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THE  
WILSON BULLETIN  
A Quarterly Magazine Devoted to the Study  
of Birds in the Field  
and the Official Organ of the  
WILSON ORNITHOLOGICAL CLUB

Edited by

T. C. Stephens, *Editor-in-Chief*

Myron H. Swenk      Albert F. Ganier  
Alfred M. Bailey      R. D. Hissong



Volume XLII  
1930

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*at*  
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## THE WILSON BULLETIN

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## THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist, and called the "Father of American Ornithology."

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The Iowa Ornithologists' Union.

The Kentucky Ornithological Society.

The Tennessee Ornithological Society.

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# THE WILSON BULLETIN

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## THE OLD ORNITHOLOGY AND THE NEW

BY ALTHEA R. SHERMAN

It seems necessary at the outset to define the two schools of ornithology to be discussed in this paper. The old school deals with ornithology: "That branch of natural science which investigates and treats of the form, structure, and habits of birds." Its members respect the derivation of the word, meaning to discourse about a bird, and call themselves "ornithologists." They abide by the definition quoted which states that ornithology is a science and that it investigates or studies birds; in other words, they do scientific work, following the rules for scientific research.

Various writers have been busy defining science in our scientific magazines, even in some newspapers. None of them get far beyond the dictionary's definition: that science is concerned with knowledge, with truth; meaning true knowledge, not mistaken notions, that all too often pass for knowledge and truth. In this connection may be quoted the words of Dr. Theodore W. Richards, our first native American to receive the Nobel prize in science. He wrote, "First and foremost I should emphasize the overwhelming importance of perfect sincerity and truth." To this he added, "And then patience, patience! Only by unremitting, persistent labour can a lasting outcome be reached." Clearly then truth and hard work are the exactions of science. Conformity to this requirement is the role for ornithologists of the old school. Their work is research, the spirit of their gatherings can be told in the words of Paul by the substitution of a single word: "For all the Athenians and the strangers which were there spent their time in nothing else, but either to tell, or to hear some new thing." ("About birds," are two words to be added). The old school may be divided into two classes, the professionals and the amateurs. Of the latter class William Brewster is a notable example.

The followers of the new school of ornithology far outnumber the members of the old school. They shy from using the word "ornithologists" (perhaps it is too hard for them to pronounce), and call

themselves "bird lovers"; and again they shy away from "ornithology", naming their twaddle "bird talks". They do no research work themselves, and have so slight regard for the truth about birds, that they neglect, sometimes positively refuse, to read the truths published by others. They will not take the bird magazines nor buy worthy books. One sentence fully describes them. They dabble a little in bird lore in order to gabble about birds.

The members of the new school also may be divided into two classes, the professionals and the amateurs. The professional class comprises those who are striving for fame or gain, or both; those who are panting for publicity, who imagine that they are on the road to world-wide fame by giving their "bird talks" before Women's Clubs or at gatherings of Community Clubs. As examples illustrative of this class will be taken two cases chosen from my own observations. The first place will be given to the man, who, when passing a singing bird on a telephone wire, expressed his very high appreciation of the Song Sparrow's music. When questioned, he admitted that he referred to the song of the bird on the telephone wire, and was told that it was a Dickcissel. His counterpart is found in a woman. Her story has been told once, but it so fitly illustrates this class of fame seekers that its repetition, possibly, may be pardoned. We met, and as can readily be believed I soon spoke of the exceedingly evil habits of the House Wren. She said, "I never heard of the House Wren." Following a brief description of the bird she exclaimed: "Oh, I know now what you mean! *You* call it a House Wren; I never knew that *anyone ever* called it a House Wren; *I* always call it a Jenny Wren." She is only one of the many instructors about birds who refuse to take bird magazines, who refuse also to learn the most elementary facts about birds. There are thousands of babblers like her, and how they do love to babble about birds! They are the teachers of the amateur class in the new school.

Passing now to the class who for gain lay defiling hands on the birds, quotations will be given from their writings, published in the highest class of popular magazines. The first example given was published in 1909, when magazines were paying twenty-five cents per line for poetry. One gem entitled "The Shipwrecked Sailor", reads:

"Yet he smiled  
Abandoning hope and drowning unaware,  
Till a great sea-bird, tern or ptarmigan  
Caught by the whiteness of his lonely face  
Swooped low exultantly; huge swish of wings  
Measuring his body, as he struck him once.

Thud of ribbed beak, like the call to arms  
Stirred the wounded soldier. . . ."

Since 1909, when these lines won two dollars for the author, there have been the terrible shipwrecks of the Titanic and of the Vestris from which some of the victims escaped with their lives. None of them told of suffering blood-curdling attacks from ribbed beaked birds, either tern or ptarmigan, hence we must conclude that this was a rare case of the man-eating ptarmigan going to sea.

On account of the high cost of living, poetry prices mounted to a dollar per line in 1929. The quality of the outpourings seems to be about the same. Here is a sample from a poem entitled "Home":

"There shall be towels as fresh as the clover  
Stored on the cedar-wood shelves down the hall,  
A kitchen as white as the eggs of the plover,  
And candlestick lights for the library wall."

Between the lines one may read a romance: The author, contemplating matrimony, plans a home; he is a modern youth and travels; he goes to Great Britain; he samples everything; he eats; he calls for plovers' eggs and is served with the eggs of a Bantam hen. Moreover, he is served rightly.

In sharp contrast with these nature fakes there come to mind, whenever the October leaves are falling, the lines of one who must have sat at the feet of Nature, perhaps in her very lap. They were found in a scientific magazine without a taint of money about them. Quite likely the author was a college professor who did not work for money. Except a little tautology, what fault is there in them?

"The autumn leaves are falling,  
Falling, falling, everywhere.  
Some are falling through the atmosphere.  
And some are falling through the air."

Again wonder thrills us upon reading some of the prose effusions about nature that have been accepted and published by the highest class of popular magazines. Some of these look like a big yellow cotton patch on a blue silk dress. Now and then they contain some remarkable statements relating to ornithology which may be quoted. When snow was lying deep on the ground in Vermont a writer said she saw a Rose-breasted Grosbeak on March 12. The same magazine published the story of a November blizzard in Michigan. In it we are told that in the thickness of the storm water fowl were rushing south and among them "Swallows twittered and swept low across the water." A well-known British writer tells a story that, as a story, is an erotic, neurotic, idiotic mess, but when he lays his defaming

hands on the birds it is time for us to protest. His heroine is "twenty and loverless". She knew all the birds, she watched for the spring arrivals of cuckoo, swallow, sedge warbler, and kestrel; as they came she scattered millet for them. Her bounty halted these solely insectivorous, or flesh-eating, birds, and as they ate her millet they hopped through the lilacs and sang to her. Late one afternoon she wandered forth and met a stranger. Cupid smote both of them with his famous darts. As night deepened they sat beneath the boughs of a tree, "they heard a tiny commotion in the tree overhead; it was like the breaking of most fragile glass. He pointed through the branches to a nest. She knew what he meant; a new-born traveller was fighting his way out of the shell into the wind-swept world." What marvelous acuity of hearing had these love-lorn creatures! But their British creator evidently had failed to read Professor C. O. Whitman and to note his statement that birds' eggs do not hatch in the night, and rarely after three o'clock in the afternoon, even though the shells may be pipped; that the hatching bird has its time for sleep and like its parents it sleeps in the night.

The Reverend Dean Inge has said, "Perhaps the great struggle of the future will be between science and sentimentalism, and it is by no means certain that the right side will win." It may be that the great struggle is now taking place in regard to the birds and that the ignorant sentimentalists will seal the fate of the few birds now left to us. They comprise the vast mass of people who belong to the new school of ornithology. They are the amateurs who in their own language "*just love the birds*". They refuse to study, even to read the truth that days, months, and years of hard delving by the disciples of the old school have brought to light. To them the words, even the names, of the great leaders in ornithological science have no more meaning than they would have if quoted to a Bushman or a Hottentot. Moreover, they refuse to believe these same words, when told of them orally. By them all birds are to be loved and protected, even though they are the birds that are destroying other birds at an alarming rate.

A prolific source of information (perhaps the only source) for these amateurs of the new school seems to be the newspapers. If some of the men who supply the columns of these papers with their stories of bird life, containing "facts" unknown to scientists, have any true knowledge of birds they fail to demonstrate it. One marvels over the announcements of the results of some of their original research investigations. Among them may be mentioned the statement

that Catbirds and Brown Thrashers use mud in the construction of their nests. One of these men declares that in northeastern Iowa there has been a "ruthless slaughter of blackbirds", and he adds: "A peculiarity of this species is that the male bird comes north in the spring two weeks in advance of the female, after mating in the southland. How they find each other is one of the mysteries of bird instinct." True, indeed, the "mystery" is sufficient to hold one spellbound! But this research student of the new school of ornithology failed to tell us the name of the blackbird of his remarkable discovery, whether it is the amorous, polygamous Cowbird or that sweet singer, the Bronzed Grackle. You may be sure he emphasized the insectivorous habits of his song bird, yet he gave no hint that the "ruthless slaughter", whether of Cowbird or Bronzed Grackle, might be the means of saving hundreds of other and better insectivorous birds. There are other things besides food habits to be considered in the evaluation of birds. Some such consideration ought to have saved our birds from the introduction of their pestiferous foes, the English Sparrow and the Starling. Many years ago the Encyclopaedia Britannica under the heading "Birds" made the statement that the Starling "constantly dispossesses the Green Woodpecker." Its habits remain the same after its transplanting to America. It usurps the homes of our native woodpeckers, yet seldom is a voice raised against it. That 4,000 Starlings in Washington, D. C., and 600 in Ohio were banded, *then released*, is an offense against our woodpeckers that scarcely can be understood or forgiven.

Returning again to the choice excerpts from popular magazines for several months one of them offered numerous things new to science. The bold young man who writes these things begins by telling us about the Brown Creeper "who is a true warbler according to ornithologists" he confidently asserts. This statement was published in April, 1923. In February, 1926, another of our leading magazines shows an excellent picture of a Brown Creeper, bearing beneath it this legend, "Little Willie Woodpecker", and the text that accompanies the picture implies that under the *alias* of Willie Woodpecker the Brown Creeper is a beneficial bird. Thus it may be seen that in the short space of thirty-four months the changeling creeper metamorphosed from a warbler into a woodpecker.

Turning once more to the magazine of the bold young man, we may read of his trip taken through southern Ohio in July. He says of it: "The most conspicuous bird seen in the Ohio region was a male butcher bird or great northern shrike, along a roadside, industriously

feeding a voracious young bird of the same species." Where were all the southern Ohio ornithologists of the old school, that the noteworthy breeding of Northern Shrikes in their very midst should be left to the discovery of this young tourist? The same young man is no less interesting when he wanders into the realms of history and mammalogy. He invades my own home neighborhood, when attempting to give the origin of the name of Prairie du Chien, Wisconsin. People, having knowledge of Upper Mississippi Valley history, recall that the early French explorers found an Indian called "The Dog" living on the prairie at the mouth of the Wisconsin River and they called the locality Prairie du Chien, a name it has borne ever since. All those, having the least bit of knowledge of the prairie dog, know that the eastern boundary of its range is several hundred miles west of the Mississippi River. But our bold young man has this to say about it: "Many similar and rather absurd instances might easily be cited; notably the 'prairie dog', which, of course, isn't a 'dog' at all, but a member of the *rat* family. For that particular misnomer we probably have to thank the French settlers who so named 'Prairie du Chien' because the locality was full of 'prairie dogs' whose outward resemblance to a dog happened to be that they had four legs and a *tail*, which latter they wagged vigorously."

Time is lacking for tarrying longer with the many delightful things published by the new school of ornithology. Those quoted are treasures garnered while reading a very limited range of popular magazines. Doubtlessly wider reading would disclose thousands like them. No space for their like has ever been found in the bird magazines. Yet every week the *Literary Digest* can fill a page and the *Journal of the American Medical Association* does fill three columns with the gems that sparkle in their own special fields of knowledge.

There is no implication in the preceding pages that ornithologists of the old school never make mistakes. They would be more than supermen, if that were true. But their mistakes are not delightful and joy-giving, on the other hand they are painfully saddening. Since ornithology is a science; since the purpose of science is knowledge, truth, perfect truth, the aims of most ornithologists are to contribute to truthful, exact knowledge as far as in them lies. The purposes of science are not attained by copying old, time-worn errors, nor in neglecting to read the many truths that research workers are constantly bringing to light. The case of Professor Tweezers amply illustrates this point. He decided to publish a life history of the birds of this state, to repeat once more the many things already told



in various state histories, which have appeared in ponderous forms of one to four volumes. Since it is utterly impossible for one man to have thorough, first-hand knowledge of the habits of all the birds of one state he was obliged to draw very largely from previous publications. But to make his book salable and to give it an appearance of original research he invited aid from his neighbors, from the Sam Smiths of Hazelbush Hollow, and the Mary Joneses of Metropolisville, whose observations as quoted are no better than scores of similar ones already published. All this is according to custom and quite justifiable. It is when Tweezers publishes ancient errors, adds some of his own, and refuses to read numerous life histories, that others have published, that he becomes reprehensible. Well might he be arrested for "cruelty to animals" when he hustles callow Purple Martins out of their nest, when the duration of the nest period is but half completed, when the quills of their wing-feathers have not yet burst. His untruths about this species might more readily be pardoned if Dr. Brownesque and several others had not given him the correct data.

Professor Tweezers is not alone in his bookmaking projects, there are several other members of his family. Some of these Tweezers would refuse to change the figures you have placed on a bank check, but they do not hesitate to mutilate the correct figures you have given in a bird history. There is a certain Tweezers who showed his masculine strength by slashing off a half day from the incubation period given for one bird. It is strange that he did not show his superiority in a bolder, braver, more heroic way by slashing off a whole day. So far as respect for truth is concerned five or ten days might have been cut off with equal reason. If science seeks knowledge and truth, there ought to be protest against those Tweezers who seize upon the outcome of days, weeks, or months of hard work done by others, only to mutilate it or to turn and twist it to suit their own ignorance or prejudice.

To emphasize the injustice they do both to truth and to bird students I take one example selected from my own experience. I had made as careful study of nesting Sparrow Hawks as I could and it was published in the *Auk*. It seemed to please one of the Tweezers, the reason soon became apparent: he needed it to use in his book. He used it, giving my name and paraphrasing the whole nest history. To that no one could object, if he had not inserted a downright, inexcusable falsehood. He said that I wrote that these hawks fed their nestlings "insects". And there that lie will stand as long as the writings of this particular Tweezers shall endure. To some people this

may appear a small matter. It is not. Besides being a gratuitous untruth, it suggests a habit that is beyond credibility. Besides never seeing it done, two seasons of close study of nesting Sparrow Hawks lead me to believe that no mother hawk of this species would be willing to approach the nest carrying insect food.

The case just cited calls to mind another class of people that may be mentioned: They are "half-castes" or hybrids between the old school and the new school of ornithology. With a smattering knowledge of a few birds they are busy trying to whitewash the reputations of certain birds proved to be bad. While they deify a bird they are at great pains to damn the characters of the people who have made known its evil habits. They forget that time is long; that after them will come bird students and ornithologists who will recognize the truth and forcibly denounce the errors and untruths in which these mongrel "half-castes" delight to revel.

NATIONAL, VIA MCGREGOR, IOWA.

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## THE NESTING WRENS OF BROOKE COUNTY, WEST VIRGINIA

BY GEORGE MIKSCH SUTTON

*Illustrated with three halftone drawings by the author.*

During the past fifteen years three species of the family Troglodytidae have been known to nest in the vicinity of Bethany, Brooke County, West Virginia. The Carolina Wren (*Thryothorus ludovicianus ludovicianus*)<sup>1</sup> is certainly the most noticeable of the three because it lives the year round near towns and farms, its loud, brilliant song is to be heard at virtually all seasons, and its size and dominant personality attract attention everywhere. The summer resident House Wren (*Troglodytes aedon aedon*),<sup>1</sup> while not so widely distributed, nor actually so common, is perhaps better or more accurately known, partly because of its ready acceptance of nesting-boxes erected for it, and partly because the average person can identify "Jenny" Wren without much difficulty. The Bewick's Wren (*Thryomanes bewicki bewicki*)<sup>1</sup> is very rare, has never nested about the towns so far as I know, and is unknown among the people of the countryside where it should occur. The Bewick's Wren may be a permanent resident wherever it is found in this latitude. The fluctuation in the wren population in Brooke County has greatly interested me.

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<sup>1</sup>Specimens have been collected and compared for determination of the subspecific form.

## CAROLINA WREN

When we first came to Brooke County in July, 1914, the Carolina Wren was fairly common about Bethany. Their loud songs were to be heard all about the village as well as in the wooded ravines nearby. On July 24, 1914, I found a brood of young birds just leaving their nest which was situated among the exposed roots of a walnut tree. During the following winter the species was observed daily. It came regularly to the feeding counters where it was especially fond of black walnut meats. One individual became so tame that it would feed from the hand, and a pair of birds which lived about the house customarily awakened me with their chatter while I was sleeping-out on the open back porch. (See Annotated List of the Birds of Brooke County, West Virginia, *Oologist*, Vol. XXXVII, July, 1920, 77-78).

During 1915 several nests were found, one, containing two fresh eggs, in mid-fall! This nest may have been deserted considerably earlier in the season. During 1916 I found several nests and collected sets of five eggs on April 11 (well incubated) and on May 24 (fresh). The bulky nests were found as a rule in out-buildings, and none was found in the woods far from a human dwelling. One nest was built on a crumpled paper sack which lay on a shelf in a woodshed. So neatly had the nest been built that its roughest foundational material nowhere protruded beyond the edges of the paper. The birds, in coming to their nest, seemed to enjoy the crisp sounds their feet made on the dry paper.

Another nest was built into a space between rafters under the roof of a low, well shaded front porch. Here the sheltered cavity was completely filled with leaves and rubbish which had been dragged in with much ado from all directions. The owners of this house stated that the wrens had nested there for years. The nest proper, however, was obviously new.

A nest found in 1917 was built into the corner of a large dry-goods box which had been nailed to the shadowy back of a barn which stood at the edge of a woodlot about two miles from town. Here, where the birds had chosen a cavity obviously too large to fill, both male and female had brought great quantities of nest material; nevertheless the structure was neat. In front of the nest proper was a crude path of weed-stalks and leaves possibly eighteen inches in length. The entire nest with its approach could be lifted easily, so skilfully were the stalks and leaf stems interwoven.

During 1918, 1919, and 1920, I noted, though I was unable to make careful observations throughout the year, that this wren was



George M. Kisch Sutton

THE CAROLINA WREN (Life Size)

disappearing. During the winter of 1918 and the following spring we did not record the species at all. We were, at first, completely mystified, though we were glad enough to note during May, 1919, that House Wrens were for the first time nesting in the village!

It is difficult to determine the factors which caused the Carolina Wren to retire and the House Wren suddenly to appear. It would seem that the larger Carolina Wren could certainly oust the House Wren at will without much trouble. Is it not possible that the House Wren, eager to extend its range wherever possible, as soon as the larger wren for some reason disappeared, watched for its opportunity to come in and establish itself?

If the House Wren in this region is as vandalistic as it is elsewhere (and there is no reason for supposing that it isn't), then it would seem probable that the Carolina Wren must come in for its share of trouble just as does the Bewick's Wren. The fact that at the present time the Carolina Wren is abundant again, and the House Wren present in considerable numbers in exactly the same territory convinces me, however, that it is possible for these two species to live together without constant friction; and also that, in explaining the disappearance of the Carolina Wren in 1918, 1919, and 1920, we must seek for other causes than the mere advent of the House Wren.

I have observed no tendency on the part of the Carolina Wren to disturb nests of the House Wren or, for that matter, of any other species of bird; nor have I observed any instance of molestation of a Carolina Wren's nest by a House Wren. The relationship between these species is evidently much more satisfactory than between the House Wren and Bewick's Wren, wherein the latter species usually suffers and retreats.

During recent years Carolina Wrens have been more abundant here than at any time within the period of my West Virginia experience. One or more pairs are to be seen or heard at almost any time in the yard. On June 10, 1929, I examined a nest containing five well incubated eggs which had been built on the open top of a chiffonier in a little-used bedroom at a neighbor's house where a window was customarily left open. Here the incubating parent was remarkably tame or brave and permitted considerable intimacy.

The odd vocal duet often given by these birds is amusing. The male, quivering as he hurls out his dominant "chee-whee-dle, chee-whee-dle, chee-whee-dle" or "which jailer, which jailer, which jailer?", lifts his head and drops his tail; usually just before this song outburst is concluded the female gives a long, harsh, scolding call which

sounds very much as though she disapproved in some way of the noisiness of her mate.

#### HOUSE WREN

It is impossible, from the meagre data at hand, to account for the absence of the well-night ubiquitous House Wren at Bethany during



George Miksch Sutton

THE HOUSE WREN (Life Size)

the years 1914-1918. It appears offhand, however, that the abundance of the resident Carolina Wren, whose entire population was on hand and, as a rule, nesting, by the time the spring migrant House Wren

arrived, actually might have kept the smaller species from attempting to establish itself. In the spring of 1919, however, when the House Wrens appeared here, they encountered no Carolina Wrens and began nesting at once. In the light of present knowledge concerning the constancy of individual pairs of certain species in nesting within a well defined area we may suppose that these newly arrived House Wrens were year-old birds perhaps seeking their first nesting-site.

There is little conflict between the two species as to nesting-site, of course. The House Wren is a much smaller bird, which prefers to nest in cavities in trees or in nesting boxes. The Carolina Wren prefers lower, darker, and more spacious situations. The House Wren might be a worse enemy of its larger relation than it is were it given to spending more of its time in the shadowy retreats which the Carolina Wren prefers to frequent.

House Wrens now nest in a deserted Downy Woodpecker nest in our yard,<sup>2</sup> while the Carolina Wrens live peacefully in neighbors' out-houses not more than three hundred yards away. The local House Wren population has not increased greatly since 1919, there being only about a dozen pairs of the birds in the village and its environs.

If the Carolina Wren disappeared in 1914 before the House Wren came it is obvious that food supply, natural tendency to wander, or overabundance of some natural enemy caused the disappearance of the larger bird, whereas the coming of the House Wren really had nothing to do with it.

#### BEWICK'S WREN

During the summer of 1921 a pair of these birds<sup>3</sup> attempted to establish themselves at a farm between Bethany and the nearby village of West Liberty. The nest was not discovered and we do not know that a brood was reared. During the following summer none was to be found, though House Wrens, in usual numbers, were found in nearby orchards and Carolina Wrens were common in the vicinity.

It is natural to lay the blame upon the House Wren though it is possible that the Carolina Wren should assume some of the censure. According to my experience in Huntingdon County, Pennsylvania, and that of Mr. Samuel S. Dickey in Greene County, Pennsylvania, I should say that the actual nesting territories of the Carolina and Bewick's Wrens insofar as ideal nesting-sites are concerned, overlap more than do those of the Bewick's Wren and House Wren; so that if either

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<sup>2</sup>We have not erected any nesting-boxes on our place; but all dead trees are preserved for cavity-nesting species.

<sup>3</sup>Apparently unmated individuals have been noted twice.

wren is responsible for ousting the Bewick's Wren in this region it may be the Carolina Wren. The Bewick's Wren seems to be an altogether inoffensive, rather unobtrusive creature though I confess I



BEWICK'S WREN (Life Size)

do not know the bird's personality very well since I have not had opportunity to observe it for long periods at a time.

#### CONCLUSIONS

1. The disappearance of the Carolina Wren during the years 1918-1921 can hardly be laid against the House Wren. Unless inadequate food supply or natural tendency toward wandering is respon-



sible, I should say that over-abundance of some natural enemy was the cause. House cats may have been responsible. Hawks and owls certainly were not, for they have been very rare in this region for years. Black snakes and house snakes may have had a good deal to do with the matter for they are abundant hereabouts and they frequent such situations as are chosen by the Carolina Wren as nesting sites.

2. The House Wren and Carolina Wren may inhabit precisely the same region without friction; but the House Wren and Bewick's Wren, or the Bewick's Wren and Carolina Wren, or all these species, evidently do not. Ecologically speaking the vicinity of Bethany appears to be ideal for the Bewick's Wren, save for the presence of the other two nesting species of the family Troglodytidae.

BETHANY, W. VA.

