After the dinner was over, the members of the Wilson Ornithological Club adjourned to the adjoining room for their annual business meeting, and the remainder were called to order by Mr. Percival Brooks Coffin, who extended a welcome to all present, then turned the meeting over to William I. Lyon, who stated the purpose of the meeting, then called on Dr. Harry C. Oberholser who gave the Biological Survey position on banding.

Then Mr. S. Prentiss Baldwin explained the origin of trapping.

Mr. Frederick C. Lincoln explained the present banding situation.

Dr. Leon J. Cole, First President of the American Bird Banding Association gave some early history.

Dr. Frederick C. Test told of interesting Boy Scout Masters.

Dr. Lynds Jones spoke on publicity.

Edward H. Forbush, President of the New England Bird Banding Association, explained their progress.

The Chairman called for suggestions for organizing, and on motion, appointed the following nominating committee: Dr. Harry C. Oberholser, Percival Brooks Coffin, Frederick C. Lincoln, who adjourned to an adjoining room, and soon brought in the following nominations:—

President—S. Prentiss Baldwin, Cleveland, Ohio.

Vice-President—Dr. Leon J. Cole, Madison, Wis.

Secretary—William I. Lyon, Waukegan, Ill.

Treasurer—Herbert L. Stoddard, Milwaukee, Wis.

For Councilors—M. J. Magee, Mrs. H. C. Miller, P. B. Coffin, Dr. F. C. Test, Dr. H. B. Ward.

It was moved that those assembled proceed with election, and the entire ticket was unanimously elected by acclamation.

The newly elected President, S. Prentiss Baldwin, took the chair.

It was moved and seconded that the dues should be \$1.00 a year, and that the constitution and by-laws be left for a committee to form. Carried.

A number of those present signed as members.

Then followed a general open discussion on Bird Banding until the meeting closed.

October 25th, 1922.

A directors meeting of the officers was called by the President during the noon recess of the A. O. U. Convention.

Present were Baldwin, Cole, Lyon, Stoddard, Mrs. Miller, Coffin, Test, and Ward.

Inland Bird Banding Association was adopted as the name of the organization.

The Secretary was authorized to purchase stationary and such other supplies as needed.

Methods of arranging funds were discussed, also plans for the future.

Wednesday evening at the banquet, the Bird Banders were again much pleased to find more evidence of their popularity in that wonderful occasional journal, *The Auklet*. On page 13, under New England Migration notes, they accuse Forbush of changing his motto to "A bird without a band is worth nothing in the bush."

On page 15 there appeared the following interesting news item — "Bandmaster Baldwin is said to be Lyon low Forbushes in which Lincoln's Sparrows may be trapped."

INTRODUCTION TO THE OFFICERS OF THE INLAND BIRD BANDING ASSOCIATION

President,—

Mr. S. Prentiss Baldwin, the Williamson Bldg., Cleveland, Ohio. Mr. Baldwin needs no introduction to those who are interested in birds, as his name will go down in history as the man who proved that systematic trapping would bring the best results in Bird banding.

Vice-President,—

Dr. Leon J. Cole, University of Wisconsin, Madison, Wis. Dr. Cole is in charge of the Department of Genetics of the University of Wisconsin. He was the first president of the American Bird Banding Association, and his pioneer work is too well known for further comment.

Secretary,—

Mr. William I. Lyon, 124 Washington Street, Waukegan, Ill. Mr. Lyon is a real estate broker. He was one of the main promoters of

this organization, has invented new forms of successful traps, and holds the world's record for handling birds in the past year.

Treasurer,—

Mr. Herbert L. Stoddard, Public Museum, Milwaukee, Wis. Mr. Stoddard is connected with the Public Museum of Milwaukee. He was formerly with the Field Museum of Chicago, is one of the most active and best bird men of this district, and recently placed over two hundred bands on young Gannets at Bonaventure Island.

The Councilors,—

Mr. M. J. Magee, Sault Ste Marie, Mich. Mr. Magee is vice-president of the Sault Savings Bank, a leader of the bird work in his city, and his work with the Evening Grosbeaks is well known.

Mrs. H. C. Miller, 1110 Main Street, Racine, Wis. Mrs. Miller was formerly an active worker in the Massachusetts Audubon Society and the Brookline Bird Club, is now one of the leaders of Racine Bird and Nature Club.

Mrs. Miller is doing active work to secure more members for the Inland Bird Banding Association along Lake Michigan.

Percival Brooks Coffin, 39 South LaSalle Street, Chicago, Ill. Mr. Coffin is a Bond Broker and President of the Chicago Ornithological Society and a leader in all bird work about Chicago.

Dr. F. C. Test, 30 North Michigan Avenue, Chicago, Ill. Dr. Test is a Physician, and Vice-President of the Chicago Ornithological Society. Dr. Test has been very active in inducing people to become interested in Bird Banding.

Dr. H. B. Ward, University of Illinois, Urbana, Ill. Dr. Ward is the head of the Department of Zoölogy in University of Illinois. He spent the summer of 1922 in Yellowstone National Park placing bands and making observations on Pelicans.

GRACKLES ATTACK JUNCO

On November 22, there were about two hundred Bronzed Grackles that stopped for rest in their migration in our yard while we were doing our morning trapping. A Junco had been trapped in one of the flat traps, and was hopping about trying to find an opening, when suddenly a Grackle made a dive from a nearby tree and tried his best to catch the Junco; then more followed until there were about twenty-five on the trap, all trying hard to catch the one poor little Junco. One of the Grackles was successful in pulling out some of its feathers just as reinforcements arrived in the shape of a club thrown at the flock.

We believe if they had not been noticed they would have killed the Junco, as it was becoming tired from the constant dodging, and surely the Grackles tried hard enough.

During the nesting season this year the Grackles spoiled nearly all the eggs of the Robins in our yard.

WM. I. LYON.

BIRD CHARACTERS AND DISPOSITIONS

In the March issue of this Bulletin you were told about the White-throated Sparrows of 1921. This fall has brought some additional facts that are worth mentioning.

Number 17042 has shown an unusual disposition for tameness, and simply squats down and lets you pick it up to read its number, and is very quiet all the time it is held in the hand. Recently, when released from the trap she flew to a bush within six feet of the trap and stayed there quietly and watched while four new birds were taken out of the trap and banded, then, with a few twittering notes, flew to the ground in search of more food.

Number 17070 is a fighter of unusual ability and proclaims it in a very loud voice. As soon as the hand is put into the trap he starts his challenging, and when the hand gets near he advances to attack, and springs on the hand, pecking with all his might, and never gives up a single instant while being examined in the hand, and after release flies to the nearest branch to sulk and scold.

The White-throats are acting just the same as last year; about a dozen staying around like regular boarders, and we expect we will have to feed them until a good storm comes and moves them southward.

OWL KIDNAPS YOUNG FLICKERS

A pair of Flickers made a hole in a dead tree close to our house, and on June 20, 1920, the three young Flickers that were raised there were banded. During the following winter the squirrels enlarged the hole and filled it with leaves. The next Spring a pair of Flickers came to the same hole and scolded for a while, then started a new hole about five feet lower down the tree. By making a folding perch just below the hole, they were trapped and banded as a mated pair, and on June 2, 1921, their four young were also banded.

In 1922 the Flickers came there about the middle of April and scolded as before, but finally started a new hole a little to one side of the tree, and about an equal distance from each of the old holes.

On May 2nd a Blue Jay was observed making considerable fuss about the lower hole, which aroused suspicions, and with the aid of a ladder we reached the hole, and found a Screech Owl there. On removal we discovered she was sitting on five eggs which were all pipped ready to hatch, but fearing she would interfere with our Flicker family, we robbed the nest, banded the Owl and took her quite a distance from the tree before releasing her.

We had to be absent from home for about four weeks, and soon after our return we were ready to band the Flickers. We had observed that the old female wore a band but could not capture her to get the number, but the male kept his legs so well covered we were unable to see if he was banded.

On June 11th we started to band the young Flickers. Before we got our ladder, we watched the old Flickers feeding the young, and observed that the young were so old that the old birds did not enter

the nest, just going to the hole and calling the young up for food, so there was no chance of capturing the old birds to see their numbers, so we climbed the ladder, and as we passed the lower hole, noticed four owl eggs, of a second sitting, were in the hole, but all broken.

It was necessary to saw out a piece of the tree to get our hand into the hole, and as we opened the hole, out came an owl. We were surprised and annoyed, and took out the four young Flickers and examined them very carefully, but they were not harmed in any way, so they were banded and replaced in the nest. Our curiosity was aroused about the owl. The next morning, the 12th, we watched the old Flickers feeding the same as ever, but finally decided to see if the owl was around. On reaching in the hole there was the owl, and we promptly threw her out. On examining the young Flickers, found they were unharmed. On the 13th, everything happened just the same as on the 12th. On the 14th the same thing was repeated, but on examining the young Flickers we found about half of some small bird which apparently the owl had attempted to feed the young Flickers, and after putting the young back in the nest they were so far advanced that two objected to such treatment, and left the nest.