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## THE FALL MIGRATION OF MOURNING DOVES

BY WILLIAM BREWSTER TABER, JR.

At the suggestion of Mr. Samuel E. Perkins III, I have undertaken the interpretation of migration data of the Mourning Dove, (*Zenaidura macroura*) as revealed by the bird banding method. At the outset I should like to point out that there will be developed theories which these data seem to warrant, and that although the data are apparently sufficiently voluminous to warrant the deduction and statement of these theories, it should be understood that until several more years have elapsed and many hundreds more of doves have been banded it cannot be definitely known that any one of these theories always fits the facts. The method of modern science may be divided into three parts: first, the accumulation of data; second, the statement of the significance of these data; and third, the proof of the theories illustrating this significance by experiment or by the further accumulation of data. It is with the first two parts of the scientific method that this paper deals. Whether or not several of the theories herein developed will be tenable after further evidence is accumulated it remains for the future to disclose.

It is pertinent here to say that the true scientist, ever a seeker of truth, cannot expect a statement of theory or fact to disclose its entire significance. Knowledge of any subject can never be consummated nor final, for as new truths are discovered and new methods of investigation devised, the light of scientific research casts ever changing shadows whose depths must be carefully plumbed, and discovers to the gaze of seekers new high lights of truth, thus throwing an entirely different

perspective upon the matter. One of our greatest naturalists has related that scarcely one of the theories he formed at first has withstood the tests of time.<sup>1</sup>

However, it is clear that the time has come when much of the knowledge of migration as disclosed by the bird banding method should be publicly stated and discussed. After eight consecutive years of extensive effort on the part of hundreds of banders surely much information has been obtained worthy of publication. It is to help fulfill this need that this paper has been written.

The subject of the *fall* migration of Mourning Doves has been taken simply because the banding method has only given returns for this particular migration. There are no data of the northward spring migration since the few returns for doves banded during the winter months in the south were made at or near the stations where the bands were placed. The abundance of data on the fall migration contrasted with the complete lack of data upon the spring is due to the hunting propensities of the people of the southern states. Although doves are classed as game birds in all localities they are hunted extensively only in the southern states. If it were not that they are game birds the return data would have been too meager to warrant any deductions.

In Figure 1 there is given a graphic representation of the migrating flights of doves, which includes all returns reported to the Bureau of Biological Survey by March 26, 1928. In order to show the trend of flight to different localities lines were drawn connecting the spots representing the banding stations in the north to the spots representing the localities in the south where each bird was retaken. When examining this map it should be borne in mind that not all of the flights represented are necessarily direct, that is in several cases one or more migration seasons may have intervened between the times of banding and recapture. Thus one dove banded at Kansas, Illinois, in May, 1921, was recaptured at Moultrie, Georgia, in January, 1926, after the lapse of two fall migration seasons. Such an occurrence, however, is the exception rather than the rule, for over sixty per cent of all the recaptures were made after only one fall migration season had elapsed. (See Table I). It must also be realized that the spots representing the banding stations do not show the nesting locations of many of these birds. Since a considerable number were trapped during the fall or spring migrations, many of them were caught while actually in

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<sup>1</sup>Charles Darwin's Autobiography, "Little Masterpieces of Autobiography," Volume 2, page 58.

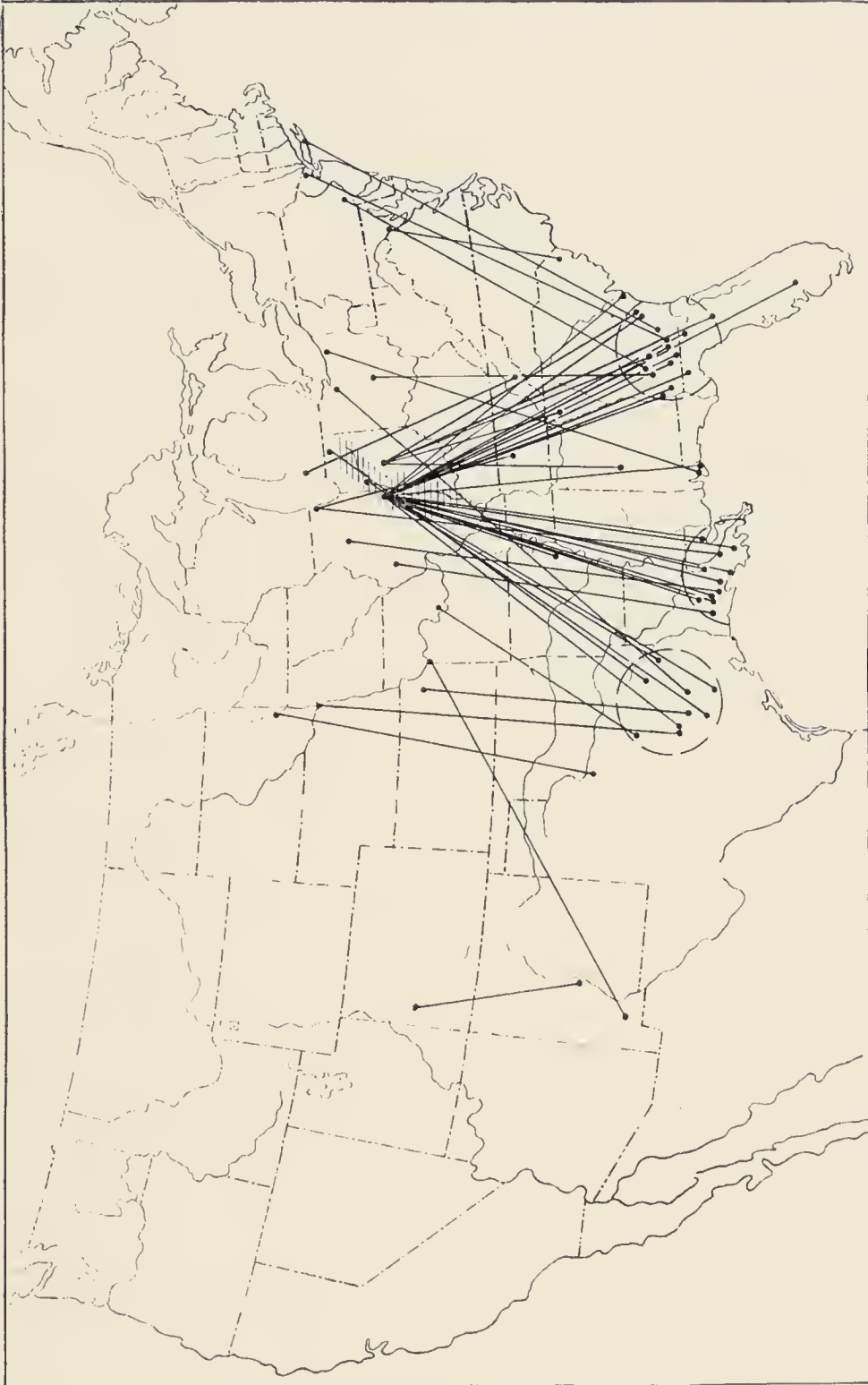


FIG. 1. Diagram to show the locations of banding and recovery of Mourning Doves.

the process of migration to or from their nesting locality, which in some cases, was undoubtedly considerable distances farther north.

Examination of the map at once shows that there are apparently three distinct areas in which doves concentrate for the winter. These areas are in the order of intensity of concentration, southern Georgia and northern Florida, southern Louisiana, and northeastern Texas. There may be three possible reasons for this *apparent* concentration, as follows:

1. That there is an actual concentration of doves in these localities.
2. That Mourning Dove hunting is more intense in these localities.
3. That dove hunting is more intense in these localities because of the concentration of doves there.

The third reason seems the more likely. Personally I have had no experience in the matter, never having been in the southern states. However, Mr. F. C. Lincoln has written me of his experiences concerning the wintering of doves in southern Georgia. He says, "Doves are extremely abundant at that season, particularly in the southern and southeastern parts of the state."

The map also shows that there is a boundary which determines the concentration areas to which doves migrate. This boundary is the Wabash River Valley, shown cross hatched. All birds trapped at points east or southeasterly of the Wabash River Valley migrate to the Georgia concentration area or its vicinity. Those nesting in or migrating through the Wabash River Valley migrate to any of the three concentration areas. Those trapped west of the Wabash River Valley migrate only to Louisiana or Texas. It would be absurd to state that never does a dove violate these rules, but nevertheless the data certainly indicate that in the majority of cases the Wabash River Valley serves as a boundary line for the fall migration.

Although the lines on this map connecting the points of trapping and the points of recapture have been drawn straight, it is an entirely unwarranted presupposition that the migration flight of any individual is in a straight line. There must be more or less wandering from one side to the other of the direct course to the point of destination. We have at present no information concerning the peregrinations of doves on their migratory flights. Nevertheless, it is evident from Figure 1 that mountain ranges form barriers which are not commonly crossed. Those birds trapped in Ohio, Indiana, and Illinois, and which were recaptured in southeastern Georgia either skirted the southern end of

the Unaka and Great Smoky Mountains or made their way through the valleys and the passes where the altitude is not great. The two doves recaptured in New Mexico also show the tendency to avoid high altitudes.

Table II gives data showing the relative times at which doves first arrive in the several concentration areas. Although it cannot be definitely said that the first migratory doves arrive at a particular concentration area upon a certain date, an average date of the earliest recaptures for a given number of doves in each area will indicate which areas are occupied first, and approximately how much earlier one area is occupied than another. The average date of recapture of the first eight doves in each area was Texas, October 16, Louisiana, November 15, and Georgia, December 6. As several of these eight birds recaptured in each area either originated in or passed through the Wabash River Valley, it is interesting to note the respective distances from Kansas, Illinois, a central point in the Wabash River Valley, to the three concentration areas. These straight line distances are approximately, to Texas, 750 miles, to Louisiana, 650 miles, to Georgia, 620 miles. It will be noted that although the distance flown to the Texas concentration area is greater than to the other two, the Texas concentration area is occupied the earliest. Three possible reasons can be given for this phenomenon:

1. The first migrants to leave the nesting locality fly to Texas.
2. The migrants to Texas fly more rapidly.
3. The earliest migrants fly to Texas and they also fly more rapidly.

In considering this matter it would be well to examine the game laws which determine the hunting seasons of these three areas and discern whether or not these data are vitiated by this artificial factor. At the time in which these data were secured, the open season for doves in that portion of Texas in which all the recaptures were made was from September 1 to December 15; in Louisiana, from November 1 to January 31; in Georgia and northern Florida from October 16 to January 31.<sup>2</sup> It should be noted that although the hunting season in Texas opened September 1, only two of the first eight recaptures occurred in September, while the majority occurred in October. In Louisiana all of the first eight recaptures occurred in the first month of open season. In Georgia and northern Florida not one of the first

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<sup>2</sup>Migratory Bird Treaty Act.

eight recaptures occurred within the first month of open season. It is plain, therefore, that in Texas and Georgia the hunting season did not affect the times at which the first eight doves in each area were retaken, for the majority of recaptures were made after the season had been open for a considerable time. In Louisiana the hunting season may have influenced the time of recapture. If the open season had determined the dates upon which the earliest birds were recaptured, we would have found that these earliest recaptures were bunched into the first few days of the open season. In the Texas and Georgia areas this was certainly not so.

In order to be able to judge of how rapidly the migration southward progresses some idea of when migration commences at a northerly latitude must be ascertained. This date for Kansas, Illinois,

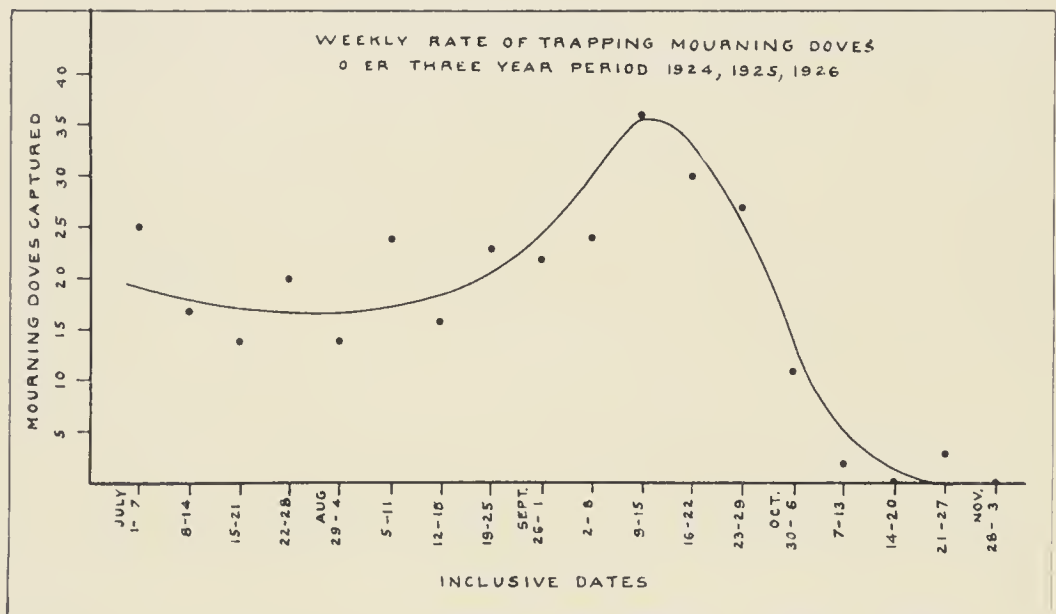


FIG. 2. Graph indicating the number of trapped and banded Mourning Doves in the fall season; which also serves as a measure of the intensity of migratory movement.

which is situated in the east central portion of the state, may be determined since here I have banded a sufficient number of doves over a period of three years to enable reliable deductions to be made. In Figure 2 there is graphically shown the totals of three years of dove trapping week by week beginning with July 1, and ending November 3.<sup>3</sup> All doves including repeats and returns have been counted. In all three years neither the number nor style nor location of traps was changed during any one season; and except for a few interruptions

<sup>3</sup>Data for this curve are shown in Table 3.

of two or three days extent the trapping was continuous. It can be seen from the average smooth curve line drawn among the points representing the total weekly catch over the three year period, that the intensity of trapping gradually decreases up until about August 1, then slowly increases until August 20, from that date increasing ever more rapidly until a sudden high peak is reached the second week in September. From then on the intensity of trapping rapidly decreases until by the early weeks of October scarcely any doves are caught. This intensity of trapping is an excellent measure of the intensity of migration. This is evident during the spring migration as well as during the fall migration. This curve shows that at Kansas by August 20, migration has sensibly begun, reaches its peak of intensity by the second week of September, and except for a few tardy birds is practically complete by October 1.

When attacking the problem of speed of migratory flight the banding method offers no positive evidence, for one can never be sure that any particular individual commences its migratory flight as soon as released from the banding station nor that it is recaptured immediately upon its arrival at its winter quarters. However, if all the available evidence is brought to bear upon the subject and the matter is approached from several different standpoints each method of approach giving approximately the same result, we may be reasonably certain that our results are not far from the truth.

Let us first consider the time of departure of the earliest migrants from Kansas, Illinois, and the times of arrival of the earliest doves at the three concentration areas. Table IV gives the data in concise form.

If now we investigate the speeds developed by individuals in their migratory flights there are two cases in which less than seventy days elapsed between the time of trapping and the date of recovery. Neither of these two repeated so the date of banding is the date on which they were free to migrate. Table V gives the complete data.

The average rate of travel 9.4 and 9.3 miles per day is the *minimum* rate of travel for each bird. It is quite possible that they actually traveled faster than this, but it is not likely that they greatly exceeded this speed for these are the two fastest rates of travel which the banding data afford.

Dove number 19008 gives additional evidence. Since this dove had been banded in June of the same year and was at Nashville, Tennessee, on September 28, it was on its migratory flight. If it had been free to continue its journey the additional 350 miles to southern Georgia and had traveled at the average rate of 10 miles per day, it

would have arrived November 2, and would have been among the earliest arrivals. Consequently it could not be expected that this rate of travel would have been much exceeded.

There is one more angle from which to look at the subject. Since it is based greatly upon conjecture it would have little weight of itself, but in connection with the circumstantial evidence already given it seems worthwhile mentioning. If it is assumed that the very last migrants of the season which pass through Kansas, Illinois, come from the northern extremity of the nesting range and that they begin their migration about August 20 and travel at an average rate of 12 miles per day, then since the last few scattered flocks of migrants have been observed to pass Kansas, Illinois, about November 1, or 70 days later, it would be expected that the northern extremity of the nesting range is about 850 miles farther north or at about 52° latitude. This, I believe, is the case.

To sum up all this evidence, which is purely circumstantial and none of it demonstrative, it seems quite certain that Mourning Doves migrate in the fall at an average rate of from about 6 to 13 miles per day. It also seems highly improbable that this rate is exceeded by much.

This slow rate of migration is in marked contrast to the strong rapid flight of Mourning Doves which often exceeds 35 or 40 miles an hour. Since only a part of a day of continuous flight would enable doves to traverse the greater part of the distance to their winter quarters, it must be that after a very few hours of migratory flight flocks will dally near one locality for several days or even weeks before resuming their southward course.

Cooke states that the average rate of migratory flight of all birds is approximately 23 miles per day.<sup>4</sup> His paper does not mention Mourning Doves. But then it is quite possible that at the date of that publication (1915) it was not known that Mourning Doves migrated. This seems to have been a point not accepted by all ornithologists.<sup>5</sup> At any rate the habits of doves are such that Cooke's methods of investigation could have yielded little information upon their migration, since they are more or less resident all the year around over at least most of their range and there are no distinguishing marks between the migrants and non-migrants.

<sup>4</sup>Bird Migration, by Wells W. Cooke, Bul. 185, U. S. Dept. of Agriculture, page 45.

<sup>5</sup>Bird Banding in America, by F. C. Lincoln, Smithsonian Report, 1927, page 345.



Bird banding returns yield a little information about non-migrants. There are two returns of doves recaptured in the winter at or near the northern banding station in which they were originally caught. Number 319212 was banded by Mr. Perkins in the nest as a fledgling September 6, at Indianapolis. It was recaptured near Indianapolis the 29th of the following December. Dove number 283786 was trapped at Kansas, Illinois, in immature plumage October 6, and was killed by flying into a locomotive on the 31st of the following December at Hutsonville, Illinois, only thirty miles south. Here are two instances of individuals remaining at or near their summer quarters as winter residents. That they were both immature birds cannot, until additional data are secured, have any significance, for these two instances are insufficient evidence to warrant any deductions. We merely know that sometimes immature doves do not migrate.

#### SUMMARY

In summarizing this paper the following points may be briefly stated:

Mourning Doves migrate.

In winter migrants from the north concentrate in three areas close to the Gulf of Mexico; namely, southeastern Georgia and northern Florida, southern Louisiana, and northeastern Texas.

The concentration of doves in these areas is greatest in the Georgia area, then Louisiana, then Texas.

The earliest migrants arrive first in the Texas area, then Louisiana, and finally in the Georgia area.

The earliest migrants arrive in noticeable numbers in the Texas area almost two months before the Georgia area is occupied in considerable numbers.

The Wabash River Valley is a boundary line determining to which area doves migrate.

Doves nesting east and southeast of the Wabash River Valley migrate only to Georgia.

Doves nesting in or migrating through the Wabash River Valley migrate to any of the areas.

Doves nesting west of the Wabash River Valley migrate to Louisiana or Texas.

The speed of doves on the fall migration flight varies from about 6 to 13 miles per day.

Migrants to the more distant Texas area fly more rapidly than migrants to the nearer Georgia area.

TABLE I

Foreign Mourning Dove returns up to March 26, 1928.

Banding Locality	Band No.	Date of Banding	Date of Recovery	Locality of Recovery
Colo., Grand Junction...	9793	Aug. 28, 1923	Sept. 5, 1926	N. Mex., Zia
D. C., Washington....	110743	July 25, 1924	Nov. 19, 1927	S. C., Conway
Ill., Clayton .....	440569	July 22, 1926	Nov. 6, 1926	La., Lake Charles
Ill., Kansas .....	287598	June 30, 1925	Sept. 22, 1927	Ala., Easonville
Ill., Kansas .....	287631	Aug. 11, 1925	Jan. 21, 1926	Ala., Perdido Beach
Ill., Kansas .....	440631	June 5, 1926	Dec. 9, 1926	Ark., Forrest City
Ill., Kansas .....	440646	June 25, 1926	Jan. 19, 1928	Fla., Jasper
Ill., Kansas .....	275206	Sept. 21, 1923	Nov. 29, 1923	Fla., Tallahassee
Ill., Kansas .....	315832	July 3, 1924	Dec. 6, 1925	Fla., Wauchula
Ill., Kansas .....	440672	July 12, 1926	Dec. 17, 1926	Ga., Baxley
Ill., Kansas .....	315801	June 16, 1924	Dec. 24, 1924	Ga., Brooks County
Ill., Kansas .....	283864	Apr. 22, 1925	Jan. 15, 1926	Ga., Donalsonville
Ill., Kansas .....	287635	Aug. 12, 1925	Nov. 24, 1927	Ga., Ft. Gaines
Ill., Kansas .....	314061	May 22, 1924	Jan. 29, 1926	Ga., Moultrie
Ill., Kansas .....	315837	July 5, 1924	Jan. 1, 1926	Ga., Savannah
Ill., Kansas .....	281741	Aug. 18, 1924	Feb. 9, 1925	Ga., Valdosta*
Ill., Kansas .....	281702	July 24, 1924	Dec. 22, 1924	La., Catara
Ill., Kansas .....	287635	Aug. 12, 1925	Nov. 24, 1927	La., Iberia Beach
Ill., Kansas .....	283883	May 3, 1925	Jan. 13, 1926	La., Mandeville
Ill., Kansas .....	281715	Aug. 5, 1924	Nov. 27, 1924	La., Midland
Ill., Kansas .....	440603	June 1, 1926	Nov. 15, 1926	La., Milton
Ill., Kansas .....	287584	June 19, 1925	Nov. 15, 1926	La., Morgan City
Ill., Kansas .....	274615	Sept. 1, 1923	Nov. 8, 1923	La., New Roads
Ill., Kansas .....	442354	May 23, 1927	Nov. 8, 1927	La., Ridge
Ill., Kansas .....	287579	June 16, 1925	Oct. 31, 1925	Texas, Brenham
Ill., Kansas .....	287654	Sept. 14, 1925	Dec. 29, 1927	Texas, San Augustine Co.
Ill., Kansas .....	361938	Apr. 25, 1926	Oct. 20, 1927	Texas, Waco
Ill., Ohio.....	374892	June 2, 1926	Nov. 16, 1926	La., Vermillion Parish
Ill., Waukegan .....	359172	Apr. 29, 1927	Jan. 26, 1928	La., Belle Rose
Ill., Waukegan .....	19008	June 18, 1921	Sept. 28, 1921	Tenn., Nashville
Ind., Goshen .....	463609	June 12, 1926	Jan. 13, 1928	Texas, Chandler
Ind., Indianapolis ....	10119	June 19, 1922	Nov. 25, 1922	Ala., Marion
Ind., Indianapolis ....	283498	June 5, 1925	Nov. 26, 1925	Fla., Gainesville
Ind., Indianapolis ....	547002	June 15, 1927	Dec. 20, 1927	Ga., Baxley
Ind., Indianapolis ....	546928	June 23, 1927	Jan. 22, 1928	Ga., Curryville
Ind., Indianapolis ....	218942	May 25, 1924	Dec. 25, 1924	Ga., Doerun
Ind., West Lafayette	284059	Apr. 19, 1925	Oct. 14, 1925	Texas, Cameron
Iowa, Sioux City.....	288041	July 16, 1925	Sept. 24, 1927	Texas, Waco
Kans., Kansas City..	441014	June 20, 1927	Sept. 17, 1927	N. Mex., Luna Co.
Kans., Mayetta .....	339492	Aug. 3, 1926	Oct. 14, 1927	Texas, Falls Co.
Mich., South Haven	314026	June 10, 1924	Dec. 2, 1927	Tenn., Hubbard
Mo., Columbia .....	266941	June 10, 1924	Sept. 10, 1926	Texas, Fort Worth
N. J., Montclair.....	275327	May 26, 1925	Dec. 24, 1925	Ga., Howell
N. Y., Mastic.....	57969	July 22, 1923	Dec. 15, 1923	Ga., Homerville*
Ohio, Columbus .....	398616	July 7, 1926	Dec. 1, 1926	Ga., Dougherty Co.*
Ohio, Gates Mills....	206104	Aug. 18, 1927	Oct. 29, 1927	Ala., Foley
Ohio, Tiffin .....	360371	Aug. 15, 1925	Nov. 28, 1925	Texas, Marquez
Pa., Newtown Square	42829	May 31, 1920	Jan. 28, 1921	Ga., Albany
S. D., Dell Rapids....	374075	June 3, 1926	Oct. 6, 1927	Texas, Wichita Falls

\*Date of recovery approximate.

For a list of all dove returns, both domestic and foreign, up to January 1, 1927, see Returns from Banded Birds, 1920 to 1923, Dept. Bull. No. 1268, and Returns from Banded Birds, 1923 to 1926, Technical Bull. No. 32, U. S. Dept. of Agriculture.

TABLE II

Dates of recovery of first eight migratory Mourning Doves recaptured in each concentration area.

TEXAS AREA		LOUISIANA AREA		GEORGIA & NORTHERN FLORIDA AREA	
Number	Date of Recovery	Number	Date of Recovery	Number	Date of Recovery
266941	Sept. 10	440569	Nov. 6	287635	Nov. 24
288041	Sept. 24	274615	Nov. 8	283498	Nov. 26
374075	Oct. 6	442354	Nov. 8	275206	Nov. 29
339492	Oct. 14	440603	Nov. 15	398616	Dec. 1
284059	Oct. 14	287584	Nov. 15	315832	Dec. 6
361938	Oct. 20	374892	Nov. 16	57969	Dec. 15
287579	Oct. 31	287635	Nov. 24	440672	Dec. 17
360371	Nov. 28	281715	Nov. 27	547002	Dec. 20
Average	Oct. 15	Average	Nov. 15	Average	Dec. 6

TABLE III

Weekly rate of trapping Mourning Doves during summer and fall over a three year period. 1924, 1925, 1926. at Kansas Illinois.

Date	Number of Doves Trapped	Date	Number of Doves Trapped	Date	Number of Doves Trapped
July 1-7	25	Aug. 12-18	16	Sept. 23-29	27
July 8-14	17	Aug. 19-25	23	Sept. 30-Oct. 6	11
July 15-21	14	Aug. 26-Sep. 1	22	Oct. 7-13	2
July 22-28	20	Sept. 2-8	24	Oct. 14-20	0
July 29-Aug. 4	14	Sept. 9-15	36	Oct. 21-27	3
Aug. 5-11	24	Sept. 16-22	30	Oct. 28-Nov. 3	0

TABLE IV

Rate of migratory flight to the three concentration areas.

Area of concentration	Earliest date of departure Kansas, Ill.	Average date of 8 earliest recoveries at concentration areas	Days elapsed	Distance traveled in miles	Average miles per day
Texas.....	August 20	October 15	56	750	13.4
Louisiana.....	August 20	November 15	87	650	7.5
Georgia.....	August 20	December 6	108	620	5.7

TABLE V

Rate of migratory flight of individual doves.

Band No.	Banding station	Date of banding	Point of recapture	Date of recapture	Miles traveled	Days Elapsed	Avg. miles per day
275206	Kansas, Ill.	Sept. 21	Tallahassee, Fla.	Nov. 29	650	69	9.4
274615	Kansas, Ill.	Sept. 1	New Roads, La.	No. 8	630	68	9.3

Mountain ranges form barriers to the migratory flights of doves. Some immature doves do not migrate the first winter.

If we stop to consider the relationship of this study to the study of bird migration in general, we find that it adds nothing of importance to what was already known.<sup>6</sup> We find that it tells us nothing new of the *modus operandi* of migratory flight, nor does it clarify our understanding of its causes. Migration is still as much of a mystery as ever. However, through the application of the bird banding method some detailed knowledge of the migration of a species, which from its own peculiar habits renders it impossible to study by any other method yet devised, has been secured.

KANSAS. ILLINOIS.

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### NESTING OF THE WHITE-WINGED JUNCO IN THE BLACK HILLS OF SOUTH DAKOTA

BY W. H. OVER AND G. M. CLEMENT\*

During July and August of 1924, while collecting plants along the highway (No. 83) above Pactola in the Black Hills of South Dakota, Mr. Over observed numerous young and adults of the White-winged Junco (*Junco aikeni*). These birds were particularly abundant near a sawmill, and around a barn where horses were kept, feeding on wasted grain, etc. Upon inquiry he learned that they were reared earlier in the season in the immediate vicinity. Search also revealed several old nests, one on a horizontal 2x4 piece of timber bracing the wall and not six feet from the man who took the boards from the saw. Another nest rested on a timber under the floor and just beneath the saw. The band that ran the sawdust-carrier passed day after day within six inches of this nest. Several employees at the mill bore testimony to the fact that young birds were reared in each of these nests. Two other old nests were found, one in the mill, and another on a rafter plate of the roof of the blacksmith shop, nine feet above the ground and in almost the exact spot where in two succeeding seasons Mr. Clement found occupied nests of this species.

During the holiday season of 1924-25 Mr. Over spent a few days in the locality, and found many of these Juncos present and feeding daily around the buildings. They readily responded to an invitation to visit a hastily improvised feed box where crumbs and cracked nut-

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<sup>6</sup>See Problems of Bird Migration, by A. Landsborough Thompson, Chap. XVI.

\*This paper has been prepared by Mr. Over, but the material is taken largely from the field notes by Mr. Clement. Efforts made in 1928 by Mr. Clement to photograph the nests and birds were not successful.

kernels were put for their convenience. Again during the last week of March, 1926, a visit to the locality found the birds abundant, and visiting the food box. At this time the mill employees informed the writer that the Juncos were not so plentiful in the summer of 1925 as in the preceding summer.

Mr. F. A. Patton reported this species as common at the State Game Lodge during the first ten days of March, but found no nests.

These facts gave evidence that the White-winged Junco was a breeding resident of the Black Hills. Consequently about May 25, 1926, Mr. George M. Clement, later a student at the University of South Dakota, made a trip to the Black Hills under the direction of Mr. Over for the purpose of collecting.

On June 3 he found the first nest in an old gallon syrup can in a thicket of small pine trees. The location was near an old road camp and only a short distance from the highway. The discovery was made by first observing the male approach the can with a worm. The nest contained four eggs well advanced in incubation. Both birds were taken in order to determine the species.

On June 5 the second nest was found on the ground under a board in a pine thicket near the sawmill. It contained four eggs, too far advanced to save. On the same day another nest was found under the end of an old log, and contained four young which "distinctly showed the white wing bars".

On June 6 a nest was found on a roof plate in the blacksmith shop, about nine feet from the ground. The bird had approached the nest from under the eaves. The nest contained four young birds a few days old, in whose plumage the white wing bars were apparent. This was almost the exact location of the old nest taken by Mr. Over in 1924.

On June 7 another nest was discovered under the root of a tree near the highway. The four eggs were well advanced. On the same date still another nest with four young birds was found in a very similar location and close by.

The season of 1927 was backward, due to late snows in the Black Hills. The first nest found this year by Mr. Clement was on June 13, and in the exact place in the blacksmith shop where one had been found in two preceding seasons. Whether the same female built here during four consecutive seasons we do not know, but Mr. Clement records the fact that the female in 1927 did not flush from the nest until touched by the hand, which may be taken as evidence that she

had become accustomed to human associations. This nest contained three fresh eggs.

On June 11 two nests had been reported to the writers; one under a log with four eggs was destroyed when the log was moved, while another contained eggs well advanced.

On the 14th a nest was located in a tomato can within ten feet of the syrup can nest of 1926. It contained only two eggs, and although the nest was visited daily until the 17th no more were laid. The two, therefore, constituted a full set. About twelve feet distant an old nest was found in another tomato can, which led us wonder if this was a territory claimed annually by the same pair of birds. On the 15th another nest was found under the exposed root of a tree near the roadside. The female was flushed by striking the tree with a stick and joined her mate in a tree a few yards from the nest. The four eggs were too far along to save. It should be stated that Mr. Clement carried a drill, and tested one egg before taking a set. During the last season of work he was able to detect the condition in some cases without the loss of a single egg.

On June 26 another nest was reported by sawmill employees but was destroyed in moving the log. As late as June 29 a nest was found containing one egg, and was visited daily until a set of five was taken.

In 1928 Mr. Clement made a third trip to the Black Hills with the following results: The first nests were found on May 27 under old logs on a hillside: two nests contained four eggs each, but only one set was saved. On the 28th a nest under exposed roots contained four eggs far advanced: here Mr. Clement watched three young birds reared until they left the nest. On the 28th he found another nest with four fresh eggs, which were taken. On the 30th five nests were found, as follows: nest under a log with four incubated eggs; nest on the side of a steep canyon with four eggs far advanced: another nest in same locality with three fresh eggs; another nest with young which left on June 5: the last nest with eggs far advanced.

On May 31 a nest was found with three young birds just leaving the shells, while the fourth hatched on the following day. These birds were under observation until they were able to leave the nest, on June 10. On the same day another nest was found in an open field under a clump of dead grass: it contained four young. Three nests were found on June 1, one under a rock ledge with four advanced eggs, one with four fresh eggs, and one with four eggs ready to hatch. On the 2nd another nest under a rock ledge with young birds, on the 3rd a nest under exposed roots with four young, and on the 6th

a nest with four fresh eggs under a rock ledge, were added to the list.

Mr. W. D. Sharwood, a resident of the Black Hills, has sent me the following notes of the White-winged Junco observed in his vicinity: Parents feeding young on June 12, 1919. Adults apparently nesting on May 8, 1924. Building nest in rear wall of an outhouse on April 13, 1925. Female incubating on May 31, 1925. Young being fed by parents on September 5, 1925.

By way of summary it may be noted that the White-winged Junco is a more or less abundant resident species in local areas of the Black Hills, especially at an elevation of about 5300 feet. From the experience of Mr. Clement it would seem that the species was more abundant in 1928 than in the other periods studied, or that Mr. Clement became more skilled in finding the nests; perhaps both factors played a part.

It is also evident that their nesting season extends over a rather long period, varying according to climatic conditions. As to the nest sites Mr. Clement's notes of 1928 state that this junco prefers "a sloping, mossy hillside, extending up from a creek of running water. The nests are on the ground, under a rock ledge, exposed root, or log." Mr. H. E. Lee reports a nest of this species which was located six inches above the ground in a low shrub with thick foliage. With the nests found in the blacksmith shop nine feet from the ground, as well as others in the sawmill, and including the old fruit cans, it is quite evident that these juncos can adjust themselves to a variety of locations. After all, their nesting habits do not vary far from those of the genus, but are in close resemblance to those of the Oregon Junco.

While four eggs is the usual clutch, it varies from two to five, the small number probably being that of very young or very old females.

We have reports of the nesting of the Slate-colored Junco in the Black Hills, but as yet no authentic records are at hand.

UNIVERSITY MUSEUM, UNIVERSITY OF SOUTH DAKOTA,  
VERMILLION, S. D.

## HABITS OF THE FLORIDA RED-SHOULDERED HAWK

BY DONALD J. NICHOLSON

The Florida Red-shouldered Hawk is found throughout the entire State, and is a common bird. No other hawk approaches it in numbers, and in certain districts it is exceedingly abundant. It frequents pine forests, prairies, marshes, river-beds, swamps surrounding lakes, extensive cypress swamps, and in fact most any place inland, but I have never seen it on or very near the sea-coast.

I have seen this bird as far south as Cape Sable, and found it nesting on March 6, 1927, about ten miles southwest of Royal Palm Park, Munroe County. The nest was in a small cypress and held two young about two weeks old. The parent was, or seemed to be, a much lighter or paler bird than those found in other parts of Florida, except on Key Largo, where I saw three birds the early part of April, 1927. The Red-shouldered Hawk of this key is now separated, and is said to be a smaller and paler bird than that of the mainland. The birds in Dade and Munroe Counties, however, appeared to me much paler than those found in other parts of Florida. This difference was so pronounced that I noticed it in the field, without the aid of specimens.

Early in December the birds begin their wild courtship "songs", which consists of loud, piercing, shrill calls, or screams, given while circling in the air. With loud cries they either soar or flap their wings rapidly, going in a circle higher and higher. From one to four individuals may be seen in the air at a time over the chosen nesting site. Spirited swoops and long dives through the air are often seen, they calling sharply the while. These cries are given also flying from one place to another. They are most noisy at this period, and keep it up throughout the entire day at intervals.

Early pairs begin building their nests in December, and by January 19 have deposited the complete set of two or three eggs. I have found a single fresh egg as early as January 18, 1927, and have found half a dozen full sets by January 20. It seems that these are laid by very old birds, as each year these same locations have early sets, regardless of cold or mild winters and wet or dry seasons. By February 15, the birds are well under way, but many deposit their eggs in early March, and a few belated nesters wait until April. These, possibly, are young birds of the year before.

More open spots in cypress swamps are chosen for nesting, and if in pine and cypress country a pine close beside the swamp is selected. They do not nest very far from water, and invariably quite



close to the cypress strands. The birds are very numerous on the Kissimmee Prairie, and in fact on most any prairie, nesting in the mixed clumps of palms, oaks and gum trees, which are called "hammocks". Their nests are usually about twenty-five to thirty feet above the ground, but few are placed eighteen or twenty feet, and some fifty to sixty-five feet above the ground. Their favorite nesting tree is the live oak draped heavily with Spanish moss; next is the pine, and third choice is "cabbage" palms; but gums and cypress trees are frequently used. Some of the nests are most artfully hidden among the heavily moss-festooned oaks, and it takes a keen eye to detect them. However, more often they are in plain sight, in the crotch, or out on some horizontal branch. There seems to be no preference.

I do not remember one instance where Spanish moss was not in use, and it comprises in many cases the bulk of the nest. Dead sticks, air-plant leaves, clumps of grass roots, and Spanish moss compose the body of the nest, and it is lined with Spanish moss, a few dead air-plant leaves and stems, bark, green or dead leaves, and down from the parent. Some nests are quite heavily sprinkled with this white down, and a sure sign of occupancy is the tell-tale down clinging to twigs surrounding the nest. The nest cavity is rarely deeply cupped, more often a gradual depression. Some are quite large structures, while others are quite small. In many nests green leaves are used, causing the eggs to become badly stained.

In many cases the nests are constructed long before the eggs are deposited, and I have waited a month after the nest was ready before the bird laid. On the Kissimmee Prairie, where tree cavities are scarce, this hawk often has her new nest stolen by a pair of Florida Barred Owls, and is compelled to build another. I have noted this on four or five occasions. Seldom will this hawk use the nest of the year before, but prefers to re-build each season; however, it does sometimes use the old nest, by merely adding some fresh material, mainly live Spanish moss, air-plant leaves, green leaves, etc. If a set is collected the bird rarely deposits a second set in the same nest, but resorts to another tree in the same clump, or near the original site. They cling tenaciously to the same place each year, no matter how often they may be disturbed. Second sets are deposited within three weeks to four weeks after the first have been destroyed.

The Florida Red-shouldered Hawk lays from one to three, very rarely four, eggs. I have seen possibly close to 150 nests, and two eggs or young is the rule, but three are laid quite often. I should say the ratio is five to one in favor of the smaller number. Quite

often only one egg is laid. William Leon Dawson found the first set of four eggs I ever saw in March, 1928, while with me. In 1929, Messrs. J. C. Howell and Wray H. Nicholson took a set of four eggs. Both sets were found on the Kissimmee Prairie and the only large sets known to me. Some years they seem to run heavily to sets of three eggs, but one year (1910) I took seventeen sets, of which two were single eggs, and one set was of three eggs.

As nearly as I can ascertain, it takes a little over four weeks for the eggs to hatch, judging from a set I took three weeks after finding a single fresh egg. It appeared from the stage of incubation that these eggs would have taken eight or ten days more to fully develop. The young are alert little fellows, clothed in snowy white down, with blue-black bills, and give weak imitations of the adult calls at quite an early age.

After the bird has deposited her full set she is always found on the nest, and rarely slips off until the tree is smartly rapped, or loud shouts are given, or sticks thrown up at the nest. She is often a close sitter and even this does not seem to bother her. I have thrown sticks and had them strike the nest only to have her flit up, and again settle upon the eggs. Often after rapping you are forced to ascend, and then sometimes she leaves the nest softly as an owl, but more often emits wild piercing screams. I once went up to a nest on a windy day and touched the bird's tail once and still she remained. The second time she dashed off like a bullet.

The birds are very bold and fearless in the defense of their nests, either while the eggs are fresh, or with young. One day I visited five nests, and the first bird carried away my cap in her talons and struck me such a severe blow that it gave me a bad headache, and left a scratch on my forehead. At two more nests I was attacked and struck upon the head. Many other times this has happened. This bird coming swiftly as an arrow directly for your head, screaming wildly, gives a timid soul the shivers, and unless you wildly wave your arms and shout, most likely she will give you a stiff blow that will put fear into you, and respect for their bravery. Actions of different birds vary when flushed from a nest; some will slip off quietly and not make any outcry, but the common practice is to begin calling and circling above, making dashes at the collector. Generally the male joins in. Others are content to alight in a tree within a few yards and try to frighten you with their shrill cries.

Two pairs rarely use the same hammock on the prairies, but I have found on one or two occasions two nests within few hundred

yards, where clumps were scarce. Nesting places are scarce on the prairies, and Florida Barred Owls, Florida Crows, and Audubon's Caracaras are often found nesting together in hammocks of an acre in area. Sometimes a Florida Red-tailed Hawk will nest near a Red-shoulder.

While in Collier County, May 1 to 5, 1928, I found several nests upon that late date with small young. The eggs of this hawk are quite handsome, but many are very plainly colored, with brown markings (sparse) on a ground of white. Frequently immaculate eggs are seen. Many have only a few minute dots. Generally, the marking is bold, with spots and splashes of reddish, brown, blackish, chestnut and lavender. Some are almost entirely marked faintly with lilac or lavender, and no other colors. Eggs of a set most usually match in size, but in a series the size of the eggs varies considerably. Some eggs are equal ended, ovate. Most eggs are blunt-pointed, while others are almost round. The patterns of marking are quite varied: some are heavily marked at the large end with other markings scattered over the entire egg. Others are equally marked all over, while still others are heavily marked at the center, more so than at the large end.

I have never seen these hawks chasing birds, and they make no attempt to catch small birds, which often annoy them in flight, but dodge and try to avoid them. Their food consists mainly of frogs and mammals; also many snakes are caught, and occasionally a bird. I have rarely observed feathers of birds in their nests. It can be safely classed as a beneficial bird. However, farmers in certain sections have suffered the loss of many small "biddies", and these hawks are killed whenever an opportunity is offered.

The method of hunting food by this hawk is perching alertly on posts, dead trees, or stumps, out in the open, watching patiently by the hour for its prey, be it some luckless mouse, snake, or frog. It is more frequently seen along the banks of streams, ditches, marshes, lakes, etc., watching for frogs, which is a favorite food. Crickets and grasshoppers are also eaten.

I counted ten of these birds within a few miles, posted on the top of telephone poles along the ditch, as I passed in my automobile, near Everglade, Florida, in April, 1928. Many did not offer to fly as I passed within twenty feet of them. However, the birds are as a rule rather shy, and do not permit close approach, except during the nesting season while near a nest.

ORLANDO, FLORIDA.

## WATER BIRDS IN A DRY LAND

BY WALTER E. LEWIS

I am located on the border of the Great American Desert. The bleak and windswept plains stretch westward to the base of the towering Rockies. The casual observer might say, as many have said, "Here there are no birds". At any rate, one might expect to find only the hardier birds, such as the native sparrows and the meadow lark, or the soaring eagle. Truly, these are all here, but the surprising discovery that the investigator makes is the relative abundance of water birds in this generally arid and treeless country. The explanation is, that while ours is a dry country, it is wet in spots.

My location is in northwestern Oklahoma, a little south of the Kansas boundary and on the line where the Panhandle is joined to the main part of the state. The Cimarron River, noted for its quicksands and its shifting channels, flows in an easterly direction a few miles to the north of me, while Beaver Creek, a main tributary of the North Canadian, comes down from the distant mountains of New Mexico a few miles to the south. Between these two streams is a flat, some dozen miles across that has no drainage outlet to either stream. The water from heavy rains falling on this territory collects in shallow fresh water ponds.

These ponds vary in size from a few acres to several hundred acres. Between heavy rains they may go dry, but the largest one, located about two and one-half miles northeast of the village of Gate, has contained water for more than five years at a time. During such a period it becomes stocked with fish, while snails, toads, and numerous forms of aquatic insects and plants are abundant. Thus it is that conditions are often favorable for the presence of large numbers and varieties of water birds.

My list of identifications numbers some fifty species of shore and water birds. I do not claim to include all the forms that visit this locality, as my bird study is carried on simply for the fun of it and as a minor accompaniment to my business of farming. Then, too, I do not collect. Living beauty interests me more than a specimen with a catalogue number. I would rather be baffled by a living mystery than to have a dead certainty lying on its back with its feet in the air. Of course this is utterly unscientific, but then I do not claim to be a scientist, merely a lover of birds. My list is, therefore, smaller because I have included only those birds whose identification has been positive and unquestionable, and have excluded a number of probabilities.

## LIST

EARED GREBE. *Colymbus nigricollis californicus*. This form has been seen only once. On May 7, 1924, five individuals were seen on the largest lake.

PIED-BILLED GREBE. *Podilymbus podiceps*. The only record of this interesting diver is one seen May 15, 1927.

HERRING GULL. *Larus argentatus*. In December, 1921, six of these gulls appeared on the big lake, which was swarming with little fish, and stayed all through the winter. At least two of them were shot by hunters. I have seen none since.

RING-BILLED GULL. *Larus delawarensis*. There are two records of this, once on May 20, 1921, near the big lake, and again March 24, 1924. This was a very windy day and the gull was flying about in the fields apparently in some difficulty because of the high wind.

FRANKLIN'S GULL. *Larus franklini*. This splendid friend of the farmer is a regular visitor here. In the spring time it fearlessly follows the farmer as he works the ground. Very few insects thus exposed escape. When there is water in the lake the gulls gather in the autumn in great numbers, appearing in September or October. They spend their nights on the lake, streaming off in the morning to search for grasshoppers in the wheat fields. During their stay here they visit in turn all the fields within twenty-five or thirty miles. They are very thorough in their work and, as the flock sometimes numbers 20,000 individuals, they can do a vast amount of good in destroying insect pests.

FORSTER'S TERN. *Sterna forsteri*. These graceful birds are occasional visitors and may be seen skimming over lake or river.

LEAST TERN. *Sterna antillarum*. This is a summer resident and may generally be seen near the old swimming hole on Horse Creek, a small tributary of the Cimarron.

BLACK TERN. *Chlidonias nigra surinamensis*. These useful birds are regular migrants and summer visitors with us. They are faithful in scanning the freshly turned earth in the fields in search of insects. About the middle of May, 1912, an unusually large number passed in migration. It was toward the middle of the day when my attention was accidentally directed upward and I discovered a remarkable flight. At a height of about one thousand feet a stream of Black Terns about one-quarter of a mile wide was rapidly flying northward. I could distinguish their calls like the faint barking of prairie dogs. The flight continued for more than half an hour during which time count-

less thousands of individuals passed on their way to their northern breeding grounds.

WHITE PELICAN. *Pelecanus erythrorhynchos*. This imposing-looking bird is a regular migrant here, generally in small numbers but occasionally in large flocks. In the spring of 1923 a flock of 250 or more rested over night on the big lake. It was a magnificent, never-to-be-forgotten spectacle. About nine o'clock the next morning the great birds resumed their northern flight. Ten years ago a hunter from the neighboring village crippled a pelican in one wing and captured it. He took it home and cared for it. It readily became domesticated and made itself entirely at home. The village dogs, seeing this great strange bird walking about, thought to attack it, but a few blows from its great beak soon convinced them that they had no business with it. It would eat quite a variety of food, but only when there were bones in it. One day it went visiting to a neighbor's house and the lady of the house set out a pan of gravy for it to eat. It scooped up the panful into its capacious pouch then, finding there was no bone in it, stepped deliberately over to a tub of rain water that the lady had caught for washing her hair. It plunged its beak into the water and thoroughly washed out the offending gravy. The pelican was kept domesticated for eight months when, unhappily, it ate some poisoned meat intended for dogs, and died.