On the 15th the old Flickers were feeding the same as ever, and investigation showed the old Owl still brooding the young Flickers, but the remaining two also objected to the irregularities, and left. For the next ten days we looked into all the holes, but the owl and the Flickers had all left. We have examined the holes occasionally since then, but have not found a trace of the Owl.

In our experience with animals we have known cats and dogs taking other young when their own had been taken away from them, and have known chickens to hover most anything they could find, but this was the first experience with wild birds. W. I. LYON.

WOODPECKERS SLEEP SOUNDLY

While banding birds there are many opportunities to study their habits. One interesting fact has developed from keeping birds indoors at night. In the shorter days of the winter months we are unable to be home before dark, but must visit the traps as soon as possible, for leaving birds in traps all night invites many disasters from storms, cats, rats, weasels, owls, etc.

On such nights, when the birds have been gathered from the traps and taken to the house to read the numbers of repeats, and band the new ones, it would be cruel to turn them out into the dark when they cannot find a roost, so they are sorted, separating the sizes to prevent fights and crowding in the small cages. On such occasions the birds are kept in our basement, where it is cool, and when we have occasion to go to the basement later, on turning on the lights, the Sparrows and Finches are always awake in an instant, but the Downy Woodpeckers all seem to sleep so soundly that we have walked past them to the next room, shaken the furnace, put the coal in, then pass them again without their awakening. It aroused our curiosity and we watched them very carefully, and they slept soundly.

Brown Creepers are even better sleepers than the Downys, and can be touched lightly without awakening them.

One or two cases of the Red-headed Woodpecker showed the same tendency. The White-breasted Nuthatch is another sound sleeper, but the Chickadee outdoes them all, and when they are touched to awaken them, they are generally mad and most of them scold.

Lately we had two Hairy Woodpeckers, and we watched them very closely, to see what they would do, but could not catch them, even asleep.

We had a few Flickers, but they were not sound sleepers, and the one Yellow-bellied Sapsucker that was trapped, slept through having the lights turned on in the room near his cage.

These observations make us believe that the birds that sleep in protected places sleep more soundly than those that perch in the more open places.

HOW FAR DO BIRDS GO WHEN THEY FLY SOUTH?

The marking of migratory water-fowl, as practiced by the collaborators of the Biological Survey, United States Department of Agriculture, has given evidence that it will be a most interesting and important investigation. Although the work has been in progress for only two years, notable results have already been secured.

The ducks and other birds, whose movements are being studied by this method, are caught, mainly by the use of special traps, light aluminum bands placed on one leg, and then released. Every band bears a serial number and the legend, "Biol. Surv., Wash., D. C." In the Washington office of the Biological Survey, these banded birds are card indexed so that when a hunter secures a duck bearing one of these bands and reports the data connected with its capture, by referring to the card file, the route covered by the bird in question can be easily ascertained. When such records are received, the hunter is advised where the bird was banded, while the person who attached the band is informed where it was secured.

During the fall shooting seasons for the last few years, a large number of mallards and black ducks, with a few blue-winged teal and other species, have been banded at a small lake about twenty miles north of Toronto, Ontario, and many interesting returns have been received.

Long Range Record

The best "long range" record for these Canadian ducks is that of a blue-winged teal, banded September 24, 1920, and killed two months and seven days later, in the Caroni Swamp, near Port of Spain, on the island of Trinidad, just off the coast of Venezuela. The shortest flight that this bird could have made would be over 3,000 miles. It is a well-known fact that blue-winged teals and certain other ducks that breed in North America spend the winter season in South America, but it was rather a surprise to learn that those individuals that had bred in Canada would make the long flight to South America, because the species also winters in small numbers in the Gulf region, and it is to that area that the more northern birds might be expected to go.

The return records of ducks of other species, banded near Toronto,

have afforded valuable data relative to their migration. The lake where the banding was done, Lake Scugog, is surrounded by marshes and thus offers excellent opportunities for the ducks to feed and rest before starting the long flight to the south. The trapping and banding was carried on continuously through the autumn, so that by the time the big southward movement began several hundred birds had been marked. At this time the season was open from the Great Lakes to the Gulf of Mexico and the migrating birds had to run a veritable gauntlet of sportsmen. A large number of "return records" were therefore received.

Mallards and Black Ducks

In tracing the route of these birds it seemed apparent that the mallards and black ducks traveled together and their course from Lake Scugog was southwestward along the shores of Lake Erie by way of the St. Clair flats. Here the route divided, the majority continuing toward the southwest, cross-country to the Ohio River, hence to the Mississippi Valley, where many of them spent the winter. The second group, that parted from their fellows in the vicinity of Lake Erie, took a southeasterly route, crossing the Alleghenies and reaching the Atlantic coast by way of Chesapeake and Delaware Bays. It is interesting to note that although both of these ducks are present and the black duck is plentiful along the coast of New England, none of the birds marked at Lake Scugog were taken in that region. The question that naturally arises is: Where do those ducks come from? So far we only know that some breed in that area, but we do not know just where the migrating birds come from that use that route. Bird banding will probably supply the answer when it has been applied more intensively at a larger number of stations.

U. S. BIOL. SURV.

FIELD NOTES

NOTES FROM SOUTH ALABAMA

During the four months which I spent near Silver Hill, in South Alabama, I devoted my free time to the study of birds. The country is not thickly populated and is mostly covered with pine forests. There are many creeks and swamps with luxuriant vegetation. Silver Hill is about 12 miles from the gulf of Mexico.

The birds I found in the radius of about three miles from my home are:

Bittern (*Botaurus lentiginosus*). Only a pair migrating through.

Green Heron (*Butorides virescens virescens*). At a creek.

Wilson's Snipe (*Gallinago delicata*). Abundant, especially when migrating.

Bob-white (*Colinus virginianus*). Common. In flocks till end of April.

Mourning Dove (*Zenaidura macroura carolinensis*). Abundant. Did great damage in March destroying cucumber seeds and young plants. (Cucumbers are raised here on a large scale.)

Turkey Vulture (*Carthartes aura septentrionalis*).

Black Vulture (*Catharista nrbu*). Both common.

Marsh Hawk (*Circus hudsonicus*). Not abundant.

Sharp-shinned Hawk (*Accipiter velox*).

Sparrow Hawk (*Falco sparverius sparverius*).

Pileated Woodpecker (*Ceophloeus pileatus*). Rare.

Southern Hairy Woodpecker (*Dryobates villosus auduboni*). Not abundant.

Red-headed Woodpecker (*Melanerpes erythrocephalus*). Most common of all woodpeckers.

Red-bellied Woodpecker (*Centurus carolinus*).

Southern Flicker (*Colaptes auratus*).

Florida Nighthawk (*Chordeiles minor chapmani*). Very abundant.

Ruby-throated Hummingbird (*Archilochus colubris*). Rare.

Kingbird (*Tyrannus tyrannus*). The first was seen on March 27. Abundant.

Crested Flycatcher (*Myiarchus crinitus*). The first came on April 16.

Phoebe (*Sayornis phoebe*). Only migrating through.

Florida Blue Jay (*Cyanocitta cristata florincola*).

Crow (*Corvus brachyrhynchos brachyrhynchos*). Not abundant.

Southern Meadowlark (*Sturnella magna argutula*).

Orchard Oriole (*Icterus spurius*). Not rare in orchards. Is building his nest in the middle of April.

Florida Grackle (*Quiscalus quiscula quiscula*). In swamps.

Chipping Sparrow (*Spizella passerina passerina*). Only migrating.

Towhee (*Pipilo erythrophthalmus*). Only when migrating.

Cardinal (*Cardinalis cardinalis cardinalis*). Frequent, especially near swamps and creeks.

Purple Martin (*Progne subis subis*). Arrived in the first half of March.

Tree Swallow (*Iridoprocne bicolor*). Only migrating.

Loggerhead Shrike (*Lanius ludovicianus ludovicianus*). Very abundant.

Warbling Vireo (*Vireo griseus griseus*).

Prothonotary Warbler (*Protonotaria citrea*). On bushes at a creek.

Myrtle Warbler (*Dendroica coronata*). In winter.

Mockingbird (*Mimus polyglottos polyglottos*). Very abundant. The young ones leave the nest before middle May.

Catbird (*Dumetella carolinensis*). Rare.

Brown Thrasher (*Toxostoma rufum*).

Brown-headed Nuthatch (*Sitta pusilla*). Breeds from the end of March.

Blue-gray Gnatcatcher (*Poliophtila caerulea*). At a creek in the shrubs.

Robin (*Planesticus migratorius*). Abundant in winter.

Bluebird (*Sialia sialis sialis*). They nest in the second half of February.

GEORGE BAUM.

FIRES IN TIMBER DESTROY MUCH VALUABLE WILD LIFE

The conservation of forested areas and particularly their protection from fire must go hand in hand with the conservation of most game, in the opinion of the Biological Survey of the United States Department of Agriculture. Shelter and food are necessities in the lives of the majority of animals and birds. Decrease one or both of these vital elements, which are supplied to a large degree in our forests, and the numbers of valuable wild creatures are correspondingly diminished.

Forest fires not only destroy the forest but eliminate the necessary food and shelter. The belief that burning over in certain localities is beneficial because it promotes a new growth of grass, ignores the fact that the grass thus obtained does not compensate for the destruction of trees and the shelter and food required by animals. Partridges in particular suffer from forest or brush fires. When their favorite places are burned over and their food and shelter are gone they are obliged to seek new localities and face new dangers.

Indiscriminate setting of spring fires in the southern states dislodges deer, opossums, raccoons, foxes, squirrels, rabbits, and other animals and endangers ground-nesting of birds in the timber, such as the woodcock, pheasants, wild turkey, and whip-poor-will. The woodcock is in some danger of extermination at the present time and deserves all possible protection. In seasons of drought, forest fires even invade marshy places and drive out fur-bearing animals as well as waterfowl and shorebirds. Many think that burning results merely in temporary inconvenience to the game, and may not realize that the food of many birds is largely the seeds and berries of the year before. Burning the brush also eliminates for months all shelter from natural enemies.

Burning of the ground cover in forests of longleaf and shortleaf pines kills the young trees as they emerge and results in thin, straggling growth. The burning of timber and other ground cover which should absorb and retain moistures also accelerates the run-off and af-

fects the stream flow at different seasons to such an extent that the supply of fish may be materially decreased.

During forest fires, game and other wild animals may be surrounded by flames and killed outright. If they succeed in escaping to adjoining areas they come into direct competition for food and shelter with the game already on that area and the chances of survival are lessened for all.

U. S. BIOL. SURV.

NIGHTHAWK MIGRATION NOTES

A decade ago the Nighthawk was a common summer resident in this part of Iowa. It returned in numbers each spring and made the Iowa environment its summer home; when it remigrated southward in the fall its ranks had been enlarged by many individuals—a result of safe nesting grounds to be found here. Without the sight of this graceful, long-winged bird, widely circling the sky in its erratic flight maneuvers, and producing the well-known sound so aptly described as tearing a piece of cloth, the calm summer evenings would have lacked a certain amount of charm that the regular evening nature chorus did not contain, however varied and interesting the latter might be. For years the Nighthawk added an important bit to the associations of city and rural life.

Now it is changed. The Nighthawk is no longer a summer neighbor and is surely missed. While it is true that a few Nighthawks are still summer residents here, the cases are isolated, and the bird can be classed only as a rare summer resident. The reason for this evidently cannot be laid to decrease in numbers of the species, but to a change in nesting grounds, which has perhaps been forced by the growing practice of the over-industrious farmer of turning every available acre of pasture or other semi-waste land into tillable soil to increase his own profits. Their natural nesting grounds become scarcer every year.

While it is apparent that the Nighthawk has appreciably decreased in many parts of the United States, it is not probable that it will ever become extinct, or perhaps any less abundant than at the present time. It seems to be very erratic in migration and choice of nesting grounds, sometimes being unusually abundant at a certain place for a time, then suddenly disappearing almost entirely for several seasons, as seems to be the case in my region.

Being especially interested in this subject, I have kept yearly records since 1919, and these show that the bird does not stop here to breed, probably going farther north, because it passes through in numbers in the fall migration and is not present in the summer. These records, given in part below, pertain to Buchanan County, with the exception of the 1919 Cedar Rapids record.

My 1919 list contains but three records of the bird. The first date is May 25, when a lone bird was noted at Cedar Rapids, Iowa; the others were August 23, two birds, and August 28, a flock of 25 (approximately).

In 1920 the Nighthawk was noted only three times, as follows: May 10, 1; August 30, several; September 12, 1.

The next season, 1921, the Nighthawk made a much larger represen-

tation on my records, nearly 100 birds being seen, and these on twelve dates. The first date was May 22, the last September 19, but none were seen during the period from June 12 to August 21, which includes the season for rearing their young. All but fifteen of the birds were seen after August 21.

My this year's record is much larger than that of 1921 and, judging from the size of the fall migration, the species is increasing its numbers rapidly. I made twenty-two records of the bird from May 19 to September 9; four of these dates were for spring migration, two for summer residents, and the remainder for fall migration. Roughly counting, there were 385 birds in all.

On the evenings of June 19 and July 2 (1922), while driving in Independence, Iowa, I saw one or two Nighthawks, but aside from these I made no other summer records for this county. I might add that on the evening of July 4 I noted several of the birds maneuvering in the air above the fairgrounds at Manchester, the county seat of an adjoining county. It was good to hear them again, even though it was above the clamor of a vigorous Iowa Fourth of July celebration. On August 21 the bird made its reappearance and was seen, in varying numbers, every day with three exceptions from then to September 9. During this period 372 birds were seen, according to my daily records. Owing to inaccuracies in counting or estimating the larger flocks, this figure represents only the approximate number. Their usual daily number varied from 3 to 20, although on September 1 about 45 were seen, and September 9—the last day—about 200 passed southward. These birds were all silent and, while most of them seemed to be proceeding in rather a leisurely fashion, some appeared to hunt in one vicinity for several days. Regarding the last day's migration (September 9), I take this excerpt from my journal: "It was cloudy all afternoon, with the clouds growing darker and heavier along toward evening, and at this time the Nighthawks were first seen. In all directions they were to be seen, some in rather large flock formations and others trailing along by themselves or far from a flock. Many were so high in the air that they looked more like specks than birds, and all seemed to be hunting food in a leisurely and not directed manner. It is very hard to estimate so many scattered individuals, but after surveying the locality I decided that 200 would be a conservative estimate. About 5:00 it began raining and many Nighthawks could be seen flying about high in the air in the rain."

A little over a year ago I raised the question of whether or not the Nighthawk was decreasing.* A number of people responded and each expressed the belief that the species had been declining rapidly and was becoming scarce in his or her particular region. Data were received from the following places: Hampton Falls, N. H.; Cincinnatus and Collins, N. Y.; Cambridge, Md.; Elkader and Nashua, Iowa; Carrington, N. Dak.; Edgewood, Lower Arrow Lake, British Columbia. I am much interested in this subject and any further information relative to the migratory movements and status of this wandering species will be gratefully received.

FRED J. PIERCE.

Winthrop, Iowa, September, 1922.

* *Bird-Lore*, Vol. 23, No. 4, July-August, 1921, p. 197.

FURTHER ROADSIDE CENSUSES IN OKLAHOMA

On May 20, 1921, and on seven days between May 29 and July 9, 1922, we have taken nearly 400 additional miles of "Roadside Censuses" in Oklahoma; since this makes us over 1000 miles of such counts in this state during the breeding seasons of the last three years it seemed well to compare these new censuses with those taken in 1920* and to summarize the results. One hundred miles of these censuses were taken in the Panhandle—Texas and Cimarron Counties—on May 29, 1922, while the rest were taken in central Oklahoma extending southwest to Comanche County and north to Kingfisher County. All the region traversed was prairie and farm land.

The accompanying table gives the average number of native birds seen per mile in 1920, in 1921-22, and in all three years under differing conditions of weather and time of day. Our later results are much the same as the first; there are slightly more birds under each category except among those seen at noon. Thus we find after 1166 miles of Roadside Census during the breeding season in Oklahoma an average of five birds per mile during all weathers and at all times of day; of 6.4 in the cool of the day, and 3.8 in the heat of the day.

NUMBERS OF NATIVE BIRDS SEEN ON ROADSIDE CENSUSES IN OKLAHOMA

Weather	Time	1920		1921-22		Total	
		Miles	Av. No. of Birds Seen per Mile	Miles	Av. No. of Birds Seen per Mile	Miles	Av. No. of Birds Seen per Mile
Pleasant	All Times	780	4.8	386	5.3	1166	5.0
Pleasant	All Times	696	5.2	336	5.9	1032	5.3
Rainy	All Times	84	1.4	50	2.8	134	2.5
Pleasant	Early Morning or Late Afternoon	395	6.2	241	6.8	636	6.4
Pleasant	at or Near Noon	301	3.9	95	2.9	396	3.8

As to the kinds of birds, the most widely distributed and most abundant in the total counts are in general the same as in 1920; yet the far western trips show an influence in the greater importance of Lark Sparrows and especially of Horned Larks. Of the nine most widely distributed birds in the first censuses and the total censuses eight are the same; Horned Larks take the place of Red-headed Woodpeckers when all the results are considered. The birds that were seen on half or more of the 65 censuses follow — the figures showing the number of censuses in which each kind was recorded: Mourning Dove, 58; Mockingbird, 54; Dickcissel, 49; Lark Sparrow, 46; Eastern Kingbird, 43; Bobwhite, 37; Bluebird, 36; Meadowlark (Eastern and Western), 35; and Horned Lark, 32.

In regard to total abundance, the nine commonest birds of the first 780 miles are still the most abundant after 1166 miles, although there is some shifting of relative abundance. The total numbers counted were as follows: Dickcissel, 999; Mourning Doves, 614; Horned Larks, 542;

* Wilson Bulletin, XXXIII, 3, 1921, pp. 113-123, 4, pp. 194-195.

Mockingbirds, 328; Meadowlarks, 328; Lark Sparrows, 268; Bluebirds, 216; Scissors-tailed Flycatchers, 179; and Kingbirds, 151.