AMERICAN MERGANSER. *Mergus americanus*. This fish duck is a common migrant here. I have seen it especially in the spring-fed bayous along the Cimarron where fish are always abundant.

RED-BREASTED MERGANSER. *Mergus serrator*. This is a rare migrant, as I have seen only one here.

MALLARD. *Anas platyrhynchos*. This fine duck is a common migrant in large numbers. It furnishes a large percentage of the great flocks of ducks that we often have here when the lakes are full. While very often they are present in immense numbers, I believe that the latter part of February, 1921, showed the greatest flocks in my observation. They rested in the day time, as is their custom, in a fairly compact mass toward the middle of the lake, covering probably twenty-five or thirty acres, with at least a thousand birds to the acre, and flew out to their feeding grounds in the fields just as dusk came on. The ducks here like to feed on the grain fields of milo and kafir, and in the autumn often do great damage to fields where the stalks have broken over or been blown down, so that the head of grain is on the ground. A flock of five or ten thousand hungry ducks can well-nigh destroy a field of grain in a few nights. Not only do they eat the

grain but they pull the head to pieces and scatter it about so that it is wasted. When the ducks once start in on a field it is almost impossible to keep them out until it is destroyed. Of course the Mallard is not to blame for all this damage but as it makes up a large part of the duck population it will have to take its share of blame. Sometimes Mallards have been known to nest here.

BALDPATE. *Mareca americana*. This is not a common duck but it has been seen several times.

GREEN-WINGED TEAL. *Nettion carolinense*. These little fellows are very common here. They bunch up so on the water that they are an easy mark for the hunter. I once saw fifty-five birds that were taken with five shots of a pump gun, while another hunter secured twenty-three with one shot.

BLUE-WINGED TEAL. *Querquedula discors*. These are the most commonly seen of all ducks as they are here a large proportion of the time and are much less shy than some of the others. Quite a number stay around until the first of June and some regularly nest here. By August numbers of them are back from the north. They are the last to leave and the first to return, but do not stay during the colder part of the winter.

CINNAMON TEAL. *Querquedula cyanoptera*. This duck has apparently not been observed elsewhere in Oklahoma, but I have seen two specimens obtained by hunters, one in November, 1920, the other the following year.

SHOVELLER. *Spatula clypeata*. The black head, white chest, and chestnut sides of these handsome ducks are familiar sights to the hunters in this section. While these birds are generally seen in pairs they often congregate in flocks, and form a goodly proportion of the duck population here.

PINTAIL. *Dafila acuta tzitzioha*. These large ducks are very common in the fall, winter, and spring, and more than one season have nested near a quiet pool on Horse Creek.

REDHEAD. *Marila americana*. Large numbers of these choice ducks annually visit here.

CANVAS-BACK. *Marila valisineria*. These are much less common than the Redhead, and most of what hunters call Canvas-backs prove on investigation to be Redheads.

LESSER SCAUP DUCK. *Marila affinis*. These are not ordinarily very numerous, but October 28, 1925, a flock of probably two thousand of them was observed.

AMERICAN GOLDEN EYE. *Glaucionetta clangula americana*. Only

once have I seen this rare duck. On November 20, 1920, I saw one on a small pond in the pasture near my home. It was in company with several scaup ducks. Its diving habits were plainly noticeable.

**BUFFLE-HEAD.** *Charitonetta albeola*. This duck, too, I have seen but once. On April 10, 1924, a youngster, disregarding the mandate of Uncle Sam, shot and brought in a specimen of this duck.

**LESSER SNOW GOOSE.** *Chen hyperboreus hyperboreus*. While not so common as they were fifteen years ago, these beautiful white geese with black-tipped wings are fairly regular in migration. They are less wary than the Canada Geese and suffer more from hunters, both on that account and because they are so conspicuous. They like to feed on green wheat, and a flock of them in a green field make a striking and beautiful sight, like a drift of snow on a green background.

**WHITE-FRONTED GOOSE.** *Anser albifrons gambeli*. This rather uncommon goose I have observed three different years. They have been solitary individuals except in the fall of 1920 when a flock of about twenty was seen. Early in October, 1924, a lone goose was seen in my wheat field. There was considerable volunteer wheat growing on the ground, that attracted the goose when I discovered it. In the same field I was drilling wheat around a "land", and whenever the drill passed the place where the feeding was the best the goose would fly away to another part of the field. As soon as I was gone it would come back, and repeat the performance with each round. As I worked in that field for two or three days it became noticeably tamer, showing less and less alarm, until it would fly only a few rods to get out of the way of the team. It stayed around for about three weeks, grazing on the wheat in the day time and spending the night on a small pond in the adjacent pasture. All this time it was within plain sight of the house and close to where we were working and choring. It finally became so tame that several times I walked past it within a distance of two rods without alarming it. It would raise its head and look at me, but as I passed on it would quietly resume its feeding. At last one night we heard it give its farewell squawk, bidding us adieu as it resumed its wandering; sure enough, in the morning the pond was vacant and we saw the bird no more.

**CANADA GOOSE.** *Branta canadensis canadensis*. When we hear the honk of the Canada Goose in the late fall we know that the time has come to make everything snug and secure, for it is the forerunner of an approaching norther. Except in the most severe weather, it stays here throughout the winter. These geese are wary and suspicious and not easily shot by hunters. The usual method of hunting them here



is to locate them in the middle of a level wheat field, dash upon them with a speedy motor car and shoot them before they can get under way and out of gunshot. Ordinarily a flock will consist of twenty or thirty birds, but I have seen as many as two hundred in a flock.

BLACK BRANT. *Branta nigricans*. On April 2, 1922, I saw a Black Brant in a flock of fifty Canada Geese feeding on the wheat in my field. This is my only record of this form, and as far as I know the only one reported from Oklahoma.

AMERICAN BITTERN. *Botaurus lentiginosus*. This ungainly bird with its weird call is a common summer resident here. It breeds regularly in the bog along the Cimarron where cat-tails, canebrake, and tall three-cornered grass furnish ample cover and protection. In wet seasons it also nests around the ponds on the uplands.

GREAT BLUE HERON. *Ardea herodias*. The Great Blue Herons are a familiar sight here throughout the summer. They regularly nest along the Cimarron. With their slow, flapping flight they fly across to the shallow lakes of the upland, where toads and insects are abundant. I have seen as many as nineteen individuals at a time on one pond.

LITTLE BLUE HERON. *Florida coerulea*. One individual was seen in late summer in the bog along the Cimarron.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius*. A flock of thirteen of these noisy squawkers was seen sitting in the top-most branches of a large cottonwood tree in a grove on Horse Creek. March 17, 1921.

WHOOPIING CRANE. *Grus americana*. Fairly large flocks of these beautiful white birds were seen in 1909, 1910, and 1911. In the fall of 1912 a single individual was seen and since that none have been here. Apparently their fatal gift of beauty has doomed them to extermination.

SANDHILL CRANE. *Grus mexicana*. Some bright, sunshiny day in the first week in October we are sure to hear the rolling bugle call of the Sandhill Cranes. By looking carefully in the direction of the sound we can at last see the glint of the sun's rays on the distant flock. As the birds soar in wide sweeping circles they are nearly invisible at a distance of two or three miles except when they turn so that the rays of the sun are reflected from their feathers. When first heard they are probably half a mile high and two or three miles away, yet their powerful call comes clear and melodious. When they are close overhead another note can be distinguished, a kind of hissing undertone that in a large flock is almost constant. Cranes are generally seen in flocks of from thirty to sixty, but in the spring of 1923 I saw

a flock of 275 pasturing on my growing wheat; and in early October, 1926, a flock of more than three hundred passed over.

VIRGINIA RAIL. *Rallus virginianus*. This shy and elusive bird of the marshes sometimes nests in the bog along the Cimarron, and I have seen the young half-grown birds there.

BLACK RAIL. *Creciscus jamaicensis*. The only individual that I have seen I caught alive in my garden following a heavy rain in the early fall of 1915.

AMERICAN COOT. *Fulica americana*. Mud hens are very common in fall and spring, and several nest here during the summer. Being undisturbed by hunters, they are quite tame, and show little fear of man. When they do take to the air at last, after much kicking and splashing, they do not ordinarily fly far, but settle down again into the water.

WILSON'S PHALAROPE. *Steganopus tricolor*. This delicately colored and very interesting bird is always present in large numbers in migration. The larger size and brighter coloration of the female is a unique and striking characteristic of these birds. They feed in the shallow margins of the ponds or in roadside ditches and barrow-pits. A peculiar feature of their conduct is their propensity to turn round and round like a whirling dervish, or like a dog chasing its tail. The individuals that I have watched seem to prefer a counter-clockwise direction, though occasionally the movement is in the opposite direction.

AVOCET. *Recurvirostra americana*. Few birds are more beautiful than this wading bird with the upcurved bill. The rich cinnamon of its head and chest, and the contrasting black and white of its body, make a picture not soon to be forgotten. Near the first of May, 1925, a flock of about ten appeared in my pasture pond. They were not especially shy, and permitted observers to approach within a few rods to admire their graceful movements and their exquisite coloration. A caller to whom I showed them could scarcely believe that objects of such grace and beauty could be seen here. I had previously seen small flocks on April 24, 1921, and May 20, 1922, and since then, one bird about April 27, 1927, and three August 14.

WILSON'S SNIPE. *Gallinago delicata*. The "jack" snipe is a regular and fairly common migrant here.

LONG-BILLED DOWITCHER. *Limnodromus griseus scolopaceus*. On May 7, 1924, I saw a flock of fifteen of these birds on the margin of the big lake. They were busily engaged feeding on the small insects along the water's edge and paid little attention to me until I was within about twenty feet of them, when they flew away a short distance.

BAIRD'S SANDPIPER. *Pisobia bairdi*. This common and regular migrant is seen in the shallow pond and on the mud flats in company with the Least Sandpiper and the Yellow-legs.

LEAST SANDPIPER. *Pisobia minutilla*. Shore birds in general are shy and retiring but the Least Sandpipers seem to have little fear of man. They are so intent on their business of picking up their dinner that I have often passed within a few feet of them without causing alarm.

SEMIPALMATED SANDPIPER. *Ereunetes pusillus*. I have only one record of this bird. One was found impaled on a barb of a wire fence. June 2, 1922. Apparently this was the work of a shrike.

GREATER YELLOW-LEGS. *Totanus melanoleucus*. When several of these attractive birds alight on a pond and gracefully raise their wings above their heads in the shore-birds' salute, they make a very pretty picture. They are not very common in migration, but nearly every year I see them.

LESSER YELLOW-LEGS. *Totanus flavipes*. This smaller form is rather more numerous in migration than the Greater Yellow-legs.

WESTERN WILLET. *Catoptrophorus semipalmatus inornatus*. I have seen this bird only once. September 4, 1921, one individual was discovered on the shallow pond in my pasture. The strongly contrasting white and dark gray plumage, visible when it flies, makes it a striking and noticeable bird. Its loud call is unmistakable.

BARTRAMIAN SANDPIPER. *Bartramia longicauda*. These birds pass in the spring migration, but are not absent long, as they return in July, sometimes by the first of the month. They spend their time in the wheat stubble-fields. They are not timid birds and show little fear of the farmer as he works his wheat ground. Their whistle is a familiar summer bird-note here.

LONG-BILLED CURLEW. *Numenius americanus*. The relatively enormous length of bill of these remarkable birds renders them unmistakable when seen, while the loud cry from which the name is derived cannot be confused with any other sound. They appear here nearly every spring, sometimes singly, but often in larger flocks. In the spring of 1926 I saw a flock of some twenty, picking and probing about on the prairie.

AMERICAN BLACK-BELLIED PLOVER. *Squatarola squatarola cynosuroides*. On August 18, 1925, a single individual of this species was observed on my convenient pasture pond. It is a very striking looking bird because of its black under parts. The white at the base of

the tail that distinguishes it in the field from the Golden Plover was plainly visible. As far as I know this is the first record of this bird in Oklahoma. On May 14, 1927, two individuals were seen on the same pond where the first was discovered.

GOLDEN PLOVER. *Pluvialis dominica dominica*. Since this remarkable voyager goes south by the ocean route, the spring migration is the only opportunity for its observation. I have seen it once, on May 18, 1922, when six individuals were seen on the shore of the big lake.

KILLDEER. *Oxyechus vociferus*. The first week in March seldom fails to show the arrival of the first Killdeer. Everyone is familiar with the Killdeer, the most common and the most noisy of the shore birds. The daylight hours are not enough for their never-ending clack; often on moonlight nights they fly about to tell the world of their troubles. Of course at nesting-time they are very solicitous of intruders and feign the most desperate injuries to lead them astray. They are, however, nimble cripples, and can always escape, no matter how hard pressed. I do not wonder that they are proud of their brood, for very attractive are the little fluffy balls that trot around in the mother's wake.

SNOWY PLOVER. *Charadrius nivosus*. I found a parent bird with young running about on the sand flats along the bed of the Cimar-ron River, July 28, 1922. The young ones were still so small that they were readily caught. The parent seemed much distressed while the little ones were captive and when they were released led them hurriedly away.

As will be noticed from the list more than one-third of the species of water birds are ducks and geese. In numbers of individuals, too, I presume they make up fully as large a proportion. When the lakes are full this is a veritable hunters' paradise and sportsmen come for hundreds of miles to take advantage of it. Probably another third of individuals are gulls and terns, while the remainder is made up of all the other species.

None of the water birds are all the year residents, but there is no time, excepting the most severe winter weather, when some interesting species are not present, adding variety and beauty to the avifauna, and multiplying the pleasure of the lover of birds.

GATE, OKLA.

## BIRD MIGRATION RECORDS IN NORTHWEST ARKANSAS

BY W. J. BAERG

Several lists of birds of Arkansas and of parts of Arkansas have been published, but so far as I know there are no available records of the dates of the arrival and departure of our migratory birds. Such information seemed essential for a course in Ornithology offered at the University, and for this reason, primarily, an attempt was made to observe the arrival and departure of the migratory birds.

The work was begun in 1924, so that by this time a five-year record\* may be presented. The dates given for the arrival of the summer residents, winter residents, and also the transients are, I think, for the most part accurate, or nearly so. The dates of the departure of the winter residents are likewise fairly accurate. However, the departure of the summer residents is not easily ascertained and the dates are, therefore, at best somewhere near the truth.

In a few instances the field trips had to be postponed on account of sickness of the observer, or on account of some other unfavorable circumstance, with the result that exact dates of the arrival of a few species were not secured. These instances, where the observer failed to observe the first arrivals, have been indicated in the table.

The records were obtained on field trips taken during the height of migration (March, April, and May), three or four times a week; during the remainder of the year, about once a week. The route followed was planned so that it includes all the different type localities available in this part of the state. These are: outskirts of the town, hawthorn-smilax thickets, dry oak woods, tall elm and sycamore timber, rivulets and small streams, fields, and meadows. On these trips the distance varied between six and ten miles. The route is changed somewhat in order to have it include one or several favorite haunts of the less common birds at the time of their expected arrival. In addition, special trips are made to localities farther away, in order to widen the range of observation.

The region in which these observations were made is hill country with an altitude of about 1450 feet. There are no large rivers, but a number of small streams that continue to flow even through very dry summers. On the hillsides are numerous springs that attract birds. An abundance of hawthorn, smilax, buckbrush, and wild grape in the extensive woodland areas serves to bring in a large number of winter residents.

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\*Mr. Frank Smith, student assistant, has made many of the observations recorded in this paper.

## MIGRATION RECORDS

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Bittern			March 27	April 5					March 20	April 4
Great blue heron			March 29		April 18			Oct. 28	April 3	Sept. 16
Green heron			April 11	Sept. 3	April 21	Sept. 19	May 8	Sept. 25	May 1	
Woodcock (1)	March 22									
Wilson's snipe (2)	April 4		March 25	April 4	March 28				March 23	
Sharp-shinned hawk					Oct. 9 (1925)	April 10	Nov. 5 (1926)		Oct. 16 (1927)	April 28
Yellow-billed cuckoo	May 18		May 10	Sept. 22	May 1	Sept. 6	May 21	Sept. 25	May 13	Oct. 7
Black-billed cuckoo	May 17		May 17		April 30				May 16	
Yellow-bellied sapsucker			Dec. 7 (1924)	April 1	Dec. 26 (1925)		Nov. 27 (1926)	Feb. 26		Feb. 28
Chuck-will's widow	April 15		April 14	July 28	April 24	July 18	April 16		April 17	July 20
Whip-poor-will			April 14	April 16	April 17					
Nighthawk										
Chimney swift	April 9		April 5	Oct. 1	April 3	Oct. 4	May 11	Oct. 2	May 16	Sept. 30
Ruby-throated hummingbird					May 2		April 2	Oct. 11	April 2	Oct. 17
Crested flycatcher	April 24		April 20		April 23	Sept. 9	April 17	Sept. 9	April 29	Oct. 6
Phoebe (3)	March 28	Oct. 12	March 8	Oct. 18	March 18	Oct. 8	March 6	Oct. 2	March 11	Oct. 14
Wood pewee	April 27		May 3	Aug. 27	April 28	Oct. 3	April 19	Sept. 11	April 30	Sept. 16
Acadian flycatcher	May 16		April 26	July 26	May 2	July 31	May 1	Aug. 11	May 1	Aug. 28
Least flycatcher							May 1	June 26	May 1	May 19
Bobolink			May 11		May 23		May 13	May 18	May 18	
Cowbird (4)			March 22	Sept. 16	March 18		March 19		March 18	Sept. 11
Orchard oriole	April 25		April 23		April 29	Aug. 22	April 21	Aug. 5	April 18	Aug. 27

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Baltimore oriole (4a)	April 25	May 2	April 23	May 11	April 30	May 22	April 24	May 21	April 27	May 13
Rusty blackbird		April 6	Nov. 23 (1924)	March 27	Nov. 8 (1925)	April 3	Oct. 31 (1926)	March 27		April 1
Purple finch	March 22	April 18	Jan. 31	April 13	Nov. 29 (1925)	April 24	Feb. 26	April 3	Oct. 28 (1927)	April 11
Vesper sparrow			March 20	April 10	March 28	April 8	March 15	April 1	March 14	March 23
Lark sparrow (8)	April 20		April 9	July 11	April 17	July 26	April 11	July 20	April 24	July 16
Harris's sparrow		April 4	Nov. 16 (1924)	April 21	Oct. 25 (1925)	May 2	Nov. 5 (1926)	April 30	Oct. 28 (1927)	April 28
White-crowned sparrow		May 2	Oct. 19 (1924)	May 10	Oct. 12 (1925)	May 16	Oct. 8 (1926)	May 11	Oct. 16 (1927)	May 10
White-throated sparrow		May 16	Oct. 26 (1924)	May 10	Oct. 12 (1925)	May 7	Oct. 12 (1926)	May 8	Oct. 16 (1927)	May 13
Tree sparrow			Oct. 19 (1924)	April 3	Oct. 18 (1925)	March 21	Nov. 28 (1926)	March 27	Oct. 30 (1927)	
Chipping sparrow	March 27		March 17	Sept. 13	March 23	Oct. 22	March 17		March 12	Oct. 13
Field sparrow (5)			Feb. 6		Feb. 18		Feb. 26		Feb. 28	
Slate-colored junco		April 6	Oct. 19 (1924)	April 7	Oct. 18 (1925)	April 9	Oct. 22 (1926)		Oct. 16 (1927)	April 11
Song sparrow		March 30	Oct. 19 (1924)	April 5	Oct. 18 (1925)	April 10	Oct. 15 (1926)	April 30	Oct. 19 (1927)	April 28
Lincoln's sparrow (6)			Feb. 25	May 17				May 4	Oct. 16 (1927)	April 28
Fox sparrow		April 5	Nov. 30 (1924)	April 7	Oct. 18 (1925)	April 9	Oct. 31 (1926)	March 13	Oct. 19 (1927)	April 11
Towhee (5)			Feb. 25		Feb. 18		March 6		March 3	
Rose-breasted grosbeak	May 9		May 12		May 2		April 30	May 17	May 2	May 6
Blue grosbeak	May 2		April 26	Aug. 27	April 30	Sept. 12	April 30	Sept. 4	May 6	Sept. 12

NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Indigo bunting	May 3		May 2	Sept. 17	April 26	Sept. 19	April 24	Sept. 27	April 28	Sept. 2
Dickcissel	May 3		April 26	Aug. 11	April 30	July 31	April 27	Aug. 11	May 1	Aug. 29
Scarlet tanager (7)	May 2		April 23		April 21		April 26			
Summer tanager	April 27		April 23		April 24	Oct. 12	April 20	Oct. 9	April 21	Oct. 14
Purple martin			March 13		March 22	Aug. 26	March 18		March 19	Aug. 27
Rough-winged swallow			May 6		April 29		April 10		May 1	
Red-eyed vireo	April 25		April 17	Aug. 20	April 18	Aug. 29	April 15	Sept. 11	April 17	Sept. 16
Warbling vireo			April 24	May 20	April 28	May 16	April 23	May 18	April 27	May 15
Yellow-throated vireo			April 7	Sept. 17	April 17	Sept. 19	April 10	Sept. 18	April 7	Sept. 16
White-eyed vireo	April 18		April 12	Sept. 17	April 18	Sept. 19	April 9	Sept. 25	April 8	Sept. 16
Bell's vireo	April 27		April 23	Sept. 3	May 7	Sept. 6	April 29	Sept. 4	May 1	Aug. 7
Black and white warbler	April 6		March 27	Sept. 11	April 2	Aug. 15	April 1		April 1	Sept. 16
Prothonotary warbler (8a)			April 19							
Blue-winged warbler (16)	April 18	June 27	April 14		April 18	June 25	April 10	June 21	April 28	June 30
Nashville warbler			April 23	May 11	April 30	May 14	April 8	May 7	April 25	May 10
Tennessee warbler	April 11		April 4	May 17	April 25	May 16	April 17	May 20	April 3	May 16
Parula warbler			April 1	July 26	April 9	Aug. 29	March 27	Sept. 18	April 1	July 25
Yellow warbler	April 20	June 27	April 17		April 17	July 16	April 15	June 19	Apr. 24 <sup>(9)</sup>	Aug. 27
Myrtle warbler (10)		May 2	April 3	April 26	March 18	April 21	March 19	April 30	April 1	May 6
Magnolia warbler			May 7	May 11	May 14		May 8		May 13	
Sycamore warbler			April 5		April 9	July 10	March 27	July 4	March 28	July 14
Prairie warbler			April 5	Sept. 13	April 13		April 11	Sept. 12	Apr. 25 <sup>(9)</sup>	Aug. 31
Ovenbird	April 18		April 17	Aug. 27	April 18	July 16	April 19		April 21	June 30
Louisiana water-thrush	March 28		March 27	Oct. 4	March 29	Oct. 3	March 27	Sept. 4	March 18	Sept. 29
Kentucky warbler			April 19	Aug. 20	April 30	Aug. 22	April 15	July 10	Apr. 25 <sup>(9)</sup>	July 20
Maryland yellow-throat	April 18		April 12	July 26	April 18	Aug. 7	April 17	Oct. 2	Apr. 25 <sup>(9)</sup>	Aug. 26



NAME	1924		1925		1926		1927		1928	
	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard	Date of arrival	Date last seen or heard
Yellow-breasted chat	April 25		April 19	July 26	April 23	Aug. 29	April 16	Aug. 18	April 25	July 23
Redstart	April 25		April 19	Sept. 11	April 18	Sept. 6	April 17		Apr. 24 <sup>(9)</sup>	July 20
Pipit			Feb. 19	April 19	March 2	May 2	March 27	April 28		
Catbird	April 25	Oct. 12	April 20	Sept. 27	April 25	Sept. 30	April 18	Oct. 9	April 24	Oct. 7
Brown thrasher	March 28	Oct. 26	March 8	Sept. 27	March 21	Oct. 15	March 6	Oct. 19	March 13	Oct. 14
House wren (11)	April 18	May 2	April 16	May 17					April 22	April 28
Brown creeper		March 30		April 16	Nov. 26 (1925)	April 2		March 26	Nov. 11 (1927)	March 20
Golden-crowned kinglet (12)			March 12	April 3			March 12		Feb. 28	March 18
Ruby-crowned kinglet (13)	March 30		March 22	April 23	March 21	April 25	March 13	April 24	March 23	May 1
Blue-gray gnatcatcher	April 5		April 4		April 2	Sept. 9	March 27	Aug. 28	April 1	Sept. 2
Wood thrush			April 19	Aug. 20	April 26	Aug. 15	April 14	Aug. 28	April 21	Aug. 23
Gray-checked thrush (14)	May 2		May 1	May 6	May 7	May 14	April 30	May 22	May 1	May 6
Olive-backed thrush			April 21	May 26	April 30	May 21	April 22	May 27	April 22	May 12
Hermit thrush	April 6	April 11	March 25	April 12			April 3		March 18	
Robin (15)			Feb. 1		Jan. 30		Feb. 3		Feb. 5	

- (1) Seen on fall migration, November 11 and December 3, 1927; also on November 11, 1928.
- (2) Seen on fall migration, November 28, 1924; November 8, 1925.
- (3) Seen also on February 6, 1925.
- (4) One lonesome male was seen on October 31, 1928.
- (4a) Observed on fall migration, September 27, 1925.
- (5) Resident species.
- (6) Records are probably of fall and spring migration, not winter residence.
- (7) The scarlet tanager nests in small numbers on some of the Ozark hills, but not in the neighborhood of Fayetteville.
- (8) Heard singing in Luola, Okla., August 6, 1928.
- (8a) Nests commonly in various parts of Arkansas, but not in the neighborhood of Fayetteville.
- (9) Arrived probably earlier.
- (10) Seen in fall migration, October 19 to November 16, 1924; October 18 to November 1, 1925, etc.
- (11) Seen in fall migration, September 27, 1925.
- (12) Observed in fall migration, October 26 to November 23, 1924; and on October 15, 1926.
- (13) Observed on fall migration, October 12 to November 16, 1924.
- (14) Seen once on December 29, 1927.
- (15) Resident species.
- (16) Only one pair of these warblers was under observation. The dates under "last seen or heard" are really for the end of the song period. On June 30, 1928, one was observed with a large caterpillar in its bill. In a general way all this applies also to other warblers, such as the ovenbird, Maryland yellowthroat, Sycamore warbler, yellow-breasted chat, and redstart. They are not often seen after their song period is over.