Two thousand and fifty-five English Sparrows were seen on these censuses, an average of nearly two a mile; this is 26 per cent of all the birds seen and twice as many as the most abundant native bird—the Dickcissel.

MARGARET M. NICE AND L. B. NICE.

Norman, Oklahoma.

THE FISH CROW IN ARKANSAS

So far as the writer has been able to learn the Fish Crow (*Corvus ossifragus*) has never been reported from Arkansas. It would seem, from rather patient inquiries and persistent observation, that it is nevertheless a common resident. My attention was first called to this fact in the summer 1921. A country lad who has shown remarkable aptitude in the study of our local bird life kept reporting to me the presence of a bird of somewhat smaller size than the crow and wanted to take me to sections of the Arkansas River flowing between Faulkner and Perry Counties where it was said to be common. During the same season a nest of this species was located in a thick woodland far from the river, and contained five eggs. In collecting them they were broken, and I did not have the opportunity of correcting my supposition that they were the eggs of the common crow.

Fishermen who live along the river had often spoken of the "jackdaws" and "magpies," but still I thought they were only confused in matter of names, and were but referring to the self-same common crow. During the present season (1922) every doubt as to the validity of this species has been set at rest. On May 13th I visited the haunts of the Fish Crow, and located a nest which had just been completed but which at this time contained no eggs. It was a rather compact structure made of sticks and twigs of the cottonwood tree, lined with leaves and rootlets of the kind preferred by our Mockingbird. This nest was well toward the top of a huge sycamore 110 feet from the ground, and the tree was growing on the bank of the Arkansas River. The prospect for my climber was none too good, but he proved his ability on this occasion, as he had done on so many others, and we were further rewarded by seeing a large number of Fish Crows searching the river sections for food.

It was the first week in June before I could revisit this nest. On June 5th both male and female were present. The female was on the nest and did not leave it until the hand of the collector was almost on her. It contained three birds, just hatched, one egg hatching, and another egg with fully developed embryo. This egg, when measured, was found to be 1.41 by 1.06 inches, and typically marked.

The nest now contained no rootlets, but was lined with a mass of sycamore balls and horse hair! It was 18 inches wide, the inside diameter being about eight inches, and was deeply cupped, a little more than four inches deep. Both birds were constantly at the tree while these investigations were going on.

Since this time the birds have been under constant observation. The

species has been located in many places along the Arkansas River, and cannot be said to be uncommon. The nests are placed high, generally in situations far more difficult than the crow, and not infrequently at a considerable distance from the water. It searches the fields for food as does the common crow, though its range generally parallels the river banks.

A singular thing occurred one day in a field some eight miles from the river. The same intrepid climber, who had become perfectly familiar with the habits of the species, was plowing in an open field and had turned up and accidentally destroyed a nest of Bob-white containing a number of eggs. Some of these he had put in his pocket, and soon after, observing a Fish Crow fly overhead, offered him an egg by tossing it in his direction. To his surprise the "crow" descended and took the egg, and several more which were offered in the same way. This lack of fearlessness, however, cannot be said to be a common trait.

Though a common species in Texas it cannot yet be reported from Oklahoma. Mr. Pemberton of Tulsa, has made most careful observations touching this point, and yet the species is persistently reported as occurring in the region about Fort Smith on the very border of the state. It can certainly be claimed for the following counties in Arkansas,—Faulkner, Perry, Pope, Yell, and Franklin, and its range will be doubtless extended to many more. It seems rather singular that neither Me-Atee nor Howell make any mention of it in their reports from Arkansas.

It is impossible to mistake the note of this bird. This has been given ample consideration by Captain Bendire in his great Monograph, and need here be only mentioned. The coarse "cau-ah" is altogether different from the "cau" of the crow, both in accent and tone, but there is a two-syllable "ah-uk," with a rising inflection, which is easy to imitate, and which will identify the bird at any time. The Fish Crow will respond to this call. It may be interesting to state that the young Fish Crows in the nest above referred to were all doing well in the latter part of August.

H. E. WHEELER.

Conway, Ark.

NOTES—HERE AND THERE

Conducted by the Secretary

Mr. B. T. Gault's new pocket Check List of the Birds of Illinois came from the press just in time for the Chicago meeting. This 80-page booklet, which is admirably arranged and durably printed, may be purchased of The Illinois Audubon Society, 10 So. LaSalle St., Chicago.

The American Association for the Advancement of Science, with which The Wilson Club is affiliated, is holding its meetings this year at Boston, December 26th to 30th. Next year The Association is scheduled to meet at Cincinnati and at Washington in 1924.

Messrs. A. C. Bent and Frank Willard spent the past spring in Arizona making field studies of the birds there. Mr. Bent secured some wonderfully fine photos as well as other material for his forthcoming volumes. Mr. Willard, who formerly lived at Tombstone, knew the ground as well as the birds. A better matched pair of field workers would be hard to find.

Among the fine paintings shown in the recent exhibition at The Field Museum was one of Canada Geese, executed with an unusually fine color effect, by Courtney Brandreth. Admirers of this picture will be interested to know that it is reproduced, in colors, in the November Country Life in America, together with several other wild fowl paintings by the same artist.

Rev. H. E. Wheeler of Conway, Ark., spent the month of July at Lake Junaluska in the high Alleghanies of western North Carolina, where he had opportunity to make some interesting studies of birds and in other branches of natural history.

The considerable amount of nature book advertising has paved the way for a new monthly journal. The Nature Magazine, of Washington, D. C., proposes to treat of all forms of natural history in a popular manner.

From Secretary Palmer, of the A. O. U., the writer is in receipt of a letter communicating a vote of thanks from that organization to The Wilson Club for the courtesies extended on the occasion of its recent meeting at Chicago. In reply we might truly say — "the pleasure was ours."

A reporter of one of the Chicago papers sat in at one of the program sessions at the Chicago meeting and, when it was over, rushed to headquarters to write up half a column to cover. The entire space was given over to the nuptial scandals Mr. Baldwin had discovered among his colony of house wrens. Such is newspaper "news value."

Mr. H. A. Brandt of Cleveland spent several weeks the past spring in Utah and collected some nice sets of the rarer birds there. Mr. Brandt makes full use of the camera and notebook and has some choice material to show for his season's work.

The writer is gathering data on the present distribution of the Swallow-tailed Kite, with a view to ascertaining how near to extinction it is. Over most of its former range it has disappeared due no doubt to the easy target it affords the gunner by reason of its unwariness. Members, who have recorded it within the past few years, will confer a favor on the writer by sending him such data as they may have.

Dr. Wilfred H. Osgood of the Field Museum, accompanied by Messrs. Colin C. Sanborn and Boardman Conover, also of that institution, sailed in November for Chile, where they will engage in collecting material for The Museum. Dr. Osgood plans to return in the spring; the others are expecting to remain for a year.

Students of birdlife, within travelling distance of our National Forests throughout the land, are finding them to be among the most desirable spots in which to spend a few days for nature study. Auto roads and trails are being developed so that change of location or environment may be readily accomplished. 156,000,000 acres are included in the 149 preserves now established. A list of the Forests may be had by writing to the U. S. Forest Service at Washington. The creation or conservation in these Forests, of lake, marsh, and swamp areas, suited to the breeding of certain birds, is a field of activity that deserves the support of organized conservationists. To all but the naturalist, there is but one thing to do to a swamp or marsh area and that is to drain it. Most of the National Forests will eventually become National Parks.

Mr. Fred C. Lincoln, of The Biological Survey, spent part of October in Southern Illinois where he had good success in trapping and banding ducks. The birds were caught in flocks, chiefly in large pen traps made of poultry netting and located in shallow water.

An excellent group photo of the Chicago meeting was taken in front of The Field Museum. The prints, which are about 6x20 inches in size, may be had for \$1.50, of Kaufman and Fabry, Photographers, 1125 South Wabash Avenue, Chicago. The writer has prepared a blueprint diagram showing the names of those appearing in the picture and will send a print to any member with his compliments.

It is with much pleasure that the retiring secretary greets his successor, in the person of Mr. Gordon Wilson of Bowling Green, Ky. The writer has the privilege of knowing him personally and has found him to be a most enthusiastic bird student and an "omnivorous" worker. As to whether or not he can lay claim to being a decendent of the famous early ornithologist, whose name honors our Club, the writer cannot say, but trusts at least that the name will prove no handicap. Our new Secretary is Professor of Literature and Language at Kentucky State Normal College.

Our new Treasurer needs no great amount of introduction to our members since he is already one of our most famous and successful bird-banders. The application he has shown in this work will serve him well in his new duties since the work of the Treasurer is no small

job. Mr. Lyon "earns his daily" by conducting a prosperous real estate business at Waukegan, Ill. Our retiring Treasurer, Mr. Fordyce, merited the well deserved resolution of thanks extended him at our recent meeting, for no one better than the Secretary knows just how much painstaking work he rendered in the discharge of his duties.