It requires but little experience to learn to recognize a new arrival. Some of these are so much in evidence, for instance the White-eyed Vireo and the Blue-gray Gnatcatcher, that they are not easily overlooked. Some of the birds are, however, decidedly shy on their first appearance, for instance the Louisiana Water-thrush, Wood Thrush, Indigo Bunting, and some others. These require careful watching of the most favored haunts. Often the "distress call" will serve to bring forth one of these new arrivals that is too shy to make itself heard.

Some of the migratory birds, such as the Blue Jay, Towhee, Bluebird, Robin, Mockingbird, and Field Sparrow, are resident species and are common here both during summer and winter. If one may judge by the noise, the Blue Jay is more common here in winter than in summer. The dates of migration of these species can be no more than generally indicated.

Mourning Doves are commonly seen in flocks of ten or more, during the winter. Goldfinches occur here in flocks of a score or two in the winter, while Bronzed Grackles, as well as Red-winged Blackbirds, are commonly seen in flocks of a hundred or more. For these birds, dates of migration cannot be given with any degree of accuracy.

The Purple Finch occurs here during the winter. In some years it appears to be fairly common, in others it seems exceedingly scarce or totally absent. The dates of its observed arrival are, therefore irregular. The dates when the Purple Finches appear in considerable numbers and are much in evidence on account of their song are likewise irregular, varying from February 1 to March 28.

The Phoebe is rare here during the winter; hence, the dates of its arrival may be considered as fairly accurate.

Great Blue Herons and Egrets nest here, but are far from common. The observations on Egrets are omitted here; those of the Great Blue Herons are incomplete.

Some of the sparrows, such as the Swamp Sparrow and the Grasshopper Sparrow, were seen on various occasions in fall and early spring, but the records are not included. The Savannah Sparrow nests in this region, but no observations regarding its migration have been made.

The arrangement in the tables, under calendar years, is not suited to the winter birds. Since a separate table seems undesirable, I have placed the dates of their arrival under the year when the major portion of the residence time comes.

UNIVERSITY OF ARKANSAS, FAYETTEVILLE, ARKANSAS.

# THE WILSON BULLETIN

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The present editorial organization is as follows: T. C. Stephens, Editor-in-Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

The subscription price in the United States is \$1.50 a year, and 50 cents a number; in all other countries of the International Postal Union the price is \$2.00 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Dr. Jesse M. Shaver, Peabody College, Nashville, Tennessee, U. S. A.

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## EDITORIAL

WE BRING to the attention of our readers the following requests for co-operation. There has been an aberrant movement during recent months of the Canada Jay. Readers who have made any observations may assist in the preparation of the report by writing of the details to Dr. Harrison F. Lewis, National Parks of Canada, Ottawa, Canada. Mr. A. L. Pickens (Zoology Building, University of California, Berkeley, Calif.) desires correspondence with all who may furnish observations on the kinds and colors of flowers visited by birds—especially hummingbirds. If the observer is not certain of the correct name of the flower a pressed specimen will be appreciated by Mr. Pickens.

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THE NOTABLE "BIRD CONTEST" conducted by *Successful Farming* closed on January 1, although the awards may not be made known for several months. This magazine has a circulation of 1,150,000, and about 25,000 answers were received in this bird contest. The goal of the contest was to correctly identify eighty species of birds from their portraits which had been printed in color in the magazine.

The contest was primarily an educational project, at least as nearly as one could conceive in a commercial organization. Prizes were offered, of course; but even in the university, grades are offered as a stimulus to effort. The profit which the magazine receives in increased circulation seems negligible; the good will created by keeping the readers interested and engaged in wholesome and profitable activities seems to be the end sought.

The more people become acquainted with and interested in birds, flowers, trees, and animal life, the greater will be the general satisfaction in rural life, and the greater will be the willingness to "remain on the farm". Appreciation of nature will be one of the greatest factors in making rural life attractive. We applaud *Successful Farming's* bird contest because it advertises and popularizes the study of birds, which is our own chief interest and hobby; but we see in it much wider implications of a social and economic nature, which are likely to bring results in future generations.

THE DES MOINES MEETING was successful beyond our expectations. Every thing ran along with precision and co-ordination. The program was one of the biggest, in number of titles, we have ever had. The attendance was by far the largest we have ever had, exceeding by nearly a hundred our 1926 meeting at Chicago. The program occupied every available minute of time, giving less opportunity for visiting than we would have preferred; nevertheless, the hotels, the banquet, and the reception made up this deficit to a great extent.

A great deal of the success of the meeting must be attributed to the enthusiasm and efficiency of the Des Moines people. There is always some danger in mentioning names, lest the stranger may make some mistake of omission; yet we think the work of Mrs. J. E. Stewart and Mr. A. J. Palas deserves public citation. Perhaps our high record of attendance is due to the ladies who gave up the program to remain at the registration desk. The hospitality of Mr. and Mrs. Henry Frankel was much appreciated by the guests.

It may be of interest to many of our members to examine the following tabulated figures concerning our recent meetings:

	Kansas City 1925	Chicago 1926	Nashville 1927	Ann Arbor 1928	D Moines 1929
Local Attendance .....	12	37	32	31	106
Out-of-Town Attendance .....	49	75	43	75	96
Total Attendance .....	61	112	75	106	202
Banquet Attendance ....	37	61	46	50	77
Titles on Program.....	21	23	34	24	36
Honorary Members .....	4	4	4	4	9
Sustaining Members ....	....	73	68	64	66
Active Members .....	....	216	244	248	245
Associate Members .....	....	327	347	383	397
Total Membership .....	....	620	663	702	717
Total Receipts .....	\$1771	\$1753	\$1638	\$1981	\$2167

These figures are taken from the files of the BULLETIN, and show a healthy increase in nearly every particular.

Looking, now, into the future, we find that the next three meetings of the American Association for the Advancement of Science are to be held in the middlewest, as follows:

1930. Cleveland, Ohio, Monday, December 29 to Saturday, January 3.

1931. New Orleans, La., Monday, December 28 to Saturday, January 2.

1932. Chicago, Monday, December 26 to Saturday, December 31.\*

Meetings beyond these dates, so far as they have been determined, are to be in the east. It may probably be assumed that the W. O. C. will hold its next three meetings according to the same schedule given above. It seems to be our experience in these meetings that the first of the week is the proper time for the W. O. C. meeting. By the end of the week people are tired and go home. Our dinner should be placed on Monday night to avoid conflict with the Zoologists' Dinner, which is usually placed on Tuesday night.

\*There has since been some discussion of the proposal to hold this Chicago meeting of the American Association during the summer of 1933, in connection with the World's Fair.

SCIENCE for February 14, 1930, contains a communication from Philip Hadley, of the University of Michigan, claiming that wild Passenger Pigeons have been seen in Michigan during 1929, and also in Indiana, by three persons. None of the observers professes to be a student of birds, but all claim to be acquainted with the Passenger Pigeon. Doubtless, *Science* does not intend, by publication, to lend its support to belief in this report. The chances of mistaking a Mourning Dove for the Passenger Pigeon are so great, that such will be the verdict of most readers of this article.

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FR. HAVERSCHMIDT, 50 Kromme Nieuwe Graecht, Utrecht, Holland, offers a clean copy of Bent's "Petrels and Pelicans and their Allies" (U. S. Nat. Mus. Bull. 121) for \$8 postpaid.

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TEACHERS who are contemplating the taking of a class of students by automobile into the Yellowstone National Park should be warned that the Government in 1929 added an extra fee of one dollar for each car of such a party. If we understand it correctly this extra tax was added in order to protect the Yellow Bus business. The extra dollar is not charged to family cars, but only to educational parties, such as Dr. Jones has been taking through the west for many years. Without warning Dr. Jones was confronted at the Park Entrance with this novel business scheme. The amount of money involved was trifling, but the principle was exasperating.

Much is being said in these days about the educational aims and purposes of the National Parks. Yet here we find an ugly discrimination against a purely educational enterprise, and for the protection of a commercial one. Even if the reason here assumed for the levying of the extra fee is incorrect, the fact still remains that the fee was charged; and it is difficult to harmonize this with the avowed educational objectives of the Yellowstone Park. There may be a considerable doubt whether the addition of a dollar to the fee will keep out the imposters, anyway. It is to be hoped that this unjust and discriminating regulation will be removed before another season comes.

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WITH THIS ISSUE we wish to introduce one new officer. While Professor Stack was promoted from the treasurership to the presidency, he is well known to the membership by reason of his three terms of office. The vacancy in the treasurer's office was filled by the election of Walter M. Rosene, of Ogden, Iowa. Mr. Rosene is the president of the City State Bank of Ogden, and is accustomed to the handling of money and accounts. He is, besides, an ardent student of birds, and a bird photographer of no mean skill. While he is enthusiastic and untiring in his pursuit of bird lore, he is also as conservative in naming a strange bird as he is in distributing silver dollars.

## GENERAL NOTES

Conducted by M. H. Swenk

**Summer Occurrences of the Harris's Sparrow in South Dakota.**—On June 23, 1929, I saw a Harris's Sparrow (*Zonotrichia querula*). My wife had heard and seen it on the preceding day. Other dates that I saw it were June 25, July 4, July 5, and a couple of times during August. I found only one, though on two different occasions I looked searchingly for a possible mate. He appeared normal, and would whistle on every occasion that I saw him.—ADRIAN LARSON, *Arlington, S. D.*

**Four Eggs in the Nest of a Mourning Dove.**—While many accounts of sets of three and four eggs of the Mourning Dove (*Zenaidura macroura carolinensis*) have appeared, it is thought that additional records are desirable.

On April 5, 1928, Mr. Leo A. Luttringer, Jr. found a Mourning Dove nest which held one egg. On the following morning he flushed the parent from this egg. On April 18 we visited the nest and were amazed to find the slight structure filled to capacity with four eggs. Inquiry into the situation has pretty well established the fact that but one pair of Mourning Doves is nesting in this particular woodland; furthermore the shape and size of the eggs seem to indicate that all have been laid by the same bird.

It may be that exposure of two of the eggs during chilly weather induced the female to lay an additional two. All the eggs were fairly fresh, judging from their translucency; but the anxiety of the parent bird indicated that she had been incubating for some time. I incline, at present, to the belief that the eggs laid about April 5 were infertile, or that the small embryos were killed by exposure, and that two additional eggs were subsequently deposited.—GEORGE MIKSCHE SUTTON, *Bethany, W. Va.*

**The Northern Pileated Woodpecker in Westmoreland County, Pennsylvania.**—On the evening of June 22, 1929, Oscar C. Reiter and the writer heard, in fairly thin chestnut woods above McGinnis Run in Westmoreland County, Pennsylvania, a hammering that indicated the Northern Pileated Woodpecker (*Phloeotomus pileatus abieticola*). A visit early the next morning confirmed this. The bird was heard many times, was seen on a tree trunk at short range, and was seen in noisy, cackling flight showing the characteristic white of the wings. A second bird was heard, but not seen. A week later, accompanied by Rheinhold L. Fricke and H. H. Elliott, we made a search for nesting operations. The bird was again seen and heard. Fresh workings on chestnut trees and stumps were found, also older workings indicating residence for several seasons. Many holes were examined but no actual nest was found; perhaps because this bird usually nests several weeks earlier.—SIDNEY K. EASTWOOD, *Pittsburgh, Pa.*

**Unsolved Problems Concerning Upper South Carolina Birds.**—In my efforts to trace more accurately the zone boundaries in the southern foothills, and list several species not before catalogued, several important problems have presented themselves. Why the abundance of Loggerhead Shrikes in the foothills in winter, and so few nests in summer? Why is the presumably northern Orchard Oriole so rare in the Upper Piedmont, though commonly nesting in the Lower? Have we here a southern race in the making? Are not the Meadowlarks reported to me as nesting in the Piedmont really members of the southern race pushing into the dividing territory between the two races, rather than stragg-

glers from the winter migrants from the north? To what extent do the larger rivers bring down the northern zones into the zones below, and do the thermal belts along the valley sides carry the southern zones northward? Year-round observations might add additional races for the following: Barred Owl, Pileated Woodpecker, Nighthawk, Blue Jay, Red-winged Blackbird, Grackles (*Quiscalus*), and possibly others. By far the most of my observations were perforce near the mountains, and must show that influence strongly.—A. L. PICKENS, *Berkeley, Cal.*

**Banditry Among Birds.**—Observing Robins when feeding on the ground, you will sometimes see one or more English Sparrows hopping around near them, and when the Robin finds a worm they will walk up to him quietly and boldly, take it out of his mouth, with scarcely a protest from the Robin. A few days ago I saw a sparrow take a worm out of a Robin's mouth and fly off with it, and the Robin simply went on hunting for another one. Then again I saw another Robin pull out a worm and a sparrow standing by tried his best to take it from him. The Robin would not give it up, but flew into a distant tree with the sparrow after him, but the sparrow failed to secure the worm this time. A neighbor of mine saw a Robin robbed six times of six worms, one right after the other, by a small flock of sparrows which had gathered around him, while the Robin kept on hunting for more worms.—HENRY A. PERSHING, *South Bend, Ind.*

**Prairie Birds Seek the Shade.**—On a recent trip through North Dakota, the writer noticed an interesting habit of certain prairie-nesting birds. During the intense heat of the afternoon numerous Lark Buntings (*Calamospiza melanocorys*) were found perching on the barbed wire fences. The birds were, however, sitting close to the posts and on the side opposite to the sun. Thus they took the advantage of the shade offered by the posts and kept out of the burning rays of the sun. A very few Chestnut-collared Longspurs (*Calcarius ornatus*) and one Western Mourning Dove (*Zenaidura macroura marginella*) were also resting in the same position. It seemed a well formed habit with the Lark Buntings, as was evidenced by hundreds of examples.—WILLIAM YOUNG WORTH, *Sioux City, Iowa.*

**The Relation Between the Blue Jay and the Pin Oak.**—Through watching the behavior of a tame Blue Jay (*Cyanocitta cristata cristata*) that first came to us with an injured wing on August 5, 1929, and that in good weather is free to come and go as it pleases, the discovery was made that it feeds on a small white grub enclosed in the acorns of the pin oak (*Quercus palustris*), and not on the acorns themselves. Taking the hint, we watched the other Blue Jays, and observed them also feeding on these grubs.

Henry D. Thoreau (*Succession of Forest Trees*, 1860) says, "I can confirm what Wm. Bartram wrote to Wilson, the ornithologist, 'The Jay is one of the most useful—these birds alone are capable in a few years time to replant all the cleared lands'". This was said in regard to the well known habit of the Blue Jays of burying acorns. And it also appears that, in addition to providing food for unborn generations of their kind in planting tree seeds and nuts, they help the trees by destroying the enemies of the acorns. Is it too much to think that this relation, approaching a true symbiosis, gradually began with the primitive ancestors of both forms of life, and has helped in the present biological success of both species? The oaks provide a great excess of acorns, many millions more during the life of the tree than the one acorn which will reproduce the

parent tree, but insurance that only a small proportion will be used for food by the birds is secured by the comparatively bitter taste. As a consequence this food is used principally in midwinter when little other is available.—E. C. HOFFMAN, *Lakewood, Ohio*.

**A Young Pied-billed Grebe on Land.**—On June 24, 1929, while helping my father on his farm, a neighbor called me concerning a strange bird that he had noted. On examination it proved to be a young Pied-billed Grebe (*Podilymbus podiceps*). The bird was about five inches long and quite active. It was found in the neighbor's back yard where it was moving about. There was no sign of injury to the bird. The nearest water was fifteen or twenty rods away, and I never have known grebes to nest or even remain there. However, across the road about three-quarters of a mile away is a small pond where grebes nest every year. The young this year (1929) left about June 14.

Whether this young bird had come from there or not, we can only speculate until some explanation of its origin as well as its leaving the water to travel about on land can be obtained.—LAWRENCE H. WALKINSHAW, *Battle Creek, Mich.*

**The Chestnut-sided and Other Warblers Nesting in Geauga County, Ohio.**—I was much interested in Mr. Louis W. Campbell's notes on the nesting of the Chestnut-sided Warblers near Toledo, in the December, 1928, number of the WILSON BULLETIN. My record of a nest of this species follows:

Chestnut-sided Warbler (*Dendroica pensylvanica*).—On May 27, 1919, I was standing in a clearing in a large wood, overgrown with briars and bushes, watching a troop of warblers. A pair of Chestnut-sided Warblers seemed interested in the crotch of a small beech. A short watch was rewarded by seeing the female bring nesting material. The nesting site had evidently just been selected.

I returned on June 12 and found the female at home. The nest was in a clump of scrubby beech, two feet from the ground and near the base of a large beech. The female refused to leave the nest until I touched her with my finger. The nest contained three well-incubated warbler eggs and one egg of the Cowbird. It was made of grasses and beech leaf calyces, lined with fine grass.

Other nesting pairs have been seen during breeding season but no other nests have been found. I consider them an uncommon resident.

Blue-winged Warbler (*Vermivora pinus*).—Uncommon, but not scarce. They are found on the outskirts of woods, nesting on the ground.

Golden-winged Warbler (*Vermivora chrysoptera*).—Rare. Only one pair noted during the breeding season. The nest could not be found.

Yellow Warbler (*Dendroica aestiva aestiva*).—Our most abundant summering warbler. It prefers small valleys, nesting in thorn bushes.

Cerulean Warbler (*Dendroica cerulea*).—Rare. No breeding record.

Ovenbird (*Seiurus aurocapillus*).—The nest of this common warbler can always be found not far from where the male is singing. I found a beautiful nest on June 3, 1928. This nest was very compact and had a trail of leaves laid one foot from the opening of the nest. The female bird sits very close. I nearly stepped on the nest to flush her. It contained five well-incubated eggs.

Water-Thrush (*Seiurus noveboracensis*).—I feel certain that this species nests about Bass Lake. The Water-Thrushes there have a decidedly different song than the song of the Louisiana Water-Thrush. I have not noted this species anywhere else in the county. I intend to collect a few Bass Lake specimens next summer to verify my observations.



Louisiana Water-Thrush (*Seiurus motacilla*).—Uncommon but found throughout the county in wet woods. The nest is very hard to find, and I have no record of one. The song is different from that of the Bass Lake birds in that it is not one continuous warble but is separated into three parts—“*chea-chea-chauncer-van-tweer*”.

Maryland Yellowthroat (*Geothlypis trichas trichas*).—A common inhabitant of wet meadows and swamps. The nest is very hard to find.

Yellow-breasted Chat (*Icteria virens virens*).—I have found but three nesting pairs in the county in fifteen years of observation.

Hooded Warbler (*Wilsonia citrina*).—In general scarce, but common in favorable localities. Being a rather quiet and retiring bird during the breeding season, their presence is commonly overlooked. They are found in heavy timber where there is a dense growth of young trees. A nest found June 11, 1924, in a three to five year old maple, two feet up, in a grove of small maples, near the edge of a large wood, contained four fresh eggs. The female disclosed the proximity of her nest by her call note of alarm. Lying down on the ground beneath the lowest leaves, I quickly spied the nest about twenty-five feet away.

Redstart (*Setophaga ruticilla*).—Common but not as numerous as the Ovenbird. They nest in open woods of small timber. The nest is often placed in a small dead tree. In fact, one-half of the nests found of this species by myself have been so placed. Fresh eggs may be found by June 1.

For those who are not familiar with the location of Geauga County, a brief description is here given. The county is hilly (the “Berkshires” of Ohio) with an elevation of 1320 feet above sea level, and 700 feet above Cleveland. The county seat is Chardon, thirty miles east of Cleveland and fifteen miles from Lake Erie. Considerable timber remains. Very heavy snows occur in winter. The making of maple syrup is an important springtime industry.—LYLE MILLER, *Sharline, Ohio*.

**The Mockingbird Breeds in Iowa.**—As a rule ornithologists have not heretofore regarded Iowa as being situated within the breeding range of the Mockingbird (*Mimus polyglottos polyglottos*). It seems, however, that the range of this bird is gradually extending northward. Keokuk County, the scene of my observations, is located in the third tier of counties from the south line of the state, and Sigourney, the county seat, is situated about fifty miles north from the northern boundary of Missouri.

In the autumn of 1914, a competent observer informed me that a pair of Mockingbirds had that season made their nest in an orchard near Martinsburg in the southern part of this country. I was unable to learn anything further of this bird's presence here until the season of 1926, when a man who had formerly lived in Missouri and was quite familiar with the Mockingbird, reported a pair as nesting near South English in the northern part of this county. On April 24, 1927, I saw one of these birds near the western limits of this city. Owing to the large amount of clear white upon its wings and the absence of the brown, I took this to be a male. Subsequent visits at or near the place failed to disclose any further trace of it. On April 28, 1928, Mr. J. B. Slate saw one of these birds near South English, but careful search made at and near the same place later likewise failed to show anything further of it.

On May 14, 1929, I saw one of these birds four blocks from the County Court House in Sigourney. It appeared to be associated with some pigeons for

a few moments, then disappeared among the shrubbery and was not seen at this place again. On the evening of July 18, Mr. Slate informed me that, a few hours before, he had seen a Mockingbird alight upon the telephone wires by the side of State Primary Road No. 2, seven miles west from here. That being near an ideal locality for these birds, and considering the time of year, it certainly indicated that a nest might be found near there. We decided at once to go back there in the near future to make an investigation.

The evening of July 22 found us motoring toward the spot. When we arrived near, we noticed one Mockingbird again on the wires. It was evidently the male, and flew in the opposite direction from the one in which we were going. After moving ahead about 200 yards we stopped, and as we were getting out of the car a second bird also alighted upon the wires directly opposite us, and she held a grasshopper in her bill. This was certainly getting interesting! Our search was evidently going to be short. She eyed us curiously for a while. Although a thousand or more cars passed this place every twenty-four hours, this one had stopped dead still. It seemed to puzzle her. After considering us for a few moments she flew to a mullen stalk about 100 feet away, then back to another point on the wires.

In the meantime, we had noticed a scraggy bush on a high bank by the fence on the opposite side of the road, and directly under the gang of telephone wires. This bush held the nest, which was about four feet from the ground and could plainly be seen about 100 feet away. After she had decided that our mission was of a peaceful nature she flew to the nest and dropped the "hopper" into one of the open mouths which instantly darted up to meet her. During the hour which we spent there she skirmished around in every direction and brought a bug or grasshopper to her hungry family every minute or two. Several times she flew out in the vicinity where we had seen her mate, but he did not return with her.