With this, your retiring Secretary lays down his pen and hands this department over to our veteran editor to maintain or abolish as he sees fit. The five years I have served The Club have brought me much pleasure and satisfaction, for the personnel of The Wilson Club is indeed a rare mixture of coöperation and good fellowship. The writer expects to improve the time, now made available, by doing some intensive ornithological work in his own state and in assisting with the furthering of the work of The Club in such ways as its officers may suggest.

A. F. G.

THE ANNUAL MEETINGS AT CHICAGO

The ninth annual meeting of The Wilson Ornithological Club was held at Chicago, Ill., on October 24th, 1922. In deference to the coincident meeting of The American Ornithologists Union, to which The Wilson Club was a joint host, the one session held was confined to the transaction of business matters and election of officers for the coming year. All program features were merged with those of The A. O. U. and every coöperation was extended to the latter body in an endeavor to make their first mid-west meeting the largest of any in its history.

The business meeting of The Wilson Club was opened with President Hankinson in the chair. The minutes of the last meeting were reported by Secretary Ganier as being published in full in the March, 1922, Wilson Bulletin. There being no corrections or additions it was moved and carried that they be accepted and adopted. A committee on nomination of officers for the coming year was named, consisting of Messrs. Stephens, Jones and Gault. The report of the President consisted of a resume of the work of The Club for the current year and suggestions for possible fields for activity during the year to come. The report of the Treasurer, being unavailable until the end of the fiscal year, was referred to The Council, to be handled at that time. The Secretary reported upon the various matters coming under his jurisdiction and presented the names of some sixty new applicants for membership. These, on motion, were referred to The Council for final handling. The Secretary also announced the resignation of Treasurer Fordyce and requested that his own resignation be accepted. After discussion a motion was offered and adopted accepting both resignations and thanking the retiring officers for the services they had rendered. Dr. Jones, Editor of The Wilson Bulletin, was called upon for a word in connection with the official organ. He called attention to the fact that for the past year The Bulletin was averaging 64 pages per number, illustrated, and that in spite of the raise in dues during the current year the continued high cost of printing would probably consume the full income from memberships and subscriptions. He made a plea for more short field notes and reviews of current publications which bear on the inland area. A motion, according Dr. Jones the thanks and appreciation of The Club for his services during the current year, was offered and adopted.

The matter of getting the official organ to more bird students in the middle west, including Boy Scout Masters, was brought up by Mr. P. B. Coffin. Mr. Stoddard suggested that a special effort should be made to get The Bulletin to all bird banders not now members. The chair appointed Messrs. Coffin, Test, Boyd, and Eifrig, a committee to consummate the suggestions.

Dr. Swenk, Secretary of the Nebraska Ornithologists Union, reported that the revised articles of affiliation between that organization and the Wilson Club had been duly signed and the matter concluded. Secretary Gainer reported that The Tennessee Ornithological Society wished to take steps to effect a similar affiliation. On motion, The Council was instructed to take up the matter with power to act.

Dr. T. C. Stephens inaugurated a discussion as to plans for holding future meetings, in which the idea was advanced that The Club should distribute its meetings throughout its territory so as to build up interest in the various sections. Following favorable comment the matter was referred to The Council for study and designation of the next meeting place.

The committee on nominations was called on to report and as a result the following officers were elected for the year 1923:

President, Thos L. Hankinson, State Normal College, Ypsilanti,, Mich.

Vice-president, Dayton Stoner, 603 Summit St., Iowa City, Iowa.

Treasurer, Wm. I. Lyon, 124 Washington St., Waukegan, Ill.

Secretary, Gordon Wilson, 1434 Chestnut St., Bowling Green, Ky.

A vote of thanks was extended Mr. P. B. Coffin for the arrangements he had made for the dinner and place of meeting at The City Club.

All business having been disposed of, the meeting adjourned sine die.

The Chicago meeting of The American Ornithologists Union was the first to be held inland by this national organization and The Wilson Club, The Field Museum, The Illinois Audubon Society, and The Chicago Ornithological Club were given the pleasure of being joint hosts to that organization. The active work of the smaller organizations during previous years was, in part at least, responsible for paving the way to a record-breaking attendance at the sessions of the A. O. U. The lecture hall of the magnificent new Field Museum of Natural History was used for the public sessions. The Museum itself with its rich collections was a source of great interest to all visitors. Dr. Osgood, Curator of the Department of Zoölogy and Chairman of the local committee, had also provided a splendid exhibition of photographs and paintings of bird-life. The three-day program was replete with interest and included some splendid photographic work both in still and motion picture. Bird-banding activities consumed the time of one morning session while the reading of the more technical papers was segregated to a separate meeting room in order that papers of more general interest could be gotten through with in the time available. Detailed discussion of the program and the subsequent trips afield are deferred to the Secretary of the A. O. U., and will doubtless be found in the next number of *The Auk*.

A feature of the Chicago meeting was the organization of The Inland Bird-banding Association, the object of which will be to further this work and enlist new interest in banding in the interior section of North America. In another column, Mr. Wm. I. Lyon, who was elected Secretary of the new organization, will have more to say of its hopes and purposes for the future.

As a whole, the Chicago gathering of bird students was a great success and with its representation from the east, south, mid-west, Pacific coast and Canada, is well deserves to go on record as the most representative and democratic meeting of ornithologists yet held in this country.

ALBERT F. GANIER,
Secretary.

INDEX TO VOL. XXXIV, 1922

- Acanthis linaria*, 157.
Accipiter atricapillus, 210.
 cooperi, 153.
 velox, 153, 234.
Actitis macularia, 136, 152.
Æchmophorus occidentalis, 132.
Agelaius gubernator californicus,
 138.
 phœniceus caurinus, 138.
 phœniceus, 157, 176.
Aix sponsa, 151.
Ammodramus savannarum australis, 158.
Anas boschas, 134.
 platyrhynchos, 151.
 rubripes, 151, 176.
 tristis, 151.
Anhinga, 96.
Anhinga anhinga, 30, 83, 96.
Autrostomus carolinensis, 223.
 vociferus, 155, 223.
Anthus rubescens, 162.
 spraguei, 194.
Aphelocoma californica, 138.
Aquila chrysaetos, 137.
Archibuteo lagopus sancti-johannis,
 153.
Archilochus colubris, 155, 223, 234.
Ardea herodias herodias, 71, 135,
 151.
 wardi, 70.
Asio flammeus, 137.
 wilsonianus, 74, 154.
Astragalinus tristis, 157.
 pallidus, 139.
Asyndesmus lewisi, 137.
Atthis morcomi, 137.
Auk, Razor-billed, 146, 180.
Baldpate, 135.
Bittern, 38, 40, 123, 135, 140, 151,
 176, 234.
 Least, 151, 176, 201.
Blackbird, Bicolored, 138.
 Brewer's, 138.
 Florida Red-winged, 88.
 Red-winged, 32, 39, 40, 43, 98,
 123, 157, 176.
 Rusty, 157.
 Yellow-headed, 71, 123, 138.
Bluebird, 34, 40, 44, 90, 92, 93, 100,
 122, 164, 235, 238.
 Mountain, 140.
Bluebill, Lesser, 123.
Bobolink, 88, 93, 123, 138, 156.
Bob-white, 31, 43, 96, 152, 234, 238,
 240.
Bœolophus bicolor, 79.
Bombycilla cedrorum, 139, 159, 176.
 garrula, 159.
Bonasa umbellus, 152.
Botaurus lentiginosus, 135, 151, 176,
 234.
Branta canadensis canadensis, 71,
 135, 151.
Bunting, Indigo, 32, 40, 98, 117,
 123, 159.
 Lazuli, 139.
 Painted, 4, 30, 32, 89.
 Snow, 44.
Buteo borealis calurus, 136.
 lineatus, 153.
 platypterus, 153.
 swainsoni, 137.
Butorides virescens, 151, 234.
Calcarius lapponicus lapponicus, 77.
 pictus, 77.
Canvas-back, 43, 135, 140.
Cardinal, 32, 44, 94, 98, 123, 178.
 Florida, 89.
Cardinalis cardinalis cardinalis, 234.
Carpodacus mexicanus frontalis,
 138.
 purpureus californicus, 138.
 purpureus, 157, 176.
Catbird, 33, 36, 39, 40, 89, 99, 122,
 162, 186, 216, 235.
Catharista urubu, 234
Cathartes aura septentrionalis, 136,
 153, 221, 234.
Centrocerus urophasianus, 136.
Centurus carolinus, 222, 234.
Ceophloeus pileatus, 234.
Certhia familiaris americana, 163.
Ceryle alcyon alcyon, 137, 154.
Chætura pelagica, 155.
Chaulelasmus streperus, 134.
Chat, Long-tailed, 139.
 Yellow-breasted, 33, 68, 82, 83,
 89, 99, 122, 162.
Chen caerulescens, 221.
Chickadee, 36, 40, 44, 92, 163, 232.
 Carolina, 29, 33, 100
 Long-tailed, 122.
Chicken, Prairie, 43, 72, 100-106.
Chondestes grammacus grammacus,
 77.
 strigatus, 139.
Chordeiles minor chapmani, 234.
 virginianus henryi, 137.
 virginianus, 155.
Chuck-wills-widow, 29, 30, 31, 88,
 97, 223.
Cinclus mexicana unicolor, 139.
Circus hudsonius, 136, 153.