There were larger and much denser thorn bushes near by, and brush thickets and woods not far away, but for some reason known to the birds they chose the exposed place where automobiles and other vehicles passed within fifteen or twenty feet every few seconds. The fact that many of these vehicles also raised great clouds of dust and in the night time threw a glare of their headlights full upon the nest, likewise did not deter the birds from choosing this spot for their home. Undoubtedly, a nest thus placed is less likely to be discovered and robbed by birds of prey or marauding animals than one placed in a forest or thicket.

A trip to the nest on the morning of July 28 indicated that the young birds had evidently just left the nest and were hidden in the grass. The mother bird was greatly excited. She hopped and danced about on the wires and repeatedly darted down to within a few feet of the car windows, at a small dog which she had spied inside, scolding him all the time and calling him all kinds of uncomplimentary names. On the evening of the next day, we were back again and now found several of the young birds twenty or twenty-five feet up in an elm tree about 150 yards from the nest. Here the mother was bringing beetles, crickets, and grasshoppers as before. The wing and tail feathers of the young birds were, however, in such an undeveloped condition that it seemed they must have covered the intervening distance, which is open pasture land, mostly on foot. The tree where they were found is partly festooned with vines and by

means of these the birds had no doubt attained their altitude. During all the visits we made, we saw very little of the male bird. He brought no food to the young and owing to the lateness of the season we did not hear his wonderful song.

The Mockingbird has been seen as far north as Sioux City, and a nest was found in Polk County, Iowa, between Valley Junction and Des Moines in June, 1929. I believe, if this bird is not known to nest in other localities of southern Iowa, it is probable that it does and this State may claim the Mockingbird as one of its regular avian summer residents, though rare as yet.—E. D. NAUMAN, *Sigourney, Iowa.*

**Two Notable Minnesota Duck Records.**—In a list of the birds observed during the period between May 15 and June 1, 1929, which was spent with the water birds in western Minnesota, is included the European Baldpate (*Mareca penelope*) and the Fulvous Tree Duck (*Dendrocygna fulva*). First state records for these species cannot be claimed, as the specimens were not collected, but the positiveness with which the identifications were made prompts the publication of the records as a matter of general interest.

A pair of Fulvous Tree Ducks were seen on a small, reedy lake near Arco, Lincoln County, in the southwestern corner of the state, on May 24. They were first observed resting on a muskrat house some 200 yards from shore, along with a number of individuals of nine other species of ducks. Specimens of this species had been observed in several of the eastern zoological gardens during the previous winter, and the birds were recognized instantly. The southwestern range of the bird being known, however, it was with some hesitation that the first impressions were accepted, and a half hour was spent in studying the birds with a pair of 16x glasses mounted on a light metal tripod which were carried as an aid in sketching. During this half hour of close scrutiny, several sketches of the birds were made, indicating the color and such positive field marks as the bright cinnamon-brown color, the long goose-like legs, the black stripe down the back of the neck, and the prominent light edgings on the side feathers, which were clearly distinguished. After a time the birds left the muskrat house and fed in the shallow, open water between the patches of bulrushes. It was observed that in feeding they dived like the Lesser Scaup Duck, showing the large legs and feet. They remained under from ten to fifteen seconds, then came up again almost in the same spot, after the manner of Coots. The other ducks gave every indication of nesting, and the lake was thoroughly examined several times during the next few days, but the birds had apparently moved on. The unusualness of this record leads one to suspect that these birds might have been escapes from some aviary, and, if this is the case, information regarding it would be welcomed.

On June 5 a lone male European Baldpate was found on Twin Lakes, Kittson County, in the northwestern corner of the state. It was in the company of a number of our common shallow water ducks that were breeding in this large, reed-grown lake. A view of it was obtained with the 16x glasses and a sketch made indicating the colors. The reddish head and the white flank, the latter like our own Baldpate, were very prominent, as was the pale buffy stripe over the top of the head. An attempt was made to approach it, but it was the first bird to fly, and, circling high, disappeared west over the other lake.—W. J. BRECKENRIDGE, *Museum of Natural History, Univ. of Minn., Minneapolis, Minn.*

**Observations at a Nest of Myrtle Warblers.**—On July 25, 1927, a nest of the Myrtle Warbler (*Dendroica coronata coronata*) was found at Grey Rocks, Pelham, Massachusetts, by Miss Lucille Baker, six feet up in a small red cedar on a branch next to the trunk. It was a rather shallow affair, composed of cedar twigs and bark, plant fibers, a piece of string and pine needles, and was lined with a few horse hairs and many Ruffed Grouse feathers. Inside were three newly hatched young. I watched the nest for fourteen hours on July 27, 28 and 29 and Miss Baker watched it for five and one-half hours on July 30, August 1 and 2. The observer sat in full view, within seven feet of the nest (on account of the sloping and rocky nature of the ground it was not convenient to be nearer), but the parents did not object in any way.

On July 28 the female brooded twenty-five per cent of the time during six and one-half hours of observation, but on the following day only nineteen minutes were spent thus during six and three-fourths hours. The brooding periods averaged nine minutes. A great deal of her energy was expended in delousing the nest—thirty-six minutes on July 28 and seventy-four minutes during the forenoon of the next day, but after that there was little trouble. Once, during thirteen minutes she made over 250 captures, all of which she ate. Curiously enough after one session of burrowing about, she tugged at a feather in the lining, pulled it out and flew away with it.

The male brought food sixty times, the female forty-eight times, so that the young were fed once in 10.9 minutes. About one-third of the time the male brought two insects, while the female did so on about one-sixth of her trips. During the fourteen hours of observation, the male brought food once in every nineteen minutes, the female once in every twenty-eight minutes. During the last five and one-half hours, the male brought food once in twenty-two minutes, the female once in eighteen minutes.

Often the young had difficulty in swallowing the large portions brought them. Once the female, after vainly presenting a round fat beetle to three young, took it to the ground. She shortly returned and at last disposed of the creature. On July 28, she was cleaning house, but hopped up above the nest upon the arrival of the male. For some time he worked with a large caterpillar, withdrawing it again and again from the throats of the young. The female came down to the nest rim and opened her bill. The male gave her the larva, and she held it while he pulled. She let go and he made another attempt to get it swallowed but had to manipulate it some more, his mate in the meantime standing with her bill open. However, it finally disappeared without further assistance from her.

The last feedings were watched on three evenings, the female settling down to brood for the night in each case. Sunset came at 7:15 p. m. on July 27, 7:14 on July 28, and 7:12 on July 30. The male's last feedings took place at 7:20, 7:08, and 7:16 p. m., respectively, the female's at 7:35, 7:24, and 7:31 p. m.

Excreta were eaten by the female through July 29, but she carried one away at 7:05 p. m., July 28. She ate twelve sacs and carried eleven; her mate carried twenty-five and ate one. He had brought a white moth and put it in the throat of one of the young, but it had fallen out and down without his noticing it. He picked lice off his legs and gave them to the babies. He then left and returned in ten minutes with two green larvae. After these were disposed of, he took a sac and swallowed it, hopped up to his favorite branch

above the nest and from there descended until he reached the moth, which he ate himself.

On the afternoon of August 1 there was a hard rain for twenty-five minutes, but although the male brought two meals and the female three, there was no move on the part of the parents to shelter the young.

The next afternoon, one of the young climbed to the nest rim, and another to the branch, but both returned. August 3 at 7:30 A. M. the last fledgling was just leaving the nest, flying over a hundred feet at its first attempt. A week later the male was seen in the vicinity feeding a fully grown young bird.

The parents made no sound near the nest until August 1, when the female came toward the observer with a low "*tchip*." The following afternoon when the young were getting out of and back into the nest, both parents became quite vocal, "*tchipping*" in nearby trees. Only ten songs were given by the male during the nineteen and one-half hours of observation.—MARGARET M. NICE, *Columbus, Ohio*.

**Some Unusual Spring Records from Bibb County, Georgia.**—The spring of 1928 brought an unusual number of new or rare bird records. Especially was this true of the water and marsh birds. Two facts may account for this. The spring has been unusually wet (the two previous springs had been very dry). Secondly, the local Isaac Walton League has been responsible for the establishment of a duck and game preserve in an old clay pit area south of town and near the river. Here, on February 11, Mr. Mounts and I saw two Red-shouldered Hawks, our first record of them for this region.

On May 12 was our most exciting trip to the clay pits. From far away a white heron was visible along the margin of one of the ponds. We watched this bird, hoping it would prove to be a Snowy Heron, but had to be satisfied with a young Little Blue Heron. Two full plumaged Little Blue Herons were also present. Near the herons were two Lesser Yellow-legs, and several more were scattered over the pond, one bird standing on one leg, the other one evidently badly injured. There were other waders of whose identity we were not sure. Along with the larger birds were six Least Sandpipers and one Semipalmated Plover. A pair of Blue-winged Teals swam about on the pond, and several times flew up, giving us a splendid view of the blue wing patches.

Not all of our rare records are from the clay pit region, however. On April 29, a House Wren appeared in our back yard and was seen, or heard in full song, for several days. This is a late record, and our first of the bird in song.

Not far from our home is a meadow, separated from the river by a low ridge. Two tiny streams run through the meadow, and in wet seasons there are several reedy, marshy patches. This year the Bobolink appeared there on May 1 and remained until May 12. Many years we do not see it at all. Here also we secured records of the Green Heron, King Rail, Short-billed Marsh Wren, and Purple Gallinule. The Purple Gallinule displayed an interesting habit. When flushed it flew to a tall tree bordering the marshy ground, and climbed higher and higher, hiding near the top, and evidently slipping out when not closely observed.

The most exciting record of the year came May 13. We had taken a friend to see the Bobolinks, which the day before were abundant and in full song. They had disappeared over night. A bird which at first glance I thought was a bob-tailed Red-wing flew up from a marshy spot and dropped down to the

ground where vegetation was short, so that its head was visible at a distance of thirty yards or more. We watched it first with a pair of eight power prism binoculars, and approached nearer and nearer, until finally two of us were within three feet of where the bird rested on the ground. It remained quiet for over a minute before flying away and dropping into the tall grass. None of us knew it. It was about five inches long and we could see plainly the red iris, slaty head and neck, reddish brown nape, dark wings and back spotted with white, and stubby tail. Comparison with the plates in the "Birds of New York" left no doubt that the bird was the Little Black Rail (*Creciscus jamaicensis*).—  
BERYL T. MOUNTS, *Macon, Ga.*

**Some Odd Nesting Sites of the House Wren.**—Some years ago my family and I lived upon and operated a farm near Thornburg, Iowa. Among the customary farm buildings was one for the implements and machinery used upon the farm. This machine house was open at the south side, no door or wall having been placed on that side.

We had made no special provision for nesting places for the Western House Wrens (*Troglodytes aedon parkmani*), but they looked up places for themselves and we always had at least one pair on the premises every summer. One fine May day I went into the implement house to prepare a machine for work in the field. While so engaged a House Wren came and alighted on my arm. In a moment the other of the pair alighted on my hat. Both were chattering at me vociferously, calling me all kinds of names and demanding to know what I meant by invading their premises in that manner. They were in no hurry to leave me and during most of the time I spent in the machine house that day they were on my clothing.

After this whenever I had occasion to go to the machine house, that summer, the wrens always came and perched on my clothing. This action of theirs struck me as somewhat peculiar, for although these little birds had been familiar to me all my life, I had never known them to do this before. But the reason for this familiarity became perfectly plain when I discovered their nest. I had hung up an old overcoat in this building the previous winter and left it there. The wrens had found one of the pockets of this coat to answer their purposes and made their nest therein. And since, as is well known, these birds scarcely ever make their nest for the second brood of the season in the same place, so they went "presto chango" into the other pocket for the second brood!

More recently I found a House Wren's nest in a joint of gas pipe twelve feet long, one and one-half inches in diameter and slightly bent in the center. This piece of gas pipe was balanced over the lower board of a fence so that both ends of the pipe were lower than the center. The ends were about eighteen inches from the ground, and the wrens entered at either end as happened to suit their convenience.

The past season (1928) I discovered a House Wren's nest under a quart tin can that had been carelessly turned over the top of a post in the garden fence. The post had been chopped off slanting at the top, and enough had been split off on one side so that it left a space three-fourths of an inch between the post and the side of the can. Through this narrow opening the birds had carried up the nesting material and made the nest in the triangular space on top of the post. But unfortunately the can was tilted off and the nest and eggs were precipitated to the ground by some one who was not aware of the wrens'

presence. Had this accident not occurred, it seems to me the birds must certainly have been fried under this tin can with the unbroken rays of the June sun beating down upon it.—E. D. NAUMAN, *Sigourney, Iowa*.

**Some Bird Notes from Trumbull County, Ohio.**—Notes on the following four species of Ohio birds are herewith presented:

Wilson's Snipe (*Gallinago delicata*).—This species was observed on December 30 and 31, 1925, at Norton's ravine, at the edge of the village. Following the first zero weather of the season, this snipe flew into the ravine from the north on a bright sunny afternoon. The ground was frozen hard, so that the bird was obliged to feed in the spring-fed brook, where it stood for about twenty hours, either probing diligently or resting quietly. Once when probing in the center of a quiet pool, the bird's head was partially submerged in the ice-cold water, the vigorous action of the head and bill causing ripples across the water.

The following March 4 to 9, inclusive, a Wilson's Snipe was again seen feeding in the same locality. Since this was early for a migrating bird of this species, it might have been the individual observed the preceding December, since springs abound in this region. A snipe was again seen on December 10 and 17, 1926, but there was no record during 1927. S. V. Wharram has found the Wilson's Snipe breeding sparingly in the next county north (Ashtabula), but he has no winter record. Mr. Kendeigh informs me that the latest Oberlin record is for the last of November.

Cardinal (*Cardinalis cardinalis cardinalis*).—This species first appeared at North Bristol in 1899, and has been a permanent resident and fairly common bird since then. It appears most commonly in the village during the winter, retiring in the spring to the adjacent Baughman Creek valley to nest. It has tried to nest near houses but has been discouraged by its enemy the Blue Jay.

Prothonotary Warbler (*Protonotaria citrea*).—A pair of this species spent four days at Norton's ravine May 12 to 16, 1925. (See WILSON BULLETIN, XXXVII, p. 225).

Carolina Wren (*Thryothorus ludovicianus ludovicianus*).—Appeared here in April, 1924, and remained in the vicinity until February, 1926. No nest was discovered. Because of its arresting song the bird attracted almost immediate attention, even from people not particularly interested in birds. One bird located in the village in the fall of 1925 and traveled from one yard to another, hunting on window sills, in out buildings and brush piles. It sang regardless of weather conditions until it disappeared about the middle of the following February. The winter had proved unusually snowy.—MARCIA B. CLAY, *North Bristol, Ohio*.

**A Nesting Census in Jackson County, Michigan.**—The writers took a nesting census on July 6, 1929, in Jackson County, Michigan. Jackson County is located in the south-central part of the state. The method of taking the census was essentially that of the Biological Survey. Briefly, the census found 360 pairs of 66 native species nesting within the area. Due to judicious use of the shotgun, but one pair each of English Sparrows and Ring-necked Pheasants were found.

The Grand River rises in the hills of the southern part of the county and leisurely flows northward, forming the Grand River Valley. The Grand River Valley is a narrow, heavily timbered valley. Tributary to the Grand River, and flowing southwest from the northeast corner of the county, is the Portage River, about the same size as the Grand River. The Portage River, rising in Portage

Lake, is a sluggish stream winding through an immense open muck marsh, the Portage Marsh.

The census area is located in the center of the county and at the junction of these two rivers. As the open marsh heads into the timbered bottom lands of the Grand River, here, we have both open marsh and timbered lowlands. The upland is almost level, and is composed of cultivated fields and pastures ranging from sandy loams to clay loams. The census area contains 235 acres of this upland and lowland, but the census was taken almost wholly within the thirty acres bordering the Portage River.

Species	Pairs	Species	Pairs
Bittern .....	1	Red-winged Blackbird .....	52
Green Heron .....	1	Meadowlark .....	2
King Rail .....	1	Baltimore Oriole .....	2
Virginia Rail .....	1	Bronzed Grackle .....	12
Woodcock .....	1	Goldfinch .....	9
Wilson Snipe .....	1	Vesper Sparrow .....	7
Spotted Sandpiper .....	2	Savannah Sparrow .....	2
Killdeer .....	3	Grasshopper Sparrow .....	1
Bobwhite .....	25	Henslow's Sparrow .....	2
Prairie Chicken .....	2	Chipping Sparrow .....	3
Mourning Dove .....	6	Field Sparrow .....	3
Marsh Hawk .....	1	Song Sparrow .....	21
Red-shouldered Hawk .....	1	Swamp Sparrow .....	5
Screech Owl .....	1	Rose-breasted Grosbeak .....	1
Yellow-billed Cuckoo .....	1	Indigo Bunting .....	2
Black-billed Cuckoo .....	1	Purple Martin .....	6
Belted Kingfisher .....	1	Barn Swallow .....	6
Hairy Woodpecker .....	1	Bank Swallow .....	10
Downy Woodpecker .....	2	Rough-winged Swallow .....	2
Red-headed Woodpecker .....	1	Cedar Waxwing .....	1
Northern Flicker .....	1	Warbling Vireo .....	5
Chimney Swift .....	2	Yellow Warbler .....	10
Ruby-throated Hummingbird .....	1	Maryland Yellowthroat .....	9
Kingbird .....	2	Catbird .....	14
Crested Flycatcher .....	4	Brown Thrasher .....	3
Phoebe .....	4	House Wren .....	4
Wood Pewee .....	2	Short-billed Marsh Wren.....	11
Least Flycatcher .....	21	Long-billed Marsh Wren.....	21
Prairie Horned Lark.....	2	White-breasted Nuthatch .....	1
Blue Jay .....	3	Black-capped Chickadee .....	2
Crow .....	1	Wood Thrush .....	2
Bobolink .....	7	Robin .....	15
Cowbird .....	8	Bluebird .....	2

LEONARD W., GEORGE S., HAROLD F. AND MAURICE WING, *Jackson, Mich.*

**Birds Noted on a Visit to Santa Cruz Island, California.**—On September 1, 1928, the writer and sixty members of the Nature Club of Southern California steamed across the channel to "Pelican Cove" on Santa Cruz Island, the most beautiful and the largest island of all in the channel, being twenty-one miles long in an east and west direction, with an average width of five miles, and a peak 2407 feet high. The eastern part is very irregular, barren and almost destitute of water. The western part, however, is, in certain localities, especially near Prisoners Harbor, plentifully besprinkled with forests of Santa Cruz Pine, which in the higher parts gives a distinctly boreal impression. At the lower edge of the pines are oaks and considerable grass lands, so that sheep raising and grape and vegetable farming are the principal activities of a few resident



folks on Santa Cruz Island. The larger canyons are well wooded and the darker retreats show marvelous growths of ferns and wild flowers, many of them in full Bloom through August. There are several varieties of deciduous trees, some of them quite large, and there is good water in many of the canyons. This would naturally harbor birds and insect life.

Excursion boats, yachts and launches cruise around the island, so that Santa Cruz Island is rapidly becoming a popular resort for the adventurer and the nature lover. Good camping spots with bathing beaches can be found almost anywhere. A few wild pigs have been noted and the boars are very wild and dangerous. House cats run wild, and there are some island foxes (*Urocyon littoralis santacruzae*), though the latter are not as plentiful as formerly.

We spent three days roaming here and there in selected groups. The writer and Dr. Hoffman of Santa Barbara, Elbert Benjamine, and Mrs. A. B. Maescher were there to record birds and to get motion pictures of sea lions (*Zalophus californianus*). Thousands of these were observed on the ledges basking in the sun at the far southwestern end of the island, and upon our intrusion they would go lumbering into the sea barking furiously.

The following forty-two species of birds were listed on this excursion:

- Western Grebe (*Aechmophorus occidentalis*).
- Eared Grebe (*Colymbus nigricollis californicus*).
- Pacific Loon (*Gavia pacifica*).
- Western Gull (*Larus occidentalis*).
- Heermann's Gull (*Larus heermanni*).
- Pink-footed Shearwater (*Puffinus creatopus*).
- Black-vented Shearwater (*Puffinus opisthomelas*).
- Sooty Shearwater (*Puffinus griseus*).
- Black Petrel (*Oceanodroma melania*).
- Ashy Petrel (*Oceanodroma homochroa*).
- Farallon Cormorant (*Phalacrocorax auritus albociliatus*).
- Brandt's Cormorant (*Phalacrocorax penicillatus*).
- California Brown Pelican (*Pelecanus californicus*).
- White-winged Scoter (*Oidemia deglandi*).
- Great Blue Heron (*Ardea herodias herodias*).
- Northern Phalarope (*Lobipes lobatus*).
- Least Sandpiper (*Pisobia minutilla*).
- Wandering Tattler (*Heteractitis incanus*).
- Black Oystercatcher (*Haematopus bachmani*).
- Valley Quail (*Lophortyx californica vallicola*).
- Western Mourning Dove (*Zenaidura macroura marginella*).
- Western Red-tailed Hawk (*Buteo borealis calurus*).
- Bald Eagle (*Haliaeetus leucocephalus leucocephalus*).
- Belted Kingfisher (*Ceryle alcyon*).
- Red-shafted Flicker (*Colaptes cafer collaris*).
- Allen's Hummingbird (*Selasphorus alievi*).
- Ash-throated Flycatcher (*Myiarchus cinerascens cinerascens*).
- Black Phoebe (*Sayornis nigricans*).
- Western Flycatcher (*Empidonax difficilis difficilis*).
- Island Horned Lark (*Otocoris alpestris insularis*).
- Santa Cruz Island Jay (*Aphelocoma insularis*).
- Raven (*Corvus corax sinuatus*).
- San Clemente House Finch (*Carpodacus mexicanus clementis*).
- Western Lark Sparrow (*Chondestes grammacus strigatus*).
- Gambel's Sparrow (*Zonotrichia leucophrys gambeli*).
- Santa Barbara Song Sparrow (*Melospiza melodia graminea*).
- San Diego Towhee (*Pipilo maculatus megalonyx*).
- Island Shrike (*Lanius ludovicianus anthonyi*).

Dusky Warbler (*Vermivora celata sordida*).  
 Western Mockingbird (*Mimus polyglottos leucopterus*).  
 Rock Wren (*Salpinctes obsoletus obsoletus*).  
 Coast Bush-tit (*Psaltriparus minimus minimus*).

ALFRED COOKMAN, *Los Angeles, Cal.*

**The Starling in Northwestern Arkansas.**—A Starling (*Sturnus vulgaris*) was observed on the University of Arkansas campus at Fayetteville, Washington County, on January 25, 1930. The bird was secured for a specimen. I believe this is the first record for Arkansas.—W. J. BAERG, *Fayetteville, Ark.*

**The Starling in Pettis County, Missouri.**—The Starling (*Sturnus vulgaris*) was recently observed about seven miles west of Sedalia, Pettis County, Missouri. It was about a farm lot, and was observed at close range. So far as I know this is the first record for this region.—CHARLES A. MCNEIL, *Sedalia, Mo.*

**The Starling in Tulsa County, Oklahoma.**—The first Starling (*Sturnus vulgaris*) known to have been collected in Oklahoma, was taken ten miles south of Tulsa, Tulsa County, on the Peoria road near the Arkansas River, December 18, 1929, by Mr. and Mrs. A. E. Gilmore. The bird was a male, and the specimen is now in their general collection.—MR. AND MRS. A. E. GILMORE, *Tulsa, Okla.*

**The Starling in the Missouri Ozarks.**—On December 18, 1929, the first real winter reached us in southwestern Missouri, with several inches of snow, and with temperatures as low as four degrees below zero. On the late evening of December 19, I was making the rounds of my bird traps, when in a small wood-lot about a quarter of a mile from the house I heard and saw a very odd-appearing bird flying from tree to tree. About mid-morning of the 20th, the next morning, I went to my basement to look out at a couple of bird traps which I had close to the house. Sitting between the trap and the basement window on the south side of the house were four Starlings (*Sturnus vulgaris*), busily engaged eating the extra bait that was scattered about. I followed them about for over an hour, and finally left them in the woods close to the spot where I had first seen them on the afternoon before.