- Cistothorus stellaris*, 163.
Clangula clangula americana, 151.
Coccyzus americanus, 154.
 erythrophthalmus, 154.
Colaptes auratus auratus, 234.
 luteus, 155.
 cafer collaris, 137.
Colinus virginianus virginianus,
 152, 234.
Columba domestica, 194.
Colymbus auritus, 150.
 holbœlli, 150.
 nigricollis californicus, 132.
Compsothlypis americana, 219.
 usæa, 160, 219.
 Coot, 30, 43, 96, 123, 135.
 Cormorant, 30.
 Double-crested, 66, 68, 70.
 Florida, 85.
Corvus brachyrhynchos brachyrhyn-
chos, 76, 156, 234.
 caurinus, 138.
 corax sinuatus, 138.
 ossifragus, 239.
 Cowbird, 39, 40, 43, 98, 123, 125,
 138, 156, 200.
 Crane, Sandhill, 96, 123, 135, 140,
 169, 170, 171.
 Whooping, 43.
 Creeper, Brown, 36, 44, 92, 163, 232.
 Crossbill, Red, 157.
 Crow, 40, 42, 43, 98, 115, 123, 125,
 156, 165, 234, 239, 240.
 Fish, 29, 32, 88, 239, 240.
 Northwest, 138.
 Cuckoo, Black-billed, 39, 97, 154.
 Yellow-billed, 31, 39, 87, 97,
 123, 154.
 Curlew, Hudsonian, 86.
 Long-billed, 136.
Cyanocitta cristata, 156.
 florincola, 234.
Cyanospiza amœna, 139.
Dendroica æstiva æstiva, 161, 205,
 219.
 brewsteri, 139.
 castanea, 160.
 cærulescens, 161, 219.
 coronata, 161, 219, 235.
 discolor, 161, 220.
 dominica, 216.
 fusca, 161.
 magnolia, 161.
 palmarum, 161, 219.
 hypochrisea, 161.
 pensylvanica, 161.
 striata, 161, 219.
 tigrina, 161, 219.
 vigorsii, 161, 219.
 virens, 161.
Dickcissel, 39, 99, 123, 238.
 Dipper, 139.
Dolichonyx oryzivorus, 138, 156.
 Dove, Ground, 87.
 Mourning, 31, 36, 39, 40, 43,
 87, 96, 115, 123, 153, 178, 195,
 234, 238.
 Rock, 197.
 Western Mourning, 136.
 Dowitcher, Long-billed, 123.
Dryobates pubescens gairdneri, 137.
 medianus, 3, 154, 198.
 villosus, 154.
 auduboni, 234.
 Duck, Black, 43, 151, 176, 179, 232,
 233.
 Bufflehead, 43.
 Harlequin, 189.
 Greater Scaup, 151.
 Lesser Scaup, 43.
 Red-legged Black, 151.
 Ring-necked, 43, 189.
 Ruddy, 135, 140.
 Wood, 30, 85, 96, 151.
Dumetella carolinensis, 162, 235.
 Eagle, Bald, 31, 87, 137, 153,
 Golden, 137, 143.
 Egret, 29, 30, 85.
 Snowy, 30, 85, 88.
Empidonax flaviventris, 156.
 minimus, 156.
 trailli aliorum, 156.
 virescens, 76, 156.
 wrightii, 137.
Erismatura jamaicensis, 135.
Euphagus carolinus, 157.
 cianocephalus, 138.
Falco columbarius columbarius, 74,
 153.
 mexicanus, 137.
 peregrinus anatum, 74, 153.
 sparverius sparverius, 143, 234.
 phalæna, 137.
 Falcon, Prairie, 137.
 Finch, California Purple, 138.
 Gray-crowned Rosy, 43.
 House, 138.
 Purple, 38, 44, 157, 176, 177,
 178.
 Flicker, 22, 31, 36, 43, 68, 91, 92,
 93, 155, 166, 199, 216, 230, 231,
 232.
 Northern, 40, 97, 123.
 Red-shafted, 137.
 Southern, 234.
 Flycatcher, Acadian, 69, 98, 156.
 Alder, 156.
 Crested, 32, 40, 68, 88, 98, 123,
 155, 234.
 Least, 69, 156.

- Olive-sided, 155.
 Scissor-tailed, 196, 224, 238,
 Traill's, 123.
 Wright's, 137.
 Yellow-bellied, 156.
- Fulica americana*, 135.
- Gadwall, 134, 140
- Gallinago, *delicata*, 136, 152, 234
- Gallinule, Florida, 86, 152.
 Purple, 86.
- Gallinula galeata*, 152.
- Gannet, 180.
- Gavia immer*, 150.
- Geococcyx californianus*, 2-20.
- Geothlypis trichas ignota*, 217.
 occidentalis, 137.
 trichas, 162, 217.
- Gnatcatcher, Blue-gray, 34, 90, 100,
 116, 235
- Golden-eye, 43, 151, 189.
 Barrows', 189.
- Goldfinch, 32, 44, 98, 123, 157, 186.
 Pale, 139.
- Goose, Canada, 43, 71, 135, 151, 189.
 Blue, 221
 White-fronted, 189.
- Goshawk, 210, 211.
- Grackle, Boat-tailed, 32, 88.
 Bronzed, 36, 40, 44, 98, 123, 125,
 201, 202, 203, 229.
 157, 198, 199, 200, 201, 213.
 Florida, 88, 234.
 Eared, 123, 132, 140.
- Grebe, Eared, 123, 132, 140.
 Holbøll's, 150.
 Horned, 145, 150.
 Pied-billed, 132, 150, 201.
 Western, 132.
- Grosbeak, Black-headed, 139.
 Blue, 30, 32,
 Evening, 38, 175.
 Pine, 157.
 Rose-breasted, 38, 40, 98, 123,
 159.
 Western Blue, 123.
 Western Evening, 138.
- Grouse, Ruffed, 43, 68, 152.
 Sage, 136.
- Grus canadensis mexicana*, 135.
- Guillemot, Black, 180.
- Gull, Bonaparte's, 43, 176.
 Franklin's, 123.
 Herring, 30, 43, 85, 95, 150,
 176, 180.
 Laughing, 30, 85.
 Ring-billed, 43, 123, 132, 140.
- Haliaeetus leucocephalus leucocephalus*, 137.
- Hawk, Broad-winged, 123, 153, 213.
 Cooper's, 97, 123, 153.
- Desert Sparrow, 137.
- Duck, 87, 153.
- Florida Red-shouldered, 87.
- Krider's, 43.
- Marsh, 43, 87, 97, 123, 136, 143,
 153.
- Pigeon, 153.
- Red-shouldered, 97, 153.
- Red-tailed, 43, 87, 97, 153.
- Rough-legged, 144, 153.
- Sharp-shinned, 97, 136, 153, 234.
- Sparrow, 17, 30, 43, 87, 93, 97,
 143, 153, 234.
 Swainson's, 137.
- Helinaia swainsoni*, 215.
- Helmitheros vermivorus*, 160, 219.
- Heron, Black-crowned Night, 67, 86,
 92, 96, 110, 135, 152, 187.
 Great Blue, 30, 67, 68, 69, 96,
 123, 135, 140, 151.
 Green, 13, 39, 86, 96, 123, 151,
 203, 234.
 Little Blue, 30, 85, 86, 88, 96.
 Louisiana, 85, 86, 88.
 Ward's 85.
 Yellow-crowned, 86.
- Hesperiphona vespertina montana*,
 138.
 vespertina, 175.
- Hirundo erythrogastra*, 139, 159,
 184.
- Hummingbird, Broad-tailed, 43.
 Morcom's, 137.
 Ruby-throated, 32, 88, 98, 155,
 223, 234.
- Hydrochelidon nigra surinamensis*,
 132, 150, 176.
- Hylocichla aliciae aliciae*, 163.
 fuscescens, 163.
 guttata pallasii, 163.
 mustelina, 163.
 ustulata swainsoni, 163.
 ustulata, 140.
- Ibis, White, 85.
 White-faced, Glossy, 135.
- Icteria virens longicauda*, 139.
 virens, 162, 217.
- Icterus bullocki*, 138.
 galbula, 157.
 spurius, 157, 234.
- Iridoprocne bicolor*, 139, 159, 235.
- Ixobrychus exilis*, 151, 176.
- Jay, Blue, 29, 32, 36, 40, 43, 88, 92,
 98, 123, 156, 165, 178.
 California, 138.
 Florida, 178, 234.
- Junco hyemalis hyemalis*, 36, 38,
 40, 92, 158, 176, 213.
- Junco*, Slate-colored, 44, 158, 176,
 178, 187, 213, 229.

- Killdeer, 31, 43, 91, 93, 96, 123, 136,
 147, 152, 176, 193.
 Kingfisher Belted, 31, 43, 88, 97,
 137, 154.
 Kingbird, 32, 39, 40, 68, 88, 93, 94,
 98, 123, 137, 155, 234, 238.
 Arkansas, 123, 137.
 Cassin's, 137.
 Kinglet, Golden-crowned, 35, 36, 44,
 163.
 Ruby-crowned, 163.
 Kittiwake, 180.
 Lanius borealis, 159.
 ludovicianus ludovicianus, 234
 migrans, 159.
 Lanivireo flavifrons, 160.
 solitarius, 160.
 Lark, Desert Horned, 138.
 Horned, 43, 156, 238.
 Prairie Horned, 43, 123.
 Larus argentatus, 150, 176.
 delawarensis, 132.
 philadelphia, 176.
 Longspur, Alaskan, 118.
 Lapland, 44, 68, 74, 118.
 Loon, 145, 150.
 Lophodytes cucullatus, 134.
 L. pohortyx californica, 136.
 Loxia curvirostra minor, 157.
 Magpie, 42, 44, 138.
 Mallard, 43, 123, 134, 140, 151, 168,
 232, 233.
 Mareca americana, 135.
 Marila americana, 135.
 marila, 151.
 valisineria, 135.
 Martin, Purple, 33, 39, 68, 99, 123,
 159, 234.
 Meadowlark, 32, 43, 77, 88, 92, 93,
 94, 123, 127, 157, 203, 238.
 Southern, 234.
 Western, 68, 74, 77, 123, 238.
 Melanerpes erythrocephalus, 155,
 222.
 Melospiza cinerea montana, 139.
 melodia melodia, 158, 176.
 Merganser, 43, 134, 150.
 Hooded, 134.
 Mergus americanus, 134, 150.
 Mimus polyglottos, 235.
 Mniotilta varia, 160, 215.
 Mockingbird, 33, 42, 43, 89, 99, 122,
 235, 238.
 Molothrus ater ater, 138, 156.
 Murre, 180.
 Ringed, 181.
 Muscivorus forficata, 223.
 Myiarchus crinitus, 155, 234.
 Myiochanes richardsoni richard-
 soni, 137.
 virens, 155, 199.
 Nannus hiemalis hiemalis, 162,
 211, 212.
 Nettion carolinense, 151.
 Nighthawk, 31, 77, 88, 97, 123, 155,
 236, 237.
 Western, 137.
 Numenius americanus, 136.
 Nuthatch, Brown-headed, 33, 90,
 235.
 Red-breasted, 163.
 White-breasted, 33, 36, 40, 44,
 92, 100, 122, 163, 232.
 Nuttallornis borealis, 155.
 Nycticorax nycticorax naevius, 72,
 135, 152.
 Old-squaw, 43.
 Oporornis agilis, 162.
 formosus, 162, 217.
 philadelphia, 162.
 Oriole, Baltimore, 40, 93, 98, 123,
 157.
 Bullock's, 138, 139.
 Orchard, 32, 98, 123, 157, 234.
 Osprey, 31, 87, 154.
 Otocoris alpestris alpestris, 156.
 enthymia, 118.
 leucolema, 138.
 Otus asio asio, 154.
 Ouzel, Water, 126.
 Oven-bird, 40, 69, 80, 82, 161, 217.
 Owl, Barn, 143, 166.
 Barred, 43, 68, 75, 97, 154, 166.
 Burrowing, 7, 137.
 Florida Barred, 87.
 Great Horned, 31, 43, 87, 97,
 141, 142, 143, 154, 167.
 Long eared, 38, 43, 74, 75, 123,
 142, 143, 154.
 Saw-whet, 43.
 Screech, 17, 31, 40, 43, 87, 97,
 141, 142, 154, 164, 165, 166,
 230, 231.
 Short-eared, 43, 97, 137, 143.
 Snowy, 43, 143.
 Western Horned, 137.
 Oxychus vociferus, 136, 152, 176,
 193.
 Oystercatcher, 31, 86, 87.
 Pandion haliaetus carolinensis, 154.
 Partridge, California, 136.
 Passerculus sandwichensis savanna,
 158.
 Passerella iliaca iliaca, 158.
 Passerina cyanea, 159.
 Pelecanus erythrorhynchos, 134.
 Pelican, Brown, 29, 30, 85.
 White, 123, 134.
 Pelidna alpina sakhalina, 176.
 Penthestes atricapillus, 163.

- Petrochelidon lunifrons, 139, 159.
 Pewee, Western Wood, 137, 155.
 Wood, 32, 88, 98, 123, 196,
 197, 199, 200.
 Phalacrocorax auritus auritus, 69,
 70, 71.
 dilophus albiciliatus, 134.
 Phalarope, Northern, 123, 136.
 Wilson's, 123, 136.
 Phalaropus lobatus, 136.
 Phasianus colchicus, 152.
 Pheasant, Ring-necked, 152.
 Philohela minor, 152.
 Phlœotomus pileatus abieticola, 75,
 212.
 pileatus, 222.
 Phœbe, 32, 98, 115, 123, 155, 187,
 234.
 Say's, 123, 137.
 Pica pica hudsonia, 138.
 Pigeon, Rock, 197.
 Pinicola enucleator leucura, 157.
 Pintail, 43, 135, 140.
 Pipilo erythrophthalmus, 159, 234.
 Pipit, 162.
 Sprague's 198.
 Piranga erythromelas, 159.
 ludoviciana, 139.
 Planesticus migratorius migrator-
 ius, 163, 208, 235.
 propinquus, 140.
 Plectrophenax nivalis, 158.
 Plegadis guarana, 135.
 Plover, Black-bellied, 122, 123, 145.
 Golden, 122.
 Piping, 123.
 Upland, 195.
 Wilson's, 86.
 Podilymbus podiceps, 132.
 Polioptila caerulea, 235.
 Poœcetes gramineus, 158.
 Porzana carolina, 135, 176.
 Progne subis, 159, 234.
 Protonotaria citrea, 218, 235.
 Puffin, 145, 180.
 Querquedula cyanoptera, 135.
 discors, 135, 151.
 Quiscalus quiscula œneus, 157, 201.
 quiscula, 157, 234.
 Rail, Clapper, 29, 30, 152.
 King, 123, 152, 201.
 Sora, 123, 176.
 Virginia, 152.
 Wayne's Clapper, 86.
 Rallus crepitans, 152.
 elegans, 152.
 virginianus, 152.
 Raven, 138.
 Recurvirostra americana, 136.
 Redhead, 132, 135, 140.
 Redpoll, 44, 157.
 Redstart, 29, 33, 83, 99, 126, 162,
 206, 221.
 Red-tail, Western, 136.
 Red-wing, Northwestern, 138.
 Regulus calendula, 162.
 satrapa, 163.
 Rhyncophanes maccowni, 126.
 Riparia riparia, 139, 159.
 Robin, 36, 38, 39, 40, 44, 90, 91, 92,
 93, 100, 122, 163, 187, 203, 208,
 209, 235.
 Southern, 34.
 Western, 140.
 Salpinctes obsoletus obsoletus, 139.
 Sanderling, 123.
 Sandpiper, Baird's, 123.
 Least, 29, 31, 86, 96, 123.
 Pectoral, 123.
 Red-backed, 123, 176.
 Semipalmated, 86, 123.
 Solitary, 86, 96, 123.
 Spotted, 31, 40, 86, 96, 123, 136,
 152.
 Stilt, 123.
 White-rumped, 123.
 Sapsucker, Yellow-bellied, 97, 154.
 Sayornis phœbe, 155, 234.
 sayus, 137.
 Scoter, Surf, 85.
 White-winged, 43, 189.
 Seiurus aurocapillus, 161, 220.
 motacilla, 78, 162, 220.
 noveboracensis, 162, 220.
 Setophaga ruticilla, 162, 206, 221
 Shoveller, 43, 135, 140.
 Shrike, Loggerhead, 89, 235.
 Migrant, 68, 99, 122, 159.
 Northern 40, 44, 159.
 Sialia corrucoides, 140.
 sialis, 164, 235.
 Siskin, 38, 44, 157, 176.
 Sitta canadensis, 163.
 carolinensis, 163.
 pusilla, 235.
 Skimmer, Black, 30, 85.
 Snipe, Wilson's, 234.
 Solitaire, Townsend's, 43.
 Sora, 135, 176.
 Sparrow, Chipping, 32, 40, 98, 158,
 178, 234.
 Clay-colored, 123.
 English, 17, 32, 36, 40, 68, 125,
 164, 165, 177.
 Field, 32, 36, 40, 98, 158, 178.
 Fox, 36, 40, 92, 158.
 Grasshopper, 16, 158.
 Harris', 36, 40.
 Lark, 98, 238.
 Lincoln's, 36, 93, 123, 126.