On Sunday, December 29, 1929, the Springfield Daily News carried a write-up from West Plains, Missouri, some 175 miles to the east, stating that Mr. F. M. Francis of that city had found a dead Starling in his chicken coop, presumably on the morning of December 27. Identification was made by Mayor Harlan of West Plains, and from the very good description given, there can be no doubt of its correctness.—JOHNSON A. NEFF, *Marionville, Mo.*

**The Starling in Oklahoma.**—During the winter of 1929-30 the Starling (*Sturnus vulgaris*) has appeared for the first time in three localities in Oklahoma. *Tulsa.* In the latter part of November Mr. C. L. Dewey of the Chamber of Commerce reported a flock of seventy-five to eighty Starlings on the east bank of the Arkansas River, opposite 55th Street. On December 18, Mr. A. E. Gilmore collected a male out of a flock of about sixty-five, ten miles south of Tulsa. A flock, presumably the same, was seen in this general locality (on the road between Sapulpa and Bixby) on December 1 by Harold A. Graham. The above information was kindly given by Miss Edith R. Force of Tulsa. *Oklahoma City.* Mr. Marsh B. Woodruff, Assistant State Game Warden, reports that a ranger, while looking over a hunter's bag on Lake Overholser, the city reservoir, on

November 3, found that the man had shot several Starlings which he thought were blackbirds. A specimen was secured and is now mounted in the museum of the State Game Department. *Norman*. A flock of fifteen Starlings sought shelter in some cedar trees on the farm of Mr. H. Hefley in the suburbs of Norman. One of these was picked up dead on January 18, 1930, and is now in the Museum of Zoology of the University of Oklahoma. The flock was still present on January 28.—R. D. BIRD. *University of Oklahoma, Norman, Okla.*

**The Starling in Hancock County, Illinois.**—On January 17, 1930, a single male specimen of the Starling (*Sturnus vulgaris*) appeared at the home of Prof. O. A. Boatman. The specimen was presented to the museum of Carthage College. On January 24, Mr. Howard Swartz and Mr. Charles Walker each brought a specimen for the same museum. Mr. Swartz has reported two small flocks numbering not more than a dozen birds, each of which appeared on January 27 and 28 near the college campus. These birds were in a famished condition, several being scarcely able to fly, due no doubt to the severe winter conditions prevailing.

Having searched the records from this vicinity, compiled by Dr. F. C. Gates and Prof. A. V. Arlton, as well as my own, covering a period of fourteen years, I have found no previous mention of the Starling in Hancock County. Other bird enthusiasts of this region also report it a newcomer to this locality.—EARL L. LAMBERT. *Carthage, Ill.*

**The Starling in Kalamazoo County, Michigan.**—The first record of a Starling (*Sturnus vulgaris*) in the vicinity of Vicksburg, Kalamazoo County, Michigan, was on December 16, 1924, when a single bird was captured in a silo one and one-half miles northeast of Vicksburg. In March of the same year four birds made regular visits to a feeding station in the western part of the village. None were seen here during the summer of 1925, but each winter thereafter they appeared in increasing numbers. On December 23, 1928, I came upon a flock of seventy-five, feeding on apples in an old orchard. The following summer (1929) they were occasionally seen, and one pair is known to have raised a brood of young. On December 22, 1929, another large flock of sixty birds made their appearance in the village, so no doubt the Starling is fairly well established in this locality.—F. W. RAPP. *Vicksburg, Mich.*

[EDITOR'S NOTE. A large amount of material on the Starling distribution came in too late to be edited for this issue, although it is all embodied in the map on the inside cover page. We hope to be able to present all this material in condensed form, along with other information which may come in. Two things must be kept in mind, viz., the winter range and the breeding range.]

## PROCEEDINGS OF WILSON ORNITHOLOGICAL CLUB

By Jesse M. Shaver, Secretary

The Sixteenth Annual Meeting of the Wilson Ornithological Club was held at Des Moines, Iowa, on December 27 and 28, 1929, and in conjunction with the general sessions of the American Association for the Advancement of Science. Something like 3,000 lectures and scientific papers were presented at the sessions of the American Association and its affiliated and associated societies. The W. O. C. meeting was made especially enjoyable through the hospitality of the Des Moines Audubon Society and the Iowa Ornithologists' Union. In many respects this meeting was the most interesting and successful one in the history of the organization. The headquarters of the Club was made at the Hotel Savery, while the business and program sessions were held in the auditorium of the Des Moines Public Library. The annual dinner was held on Saturday evening, December 28, at Younker's Tea Room.

### BUSINESS SESSIONS

The business sessions were held on December 27 from 9:15 to 9:45 A. M., and on December 28 from 12:00 to 12:30 P. M., and from 5:00 to 5:30 P. M. Council meetings were held Thursday and Friday evenings, December 27 and 28, from 7:30 to 11:00.

The Council considered on Thursday evening methods for increasing membership. The Secretary outlined plans for securing nominations from our present membership, for follow-up letters, for a Membership Committee to be selected with care by the Secretary to work with him in building up the membership. The Secretary was authorized to go ahead with the selection of the Committee and with his plans as outlined. The work of the Endowment Committee was considered and plans discussed for more active work during the coming year. The Friday evening session of the Council was devoted to a very careful revision of the new constitution to be presented to the Wilson Ornithological Club on Saturday.

At the business sessions, the Secretary's report of the last annual meeting was approved without being read since it was published in the March, 1929, number of the WILSON BULLETIN. The officers reported briefly on their activities with the exception of the Vice-President who was away on an arctic expedition.

The Editor presented a tabulation of figures showing itemized costs of each issue of the WILSON BULLETIN during the past five years. From these figures the cost of each volume for these years was ascertained. The average cost per volume for the last five years was \$1.15, but the cost of the volume for 1929 was \$1.39. (In order not to misinterpret these figures it should be remembered that we print about 200 copies more than are immediately distributed. This means an outlay of between two and three hundred dollars a year for which there is no corresponding income. This cannot be avoided, and perhaps no one would wish to, even if some slight economy would result). The Editor pointed out that stamps had to be affixed to each BULLETIN mailed for local delivery. Hence, the cost of sending a magazine to a member in Sioux City is just the same as to send it to Europe, or any other country. The Editor recommended, therefore, that no extra sum for postage be added to the dues of *members* who reside outside the United States. The Chair hereupon ruled that

such was his interpretation of the Constitution. Foreign *subscriptions*, however, are to remain at \$2.00.

The Treasurer's report was received in a brief form and was referred to an Auditing Committee for consideration together with the other papers from the Treasurer's office. This report with a statement from the Auditing Committee is published elsewhere in this number of the BULLETIN. The Secretary's report was read and accepted. There was a total of 748 members of all classes, but 31 were delinquent for 1929 dues. They will be dropped this year unless their dues are paid shortly.

The Committee on Endowment regretted its relative inactivity this year, due in part to the death of one of its members and the long illness of another. This Committee was continued for another year with A. F. Ganier as Chairman. No one was appointed to take the place on the committee of Thos. H. Whitney, deceased.

Prof. Myron H. Swenk reported for the Committee on Revision of the Constitution by reading a new constitution partly prepared by the Committee but thoroughly reviewed and revised by the Council. It was tabled for one year in accordance with the procedure provided in our present constitution.

The sixty-five new members, consisting of 15 active and 50 associate members, presented by the Secretary were elected, as were 12 additional active and 6 additional associate members nominated at this meeting. The names of these new members will appear in the new directory of members to be published in June. Two new life members, Miss Althea R. Sherman and Mr. W. I. Lyon, were announced.

The Secretary was instructed to send through radio station KDKA, of Pittsburgh, the greetings and best wishes of the Wilson Ornithological Club to our Vice-President, George Miksch Sutton, who is spending the winter close to the Arctic Circle.

A Committee on Honorary Members, consisting of Messrs. T. C. Stephens and A. J. Palas, was appointed at the first session. Because of their contributions to the science of ornithology and because of their loyalty to the Club the Committee recommended the election of the four Founders, Dr. L. Otley Pindar, Dr. Lynds Jones, Dr. R. M. Strong, and Mr. Franklin L. Burns, to Honorary Membership. Because of her long-continued studies on the habits of birds, her numerous published contributions, and her loyal support of the Club, the Committee recommended that Miss Althea R. Sherman be elected to Honorary Membership. The report of the Committee was unanimously adopted, and these five members were declared Honorary Members.

At the Ann Arbor meeting T. C. Stephens was appointed as Chairman of a Committee on the Establishment of a Research Library on Ornithology. This Committee was subsequently enlarged by the appointment of Mr. Frank C. Pellett and Prof. Myron H. Swenk. During the past year the Committee received definite proposals from the Museum of Zoology, of the University of Michigan, and from the Iowa State College, at Ames. The proposals were presented at the Des Moines meeting and ratified by vote. During the coming year it is expected that these agreements will be consummated legally, and that the libraries will then be ready for donations and bequests. The text of the agreements will be published in a later number of the BULLETIN.

The Committee on Resolutions, consisting of Prof. E. L. Moseley and Prof. James S. Hine, prepared appropriate resolutions thanking our hosts, the Des Moines Audubon Society and the Iowa Ornithologists' Union, for the hospitable manner in which they entertained the Club; the people of Des Moines for many courtesies; the press of the city for the excellent publicity which it gave to the meeting; the Des Moines City Library for opening its Auditorium to the Wilson Ornithological Club for the meeting; and especially the Club's very efficient local representative, Mr. Arthur J. Palas. The Committee also expressed the Club's appreciation of the long and untiring services which the retiring president, Lynds Jones, has rendered in one capacity and another throughout the life of the organization. The retiring Treasurer was also commended for his efficient activity in keeping the funds of the Club in good condition during his terms of office.



W. M. ROSENE  
The New Treasurer

The Committee on Nominations, composed of Messrs. A. F. Ganier and Myron H. Swenk and Mrs. H. J. Taylor, reported nominations as follows:

For President, J. W. Stack.

For Vice-President, George Miksch Sutton.

For Treasurer, Walter M. Rosene.

For Secretary, Jesse M. Shaver.

For Councillors,\* Mrs. Margaret M. Nice, Lynds Jones, C. W. G. Eifrig, Albert F. Ganier, and Myron W. Swenk.

All of the nominees thus proposed were elected, and declared to be the officers for the ensuing year.

The Des Moines Audubon Society had independently arranged a most creditable exhibit of bird paintings. The exhibits were all conveniently hung on the walls of a large and well lighted room on the same floor on which the program meetings were held. We give below a list of the exhibiting artists with the titles of the works shown; there is some possibility that we have unintentionally omitted some of the items, since the exhibits extended all around the four walls of a very large room.

MR. JOHN L. RIDGWAY, 501 Fairmount St., Glendale, California. *Pileated Woodpeckers, Western Robins, Guadalupe House Finches, Cardinal, Rufus and Costa Hummingbirds, Rufus and Costa Hummingbirds and Accessories, Restoration of Patapava californicus.*

\*The first three names were presented by the Committee, the last two were nominated from the floor.

- MR. GEORGE MIKSCH SUTTON, Bethany, West Virginia. *Wood Ibises*, (reproduced in WILSON BULLETIN of last March), *Mallard, Kite, Grebes, Great White Heron*.
- MR. R. BRUCE HORSFALL, 3835 "S" St., N. W., Washington, D. C. *Violet Green Swallow, Steller Jay, Chinese Pheasant, Robin, Dove, Water Ouzel, Night-hawk, Towhee, Cowbird, Yellow-throat, Tree Sparrow, Black-headed Gros-beak, Whip-poor-will, Kildeer, Cardinal*.
- MR. EARL L. POOL, care of Public Museum, Reading, Pa. *Harpy Eagle and Spoonbill, Duck Hawk, Chickadee and Tufted Titmouse, American Oyster-catcher, Roseate Tern, Prairie Falcon*.
- MR. O. J. MURIE, care Biological Survey, Washington, D. C. *Pacific Eider flying, Hawk Owls at Mating Time, Savannah Sparrow, Willow Ptarmigan flying, Horned Puffin, Golden Eagle, Immature Pacific Eider, Immature King Elder, White-crested Cormorant* (the last five being field sketches).
- MR. FRANCIS LEE JAQUES, 515 Edgecombe Ave., New York, N. Y. *Cedars and Grey Geese, Tropic Sea*.
- MR. E. R. KALMBACH, care Biological Survey, Washington, D. C. *Crow, Florida Turkey, Great Horned Owl, Starling, Western Bluebird*.
- MASTER OLIN KALMBACH. *Wood Ducks*.
- MR. WILLIAM ROWAN, University of Alberta, Edmonton, Canada. *Juncos, Head of Horned Grebe, Young Whiskey Jay, Canada Crow*.
- MR. OTTOMAR FRANZ VON FUEHRER, Carnegie Museum. *Toucans, Cockatoo*.
- MAJOR ALLAN BROOKS, Okanagan Landing, B. C. *Pinon Jay, Hummingbirds, Pectoral Sandpiper, Song Sparrow, Head of Owl* (the last three being field sketches).
- J. N. DARLING, Des Moines and New York. Original of "Ding" cartoon "A plea for reduction of armaments".

The Des Moines Public Library also arranged a small exhibit of bird books, including "The Birds of America", 7 volumes, by John James Audubon, Philadelphia, 1840. The State Historical Society displayed a set of the Elephant Edition of Audubon's "The Birds of America"; and also the diary and bird paintings by William Savage, made during the early history of Iowa. One of the most interesting exhibits among the books was the first volume of a new work on the birds of North America. This work consists of paintings of birds by Mr. Rex Brasher, and is planned to illustrate every species found in North America. There are to be twelve volumes, each volume selling for \$200. The volume here exhibited was shown and explained by Mr. Philip Brasher. Many of our members also visited the unique private museum of Mr. Ernest Brown, proprietor of the Brown Hotel. This collection consists mostly of fishes, and is reputed to be as complete as anything of the kind in existence: it contains many species of fishes not found in the great museums, and a few specimens which seem to be undescribed forms. Among the fishes are just a few birds, brought in incidentally, including a few Laysan Island birds, obtained from Prof. H. R. Dill.

The social features of the Des Moines meeting were unusually pleasant and enjoyable. The annual dinner was held at Younker's Tea Room. The menu and service on this occasion reached a high mark which will long be remembered by those present. Dr. L. S. Ross, of Drake University, was Toastmaster, and exercised his privilege with finesse and to the satisfaction of all. Prof. M. H. Swenk responded wittily in identifying the "Goofus Bird", but fortunately the old bird hooted before the speech was over, and identification was complete. Short speeches were made by Miss Sherman and Dr. Jones. Dr. Paul Bartsch, of the Smithsonian Institution, was also present and spoke briefly.

During the evening several reels of motion pictures, which had been postponed from the afternoon, were shown. Following these an original poem, entitled "Reflections", was recited by Mr. W. M. Rosene. Each verse was accompanied by a beautifully colored slide which appropriately illustrated the thought expressed. The dinner was attended by seventy-seven persons.

On Sunday afternoon, December 29, the Wilson Ornithological Club was pleasantly entertained at the beautiful home of Mr. and Mrs. Henry Frankel, by the Des Moines Audubon Society.

On Friday and Saturday the Club members lunched together at the Savery Hotel, giving opportunity for making new acquaintances and renewing old ones.

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#### REGISTER OF ATTENDANCE AT THE DES MOINES MEETING, 1929

From CANADA: Prof. V. W. Jackson, University of Manitoba at Winnipeg. From CALIFORNIA: Mrs. H. J. Taylor, Berkeley. From DISTRICT OF COLUMBIA: Dr. Paul Bartsch, Smithsonian Institution; Dr. W. B. Bell, Bureau Biological Survey. From ALABAMA: Pauline Shepherd, Russellville. From ARIZONA: Dr. Walter P. Taylor, Tucson. From CONNECTICUT: Philip Brasher, Kent. From ILLINOIS: Miss Mary Bradford, Moline High School; Miss Ruth Marshall, Rockford College; Frederick L. Brown, Chicago; W. I. Lyon, Waukegan; Prof. G. Eifrig, Concordia Teachers College; Dr. W. C. Allee, University of Chicago. From INDIANA: Dr. Howard E. Enders, Purdue University. From KANSAS: Frank M. Alexander, Wellington; Iva Larson, Marjorie Priekett, Dr. Mary T. Harmah, State College at Manhattan. From MASSACHUSETTS: Mr. and Mrs. Robert Emerson, Belmont. From MINNESOTA: Donald Fischer, Shakopee; Dr. A. M. Holmquist, St. Olaf College at Northfield; F. B. Hutt, University Farm; W. J. Breckenridge, University Museum; Selma Crow, University of Minnesota; Gustav Swanson, all of Minneapolis. From MISSOURI: L. M. Dougan, Burton H. St. John, St. Louis; Elizabeth Allen Satterthwait, Webster Groves; Prof. A. E. Shirling, Kansas City. From NEBRASKA: Miriam Roe, Chadron; Prof. C. C. Carlson, Doane College at Crete; Dr. Robert H. Wolcott, Dr. David D. Whitney, and Prof. Myron H. Swenk, University of Nebraska at Lincoln. From OHIO: Prof. E. L. Moseley, State Teachers College at Bowling Green; Dr. Lynds Jones, Oberlin College; Prof. James S. Hine, Ohio State University at Columbus. From OKLAHOMA: C. P. Freeman, A. & M. College, Stillwater. From PENNSYLVANIA: Charles Edward Mohr, Bucknell University at Lewisburg. From SOUTH DAKOTA: Prof. N. E. Hansen, State College at Brookings. From TENNESSEE: Edwin B. Powers, Knoxville; Dr. Wyman R. Green, Chattanooga University; Albert F. Ganier, P. E. Cox, State Archaeologist, Dr. John T. McGill, Vanderbilt University, Dr. Jesse M. Shaver, Peabody College, all of Nashville. From WISCONSIN: Mr. and Mrs. Ira Hatfield, Dr. Leon J. Cole, University of Wis-



consin at Madison. From IOWA: (outside of Des Moines): Mrs. H. J. Lambert, Dows; Kathryn Gilmore, Bloomfield; Carl Fritz Henning, Custodian Ledges State Park at Boone; J. Wilbur Dole, Fairfield; Leona Johnson, Gilman; Donald Douglas, Grinnell College at Grinnell; Dr. C. E. Ehinger, Keokuk; May Alice Smith, and Leslie Weetman, Indianola; May Pardee Youtz, Iowa City; O. P. Allert, McGregor; Prof. H. E. Jaques, Iowa Wesleyan College at Mt. Pleasant; Dr. Charles R. Keyes, Cornell College at Mt. Vernon; Althea R. Sherman, National, via McGregor; Charles J. Spiker, New Hampton, W. M. Rosene and Walter Rosene, Jr., Ogden; Alfred R. Stanley, Oskaloosa; M. Bourland, Shenandoah; Mrs. Max Levine, John Eide, Elsie Ann Guthrie, Harlan B. Mills, Mrs. John E. Smith, all of Ames; Prof. J. E. Guthrie and Dr. L. H. Pammel, Iowa State College at Ames; F. L. Kubichek, Coe College, Byron H. Evans, Gaynor Evans, Mrs. V. R. Evans, Lavinia Steele, Cedar Rapids; Ethel M. Hackett, T. C. Stephens, Morningside College, Mrs. Mary L. Bailey, Walter W. Bennett, R. O. Malcomson, William Youngworth, all of Sioux City; Dr. and Mrs. F. L. R. Roberts, Spirit Lake; Lottie V. Crouse, Valley Junction; J. W. Jones, Vinton; Mr. and Mrs. Fred J. Pierce, Winthrop; Mr. and Mrs. Arthur Goshorn, Winterset; Hazel Guthrie, Woodward. From DES MOINES: Dunbar Bair, Mrs. E. R. Baker, Florence Barr, Mr. and Mrs. A. N. Beim, B. J. Bleasdale, Olive C. Brandt, Mrs. R. G. Brenner, Miss Debra Brinton, Mrs. Ernest Brown, Mr. and Mrs. Harold A. Bruner, Marjorie Christian, Mrs. C. F. Christy, Floy Cook, Ada Coon, Charlotte Coon, Mrs. C. C. Donahue, Jean DuMont, Mr. and Mrs. W. G. DuMont, David DuMont, J. H. Dutton, Mrs. T. S. Farquharson, Harry Fensler, Carolyn E. Forgrave, Leta Fowler, Mrs. Henry Frankel, Miss Florence Froning, Mrs. A. B. Funk, Mr. and Mrs. O. E. Gilchrest, Jean Goodrich, Mrs. R. S. Herrick, F. R. Hubbard, Jr., Maude Hubbard, Charles Hutchinson, Helen Johnston, Mrs. C. Leslie Johnson, David T. Jones, Miss Helen Kamber, Edith C. Kimmell, Miss Kate LaMar, Miss Libbie Lang, Miss Ellice Langfitt, Belle Levey, Mrs. Ida Levey, Mr. and Mrs. Paul Love, W. E. Lyman, Paul and Max Lyon, Mrs. John Lyon, Miss Olivia McCabe, Mrs. Cole McMartin, Miss Fannie Malone, Dorothy Merritt, Mrs. A. S. Miller, Robert Hoehl, Russell Mott, Kenneth Nelson, Maxine Nelson, Mr. and Mrs. W. C. Nelson, Miss Elsa M. Neumann, Mrs. Arthur Neumann, Miss Prudence Nicholas, Mr. and Mrs. Arthur J. Palas, Addison Parker, Jr., Miss Hazel Peasley, Mrs. R. R. Peters, Ben K. Polk, Jr., Mrs. H. M. Purvis, Mrs. J. W. Rehmann, Miss Estelle Reynolds, Dr. Luther S. Ross, Miss Edna Rounds, Mrs. M. H. Rowe, Miss Ruby Sage, Miss Mamie St. George, Miss Mary M. Schell, Miss Viola H. Scheel, Fred O. Signs, Mrs. E. E. Stacey, Mrs. B. M. Stearns, Ray E. Sterrett, Mrs. Truman Stevens, Mr. and Mrs. John E. Stewart, Miss Anna K. Sutton, Mabel Conkling Thomas, Mrs. Louise I. Tower, Miss Frieda Troeger, Miss Irene Ullius, Miss Hazel Velie, Miss Margaret C. Walker, Mr. and Mrs. Leo Weeks, Alfred Wendelburg, Mrs. Toni R. Wendelburg, Miss Grace White, Mrs. Mary E. Winston, Unah Winston, Ethel Gay Wood, Miss Minnie Youngerman.

Summary of Attendance. Canada, 1; California, 1; District of Columbia, 2; Alabama, 1; Arizona, 1; Connecticut, 1; Illinois, 6; Indiana, 1; Kansas, 4; Massachusetts, 2; Missouri, 4; Minnesota, 6; Nebraska, 5; Ohio, 3; Oklahoma, 1; Pennsylvania, 1; South Dakota, 1; Tennessee, 6; Wisconsin, 3; Iowa (outside of Des Moines), 46; Des Moines, 106. Total, 202. Total outside of Des Moines, 96. Number at Dinner, 77.

## REPORT OF THE SECRETARY FOR 1929

\*Nashville, Tenn., December 26, 1929.

*To the Officers and Members of the Wilson Ornithological Club:*

The Wilson Ornithological Club finished its fiscal year in a fairly satisfactory condition as to membership and general activities.

Seventy-six new members have been added to our roll during the past year as follows: life member, 1; active, 17; associate, 58. These new members have the following state distribution: Alabama, 1; Arizona, 1; Arkansas, 1; California, 2; Connecticut, 1; District of Columbia, 1; Foreign, 3; Illinois, 13; Indiana, 1; Iowa, 7; Kentucky, 1; Massachusetts, 2; Michigan, 5; Minnesota, 3; Missouri, 3; North Carolina, 1; New Jersey, 1; New York, 2; Ohio, 12; Oklahoma, 1; Pennsylvania, 2; South Carolina, 1; Tennessee, 7; Texas, 2; Utah, 1; Wisconsin, 1.

The various members responsible for the applications of new members are as follows: Jesse M. Shaver, 26; T. C. Stephens, 14; J. W. Stack, 8; H. K. Gloyd, 8; Lynds Jones, 5; W. I. Lyon, 3; T. L. Hankinson, 2; Louis Campbell, 3; A. M. Bailey, 2; and five members, one each.