- Mountain Song, 139.
 Savanna, 36, 40, 158.
 Song, 35, 38, 39, 40, 44, 92, 93,
 112, 123, 158, 176.
 Swamp, 36, 40, 88, 126, 158.
 Tree, 36, 40, 44, 92, 158.
 Vesper, 40, 158, 187.
 Western Field, 123.
 Western Lark, 139.
 White-crowned, 35, 40, 158.
 White-throated, 34, 38, 40, 92,
 158, 176, 177, 178, 210, 230.
Speotyto cunicularia hypogæa, 137.
Spatula clypeata, 135.
Spinus pinus, 157, 176.
Sphyrapicus varius, 154.
Spiza americana, 78.
Spizella monticola, 158.
 passerina, 158, 234.
 pusilla, 158.
Steganopus tricolor, 136.
Stelgidopteryx serripennis, 159.
Sterna caspia, 132.
 foresteri, 132.
 hirundo, 165.
Strix varia, 154.
Sturnella magna argutula, 234.
 Swallow, Bank, 89, 99, 122, 139,
 159.
 Barn, 29, 33, 40, 99, 122, 139,
 159, 184.
 Cliff, 99, 122, 139, 159.
 Rough-winged, 29, 33, 122, 159.
 Tree, 68, 69, 139, 159, 235.
 Violet-green, 139.
 Swan, Trumpeter, 198.
 Whistling, 96.
 Swift, Chimney, 31, 88, 97, 123, 155.
Tachybaptus podiceps, 150.
 Tanager, Scarlet, 29, 32, 89, 123,
 159.
 Summer, 33, 89, 99.
 Western, 139.
 Teal, Blue-winged, 123, 135, 151,
 179, 232.
 Cinnamon, 135.
 Green-winged, 151.
Telmatodytes palustris, 163.
 paludicola, 139.
 Tern, Black, 95, 123, 132, 140, 150,
 176.
 Caspian, 132, 140.
 Common, 30, 85, 95, 175, 176.
 Forster's, 132, 134.
 Least, 85.
 Royal, 30.
 Thrasher, Brown, 33, 36, 39, 40, 89,
 99, 121, 122, 162, 178, 235.
 Thrush, Gray-cheeked, 163.
 Hermit, 36, 38, 40, 163, 178.
 Olive-backed, 40, 122, 163.
 Russet-backed, 140.
 Wilson's, 163, 186, 188.
 Wood, 34, 36, 40, 69, 100, 122,
 163, 188.
Thryomanes bewicki bewicki, 78.
 Titmouse, Tufted, 29, 33, 44, 94,
 100.
Totanus melanoleucus, 221.
 Towhee, 36, 40, 98, 123, 159, 178,
 234.
 White-eyed, 32, 88, 178.
Toxostoma rufum, 162, 235.
Troglodytes ædon, 162.
 parkmani, 139.
 Turkey, Wild, 84, 86, 235.
 Turnstone, Ruddy, 86, 123.
Tympanuchus americanus america-
nus, 72.
Tyrannus tyrannus, 137, 155, 234.
 verticalis, 137.
 vociferans, 137.
 Veery, 69.
Vermivora chrysoptera, 160.
 peregrina, 160.
 pinus, 160.
 rubricapilla, 160.
Vireo gilva swainsoni, 139.
 griseus, 160, 235.
Vireo, Bell's, 119, 120, 121, 122.
 Blue-headed, 160, 211.
 Red-eyed, 33, 89, 99, 122, 159.
 Warbling, 39, 122, 160, 235.
 Western Warbling, 139.
 White-eyed, 33, 89, 99, 160.
 Yellow-throated, 99, 122, 160.
Vireosylva gilva, 160.
 olivacea, 159.
 Vulture, Black 31 87, 96, 234.
 Turkey, 31, 87, 96, 136, 144, 153,
 221, 234.
 Warbler, Bachman's, 83.
 Bay-breasted, 93, 161.
 Black and white, 33, 69, 80, 89,
 93, 99, 160, 218.
 Blackburnian, 69, 83, 161.
 Black-poll, 40, 89, 161, 219.
 Black-throated Blue, 161, 219.
 Black-throated Green, 69, 83,
 99, 161.
 Blue-winged, 68, 69, 81, 160.
 California Yellow, 139.
 Cairns', 83.
 Canada, 42.
 Cape May, 43, 160, 216.
 Cerulean, 69, 81.
 Chestnut-sided, 69, 161.
 Connecticut, 162.
 Golden-winged, 69, 83, 160.
 Hooded, 33, 82, 83, 162.

- Kentucky, 68, 80, 82, 99, 162, 220.
 Magnolia, 89.
 Mourning, 162.
 Myrtle, 36, 40, 44, 93, 99, 161, 178, 187, 219, 235.
 Nashville, 69, 160.
 Northern Parula, 160.
 Palm, 93, 161, 178, 219.
 Parula, 29, 33, 83, 89, 219.
 Pine, 33, 82, 89, 161, 219.
 Prairie, 82, 161, 219.
 Prothonotary, 33, 68, 83, 89, 99, 218, 235.
 Swainson's, 80, 83, 218.
 Sycamore, 119.
 Tennessee, 160.
 Wilson's, 126, 162, 221.
 Worm-eating, 81, 160, 219.
 Yellow, 39, 40, 80, 89, 93, 99, 122, 161, 205, 219.
 Yellow Palm, 89, 161.
 Yellow-throated, 29, 33, 81, 219.
 Water-Thrush, 36, 40, 162, 219.
 Louisiana, 69, 82, 99, 162, 220.
 Waxwing, Bohemian, 42, 159.
 Cedar, 33, 44, 139, 159, 176.
 Whippoorwill, 31, 155, 220, 235.
 Willet, 86.
 Western, 123.
Wilsonia canadensis, 162.
 citrina, 162, 221.
 pusilla, 162.
 Woodcock, 96, 145, 152, 235.
 Woodpecker, Arctic Three-toed, 43, 92.
 Downy, 35, 40, 43, 68, 154, 198.
 Gairdner's, 137.
 Hairy, 43, 68, 97, 123, 154, 232.
 Lewis', 137.
 Northern Downy, 123, 231, 232.
 Northern Pileated, 43, 68, 75.
 Pileated, 31, 88, 97, 209, 214, 222, 234.
 Red-bellied, 4, 43, 68, 75, 88, 97, 178, 223, 234.
 Red-headed, 31, 40, 43, 68, 88, 97, 123, 155, 166, 199, 222, 223, 234.
 Southern Downy, 31, 88, 97.
 Southern Hairy, 31, 234.
 Wren, Bewick's, 100.
 Carolina, 29, 33, 89, 100.
 House, 36, 39, 40, 117, 122, 162.
 Long-billed Marsh, 39, 163.
 Rock, 139.
 Short-billed Marsh, 161.
 Tule, 139.
 Western House, 139.
 Winter, 162, 208, 209.
 Worthington's Marsh, 90.
Xanthocephalus xanthocephalus, 138.
 Yellow-legs, 86, 122, 145.
 Greater, 122, 221.
 Yellow-throat, Maryland, 33, 44, 82, 99, 122, 162.
 Southern, 220.
 Western, 139.
Zamelodia ludoviciana, 159.
 melanocephala, 139.
Zenaidura macroura carolineusis, 153, 195, 234.
 marginella, 136.
Zonotrichia albicollis, 158, 176, 213.
 leucophrys gambeli, 158.
 leucophrys, 78.

Publications of the Wilson Ornithological Club

The complete series consists of the following publications:

The Ornithologists and Oologists Semi-Annual,
three volumes, 5 numbers.

The Wilson Quarterly, one volume, two numbers.

The Journal, two numbers.

The Wilson Bulletin, three numbers in the first
volume, two in the second, six numbers in
each of the next four volumes, and four num-
bers in all succeeding volumes including the
current volume—34.

Out of print numbers of this entire series are as follows:

Semi-Annual, Vol. 1, No. 1; Vol. 2, both num-
bers.

The Wilson Quarterly, both numbers.

The Wilson Bulletin, Vol. 10, No. 5; Vol. 16,
No. 1.

The available numbers, to Vol. 32, will be sold
at the rate of one dollar a volume.

— ADDRESS —

THE WILSON BULLETIN

SPEAR LABORATORY, OBERLIN, OHIO

The "Blue Bird"

Is now published monthly, the year 'round, with new and interesting departments, features and contests, and AT NO ADDITIONAL COST TO SUBSCRIBERS.

Official organ of The Cleveland Bird Lovers' Association.

SEND 20c FOR SAMPLE COPY

Annual Subscription \$2.00

Agents Wanted Everywhere

THE BLUE BIRD

1010 Euclid Ave., Cleveland, Ohio

The Oologist

Birds - Eggs - Nests - Taxidermy

The Oologist is the only magazine published in America devoted to the interests of those making collections of Birds, their Nests and Eggs. For thirty-seven years it has been the recognized medium for the exchange of ideas along these lines and its columns teem with advertisements of this character, solely for exchange. It is the second oldest bird journal in America and indispensable to those engaged in either the amateur or scientific study of birds.

Subscription, fifty cents per year, with a free exchange notice. Sample copy free. Address The Oologist, Lacon, Ill.

JAN 23 1924

The Wilson Bulletin

Official Organ of the Wilson Ornithological Club

An Illustrated Quarterly Magazine
Devoted to the Study of
Birds in the Field

Edited by Lynds Jones



Nineteen Hundred and Twenty-three

Old Series, Volume XXXV

New Series, Volume XXX

Published by the Club at Oberlin, Ohio