At present the total membership is 717, distributed among the following groups: honorary, 9; life members, 6; sustaining members, 60; active members, 245; associate members, 397.

During the year 35 members resigned, 4 were deceased, and 31 were dropped for non-payment of 1929 dues. Thus a total of 70 members were lost. The dropped members were distributed among the following groups. life member (deceased), 1; sustaining members, 3; active members, 18; associate members, 48.

Respectfully yours,

JESSE M. SHAVER, *Secretary*.

## CONTRIBUTIONS TO THE SPECIAL COLOR PLATE FUND†

Clarence Bretch, Gary, Ind.....	\$10.00
Dr. Alvin R. Cahn, Urbana, Ill.....	5.00
Dr. C. E. Ehinger, Keokuk, Iowa.....	5.00
Mrs. Margaret M. Nice, Columbus, Ohio.....	5.00
Prof. M. C. Quillian, Macon, Ga.....	1.50
Hon. John E. Thayer, Lancaster, Mass.....	25.00
Thos. H. Whitney, Atlantic, Iowa.....	5.00
Fred M. Dille, Valentine, Nebraska.....	1.00
Edward R. Warren, Colorado Springs, Colo.....	1.00
Sidney K. Eastwood, Pittsburg, Pa.....	1.00
E. D. Nauman, Sigourney, Iowa.....	2.00
Total.....	\$61.50

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

†Contributions received in December are not included here.

REPORT OF THE TREASURER FOR 1929

East Lansing, Mich., December 28, 1929.

RECEIPTS FOR 1929

Cash in bank November 23, 1928 .....	\$527.18
Sustaining dues .....	270 00
Active dues .....	520.00
Associate dues .....	484.50
Libraries, Museums, Schools .....	69.00
Two foreign subscriptions .....	4.00
Total excess on checks .....	1.25
Collection on back dues .....	126.71
Sale of Bulletins to members .....	11.52
Donations to color plate in March .....	61.50
Exchanges through Oberlin College .....	18 00
Exchanges through Dr. Jones .....	22.50
1930 Associate dues .....	25.50
1930 Active dues .....	7.50
1930 Libraries, Museums, Schools .....	18.00
 Total income .....	 \$2,167.16

DISBURSEMENTS FOR 1929

Printing four issues, WILSON BULLETIN .....	\$1,040.70
Color plate work, March and September .....	181.20
Halftones and zinc plates .....	145.14
Addressing envelopes for BULLETIN, 5 issues <sup>1</sup> .....	15.00
Mailing BULLETINS for 1928 <sup>2</sup> .....	33.64
5000 mailing envelopes for BULLETIN .....	38.75
 Cost of publication .....	 \$1,454.43
Secretary's expense, postage, mimeograph, etc. ....	70.68
Treasurer's expense, postage, printing, etc. ....	70.75
Printing of general stationery .....	16.00
Transferred to Endowment Fund .....	25.00
 Total disbursements .....	 \$1,636.86
Cash balance on hand .....	530.30
 	 \$2,167.16
Endowment Fund, January 1, 1929 .....	\$534.08
Endowment Fund, December 26, 1929 .....	720.25
Interest, June to January .....	12.07
 	 \$732.32

The undersigned has examined the accounts of Professor J. W. Stack, Treasurer of the Wilson Ornithological Club, and finds them correct in every detail.

C. W. G. EFRIG, Auditor.

River Forest, Ill., January 30, 1930.

<sup>1</sup>This also includes \$2.50 for making a copy of the mailing list for checking purposes.

<sup>2</sup>Including second class postage on BULLETINS, foreign postage, postage due on returned copies, postage on each local delivery, parcel postage on manuscripts, photographs, etc.

## THE PROGRAM

The program is given below just as it was carried out, which varies slightly from the order in which it was announced in the program printed for the meeting.

Friday Morning, December 27, 1929

Mrs. I. E. Stewart, President of the Des Moines Audubon Society, welcomed the Wilson Ornithological Club to Des Moines in her own charming manner. On behalf of the Club Dr. Jones responded briefly.

1. Making Bird Sanctuaries of Public Grounds. (Lantern slides). Arthur J. Palas, Des Moines.

By gift and purchase the city of Des Moines has acquired rather extensive tracts of land around its water-works and bordering the Raccoon River; this area is kept as a bird sanctuary. To a great extent this enterprise is due to the energy and foresight of the Des Moines Audubon Society, and especially to its president, Mrs. J. E. Stewart. For the most part, this area is left in its native and undisturbed condition, providing excellent shelter for birds. Since, in the nature of the case, water-works property must be carefully supervised, it usually makes excellent bird sanctuary. In this particular case, we may judge from the beautifully colored pictures that this area contains much picturesque scenery.

2. Correlation between the Blooming of Flowers and the Migration of Hummingbirds. Prof. L. H. Pammel, Iowa State College, Ames.

Literature, personal observations, and data gathered from others by correspondence were summarized as to the kinds of flowers visited by Hummingbirds (*Archilochus colubris*), and as to the time of year of the visits. The general conclusion was drawn that the ruby-throats leave for the south at approximately the time when hummingbird flowers are killed by the frost. The flowering season of "hummingbird flowers" usually co-incides with the period of residence of the Ruby-throated Hummingbird. Additional data will be welcomed.

3. Nesting of the Duck Hawk in the Great Smoky Mountains. (Lantern slides). Albert F. Ganier, Nashville, Tenn.

The excursion leading to the discovery of the nest and eggs of this relatively rare falcon was described with absorbing interest. Excellent pictures showed the difficult and perilous climb to the site of the nest, the nesting cliff and surrounding environment, the nest and eggs in situ, and the old bird in flight.

4. The Chemistry of a Bird's Nest. Althea R. Sherman, National, Iowa, and Burton H. St. John, St. Louis, Mo.

A brief statement of the manner of placing and gluing the first sticks onto the chimney wall by the Chimney Swift was followed by a report on some analytical work on the nature of this secretion. It was found to be "an acid glucoprotein (protein combined with carbohydrates), being comparable in composition, as shown by the analysis, and in most of its characteristics, with known mucins such as those found in snails and the submaxillary gland, but differing from them and sharing a property of the keratins in lack of digestibility by either pepsin or trypsin." A peculiar property of this secretion is its ability to harden rapidly when exposed to the air. This analysis was compared with that of various natural proteins. The paper was read by Mr. St. John.

5. Some recent Iowa Bird Notes. C. E. Ehinger, Keokuk, Iowa.

Dr. Ehinger presented observations on: 1) the effects of a bridge and dam across the Mississippi River on the migration of water birds, 2) a great autumn migration of Lesser Snow Geese, Double-crested Cormorants, Coots, Lesser Scaup Ducks, Teal, and Golden-eyes, 3) the presence of Redpolls

as late as December 18 at Keokuk, of Starlings at Warsaw, Illinois, of Western Meadowlarks in southeastern Iowa, and of nesting Mockingbirds near Keokuk, and 4) the abundance of the Yellow-breasted Chat in favorable localities near Keokuk.

6. Mallophagan Parasites on some of our Common Birds. R. O. Malcomson, Sioux City, Iowa.

Lantern slides and microscope slides were used in describing these common parasites of birds. Many of the parasites studied by Mr. Malcomson were obtained from long-preserved bird skins. Some of the parasites mounted on microscope slides were projected by lantern on the screen, including two new species recently described and named by Mr. Malcomson.

Friday Afternoon, December 27, 1929

7. Studies at the Nests of our Larger Owls. (Lantern slides). W. M. Rosene, Ogden, Iowa.

Camera studies of the nesting sites, young, and adults of several species of the larger owls, particularly the Barred and Great Horned Owls. A careful study of the food found in the nest of a pair of Barred Owls in two successive years revealed some very interesting facts concerning their economic status. This nest was visited almost daily for a period of about six weeks.

8. Seasonal, Cyclic, and Permanent Fluctuations and Decrease in the Number of Certain Species of Birds. C. W. G. Eifrig, River Forest, Illinois.

This paper shows how unusual scarcity or superabundance of certain species some years is due to the fact that the migration of birds proceeds in waves. If the night flight of a large army of migrants starts not far to the south of the observer, it may miss the region entirely, with the consequent dearth of certain species in that area for that year. Or, if the army starts far enough south of the observer's region, the whole wave may come down there, with the consequent abundance of the same species. Cyclic and permanent decrease may be due to one or more of several causes, such as the changes wrought by man's civilization, draining of swamps, deforestation, unfavorable or destructive weather conditions, excessive shooting, the introduction of foreign species, mishaps and catastrophies during migration, disease, and the depredation of the Cowbird.

9. Some Birds of the Rocky Mountain National Park. (Lantern slides). A. E. Shirling, Teachers College, Kansas City, Mo.

Excellent photographs of nesting Cliff Swallows, the Mountain Bluebird, and other birds which inhabit this region.

10. The Relation of Temperature to the Time of Ending of the Evening Song of the Mockingbird. (Lantern slides). Jesse M. Shaver and Miss Gladys Walker, George Peabody College for Teachers, Nashville, Tenn.

The relations *between* daily maximum, minimum, and mean temperatures, *and* the time of ending of the Mockingbird's evening song were examined statistically. Similarly, the temperature at the exact time of the song ending and normal temperature were studied in their relation to this song ending. It was found that all these classes of temperature were significant but no one kind of temperature possessed any virtue over another. Correlation coefficients were  $.50 \pm .06$ . Change of temperature was not important. In general, the Mockingbird sang later on warm days and stopped earlier on cold days. Presented by Mr. Shaver.

11. Why the Variation in Color of the Iris of Brown Thrashers? Elizabeth Allen Satterthwait, Webster Groves, Mo.

During several seasons of trapping Brown Thrashers for banding purposes, notes have been taken on the color of the iris. It was found to range from dark brown in nestlings to light carbon gray in birds out of the nest.

These differences in iris color are apparently not related to sex. The question may be asked: Are they not related to the age of the bird? The suggestion was made that the very light gray iris occurs in the young bird, and later gives way successively to an iris of various shades of yellow.

12. The Abundance of Marsh Birds south of Lake Erie in 1929 due to High Water. E. L. Moseley, State Teachers College, Bowling Green, Ohio.

During several years prior to 1929 the water level of the Great Lakes was so low that marshes adjacent had become too dry for the proper development of wild rice, tape grass, bladderwort, *Potamogeton*, and other important sources of food for marsh birds. Because of the opening of the locks at Sault Ste. Marie from August to December, 1928, and heavy precipitation then and in 1929, the water level became three feet higher in May than it was in the spring of 1926. This caused a luxuriant growth of food plants in the marshes, and also made it difficult for four-footed prowlers to get to the nests of aquatic birds. Consequently, many more rails, gallinules, coots, ducks, and other marsh birds were hatched and reared there than in previous years. Of certain species even old time hunters could not recall having seen such large numbers before.

13. Bird Banding as a Method of Bird Study. Wm. I. Lyon, Waukegan, Illinois.

A brief statement of some of the work accomplished by various bird banders in the central states, and a plea for greater co-operation among bird students in this activity.

14. Some New Birds of Yellowstone National Park. Emerson Kemsies, Oberlin, Ohio.

A list of hitherto unrecorded birds observed during the summer of 1929. In the author's absence the paper was read by Dr. Jones.

Saturday Morning, December 28, 1929

15. Breeding of the Least Tern at Sioux City, Iowa. William Youngworth, Sioux City, Iowa.

The author describes the discovery of the nesting of the Least Tern on a sandbar in the Missouri River opposite Sioux City, in the summer of 1929.

16. The Sequence of Molt in Birds. (Charts). Lynds Jones, Oberlin, Ohio.

The sequence of feather loss in birds was described with special reference to the feather tracts, and the Bobolink was used as a standard for comparison.

17. The Laying Cycle in the House Wren. (Lantern slides). L. J. Cole, University of Wisconsin, Madison, Wisconsin.

Birds may be classified as determinate with respect to egg production when they lay a definite number of eggs in a set, and indeterminate when they can be induced to continue laying by egg removal. The dove is an example of the determinate class, and the Flicker of the indeterminate class. Eggs presumably from the same female House Wren were removed daily and the wren thus induced to lay an unusually large number of eggs. These eggs were measured and studied as to volume, breadth, and length, and examined as to degree of pigmentation. Length increased in general to a certain point, then rested, then increased to a second high point, then rested, and for a third time increased to a high point: following this there was a downward trend. Thus, there appeared to be four cycles, separated by rest periods. A bird of the intermediate type normally lays a relatively definite number of eggs and then stops if undisturbed. If, however, the eggs are removed as laid, the number may be much larger. How is it possible for the bird to limit the number of eggs in the former case but not when they are removed? It is suggested that it may be that the process of incubation reacts upon the endocrine glands to cause cessation of egg production.

18. The Old Ornithology and the New. Althea R. Sherman, National, Iowa.

This paper is published in full in this issue.

19. The Crown Sparrows of the Middle West. (Colored plates). Myron H. Swenk, University of Nebraska, Lincoln, Nebraska.

The A. O. U. Check-list recognizes four species of crown sparrows (*Zonotrichia*), viz., Harris's, White-crowned, Golden-crowned, and the White-throated. Gambel's Sparrow is regarded as a subspecies of the White-crowned Sparrow. Its breeding range, however, overlaps that of the White-crowned in the northern Rocky Mountains, and no definite intergradation seems to have been demonstrated. The two are, therefore, regarded as distinct species. Their breeding and wintering ranges and songs were discussed. The Gambel's Sparrow is shown to move northward considerably before the White-crowned along the foot-hills, but with or after it along the Missouri River. The term *peripheral lag* is proposed for the slowing up of the migratory movement of any bird toward the peripheries of its migrational path, and illustrations were given from this group. The relative migratory movements of Harris's, White-crowned, Gambel's, and White-throated Sparrows in Nebraska were given.

20. Some Notes on Banding Chimney Swifts. (Lantern slides). Wyman R. Green, University of Chattanooga, Chattanooga, Tenn.

Traps and methods of handling Chimney Swifts in wholesale numbers were described and illustrated. During 1928 and 1929 a total of 3,737 swifts were banded, while 8,914 additional swifts which had been trapped were released unbanded for lack of bands. Fifty-four swifts previously banded by the author at Chattanooga and sixteen banded elsewhere were re-trapped.

Saturday Afternoon, December 28, 1929

21. Some Water Birds at Home. (Lantern slides and motion pictures). W. F. Kubichek, Coe College, Cedar Rapids, Iowa.

The author gave the results of several seasons of work on a chain of lakes in the "Waubay Region" of South Dakota. On Rush Lake four species of grebes were found nesting, viz., the Pied-billed, Eared, Holboell's, and the Western. Gulls, cormorants, terns, and shore-birds nested on an island in Waubay Lake. The author also discussed the influence on bird life of the construction of a road which dammed the outlet of one lake, causing it to seek an outlet through other lakes. An abundance of pictures helped to tell the story.

22. Life History of the Golden Eagle in Scotland. (Motion pictures). A. F. Ganier, Nashville, Tenn.

These wonderful movies of two tame Golden Eagles were taken by Captain Charles W. R. Knight, and were shown at this meeting through the courtesy of Dr. H. S. Vaughn, of Nashville. Slow motion pictures showed the difference in technique when stooping for prey and when alighting on a man's arm.

23. Some Feeding Habits of Birds. (Motion pictures). Walter W. Bennett, Sioux City, Iowa.

Three species of birds were shown in feeding acts. A captive Ruby-throated Hummingbird was shown feeding on sugar syrup from various vessels. After the starved bird had regained its strength by these artificial feedings it was set free. A pair of Pine Siskins which nested in Sioux City were shown in fine form feeding their young by apparent regurgitation. One bird fed the other adult on the nest, the latter passed the morsel on to the nestling. The feeding process as practiced by Cedar Waxwings made up the last exhibit.

24. Some Southern Bird Colonies. (Motion pictures). Herbert L. Stoddard, United States Biological Survey, Washington, D. C.

Snowy Egrets and juvenile Little Blue Herons were shown following cattle, horses, and pigs in Leon County, Florida, and feeding on animal life

in the grass. This habit, which is well known in the small herons of Africa, Asia, and some other countries of the world, has apparently never been previously noted for the New World Herons. These films also included wonderful close-up views of the Wood Ibis and various other species.

25. The Birds of Manitoba. (Lantern slides). V. W. Jackson, University of Manitoba, Winnipeg, Canada.

The author showed an interesting collection of still pictures of bird life, many of which were unusually fine.

26. Nesting Habits of the Loon. (Motion pictures). Owen J. Gromme, Milwaukee Public Museum, Milwaukee, Wisconsin.

These wonderful close-up moving pictures of a pair of wild Loons are the same as the ones seen at our last Chicago meeting, but it was very largely a different audience which saw them at this meeting. The pictures were made at Bass Lake, in Michigan, just across the Wisconsin line. As soon as the young Loons were hatched they accompanied their parents to the open water. Now, the pictures of the whole family on the open water are wonderful. The old birds are shown feigning injury in frantic efforts to attract the intruders away from the young birds.

Saturday Evening, December 28, 1929

27. Bird Colonies on the West Coast. (Motion pictures). Lynds Jones, Oberlin College, Oberlin, Ohio.

These pictures dealt mainly with various colonies of water birds along the Pacific Coast.

28. Notes on the History of the Heath Hen. (Motion pictures). T. C. Stephens, Morningside College, Sioux City, Iowa.

These motion pictures of the Heath Hen were shown through the courtesy of Mr. Arthur L. Clark, National Sportsman, Boston, Mass. The pictures were taken several years ago while these birds were still present in some numbers on Martha's Vineyard Island. After the last bird is gone, which may now, we will all try to figure out how it happened.

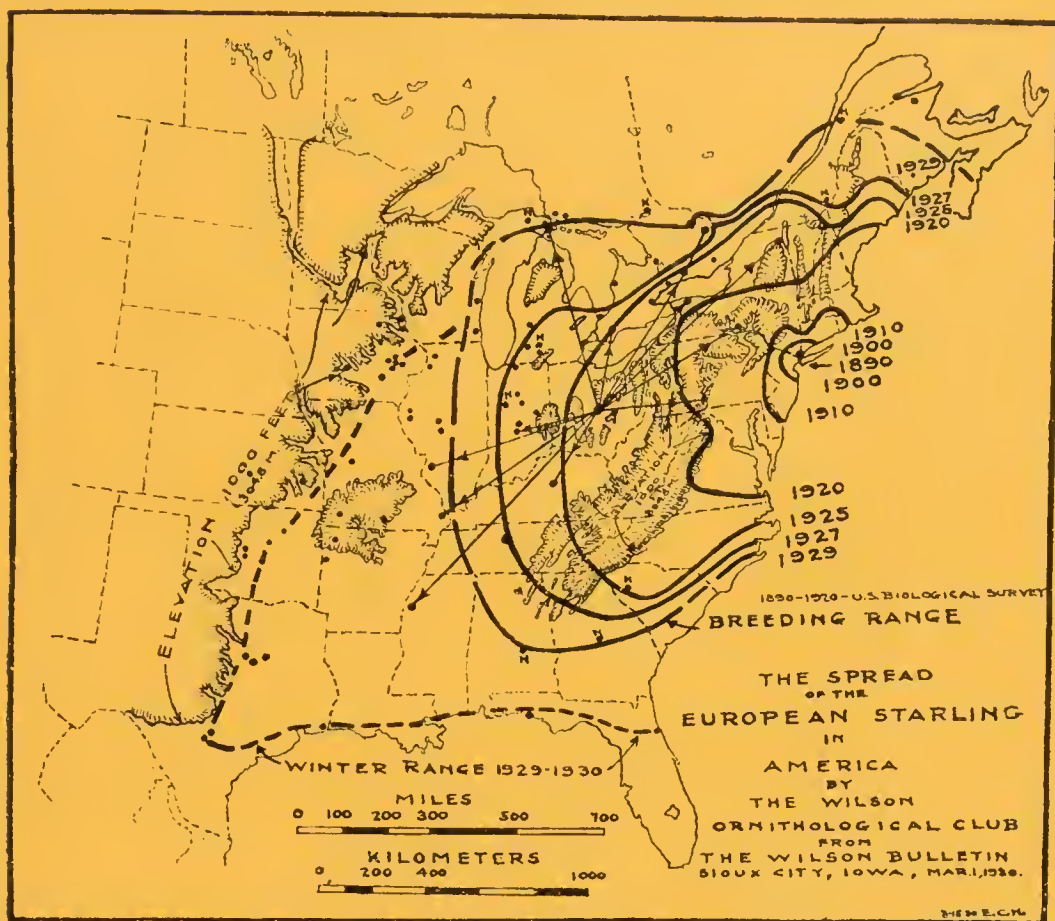
The following additional papers were read by title, owing to the absence of the authors: most of the manuscripts are in hand, however, and will be published in the BULLETIN:

29. Do Birds Usually Change Mates for the Second Brood? Mrs. Margaret M. Nice, Columbus, Ohio.
30. A Summary of the Birds of Polk County, Iowa. Philip A. DuMont, American Museum of Natural History, New York, N. Y.
31. The Economic Importance of Birds as Insect Predators. C. N. Ainslie, U. S. Bureau of Entomology, Sioux City, Iowa.
32. Experiences with Song Sparrows in 1929. Mrs. Margaret M. Nice, Columbus, Ohio.
33. Fall Migration of Mourning Doves. William Brewster Taber, Jr., Kansas, Illinois.
34. The Black-crowned Night Heron in Southern Michigan. T. L. Hankinson, State Normal College, Ypsilanti, Michigan.
35. Mockingbird Methods. Frank F. Gander, O'Rourke Zoological Institute, San Diego, California.
36. The Relation of Light to Time of Ending of the Evening Song of the Mockingbird and of the Robin. Jesse M. Shaver and Miss Ruby Walker, Nashville, Tenn.



# SPREAD OF THE EUROPEAN STARLING IN AMERICA

BY E. C. HOFFMAN, LAKEWOOD, OHIO



This map is made from the following sources of information: The new boundary line for January-February, 1930, is drawn chiefly from data furnished by members of the Wilson Ornithological Club. Other sources are: National Parks of Canada; the Canadian Field Naturalist; the Auk; Bird-Lore; Oologist; the government of Mexico; the U. S. Biological Survey; the U. S. Geological Survey. The dispersal lines from Columbus, Ohio, are made from banding data supplied by Mr. E. S. Thomas

Recent investigations in England (see "British Birds" for November and December, 1929) have indicated that elevation of land has an influence on the distribution of the Starling. The 1000-foot contour line on the map seems to be approximately parallel to the 1929-30 winter range frontier line of the Starling in America. The breeding range indicated for 1929 is conservative, as several records are known beyond this line, as shown. The broken line in Illinois indicates incomplete or uncertain knowledge. Further information as to the extension of this species westward and southwestward is solicited.

□.....□

## Annual Meetings of the Wilson Ornithological Club

	Retiring President
1914—Chicago. February 5. Chicago Academy of Sciences.	
1914—Chicago. December 29-30. New Morrison Hotel.....	T. C. Stephens
1915—Columbus. December 28-29. With the A. A. A. S.....	T. C. Stephens
1916—Chicago.....December 27-28. New Morrison Hotel.....	T. C. Stephens
1917—Pittsburgh. January 1-2, 1918. With the A. A. A. S.....	W. F. Henninger
1918—No meeting on account of the exigencies of war.....	M. H. Swenk
1919—St. Louis. December 29-30. With the A. A. A. S.....	M. H. Swenk
1920—Chicago. December 27-28. With the A. A. A. S.....	R. M. Strong
1921—Chicago. December 26-27. The Field Museum.....	R. M. Strong
1922—Chicago. October 26.....	T. L. Hankinson
1923—Cincinnati. Dec. 31, 1923-Jan. 1, 1924. With the A. A. A. S.....	T. L. Hankinson
1924—Nashville. November 28-29-30. Peabody College.....	A. F. Ganier
1925—Kansas City. December 28-29. With the A. A. A. S.....	A. F. Ganier
1926—Chicago. November 26-27. Chicago Academy of Sciences....	A. F. Ganier
1927—Nashville. Dec. 30, 1927-Jan. 1, 1928. With the A. A. A. S.....	Lynds Jones
1928—Ann Arbor. Nov. 31-Dec. 1, 1928. Museum of Zoology.....	Lynds Jones
1929—Des Moines. December 27-28. With the A. A. A. S.....	Lynds Jones

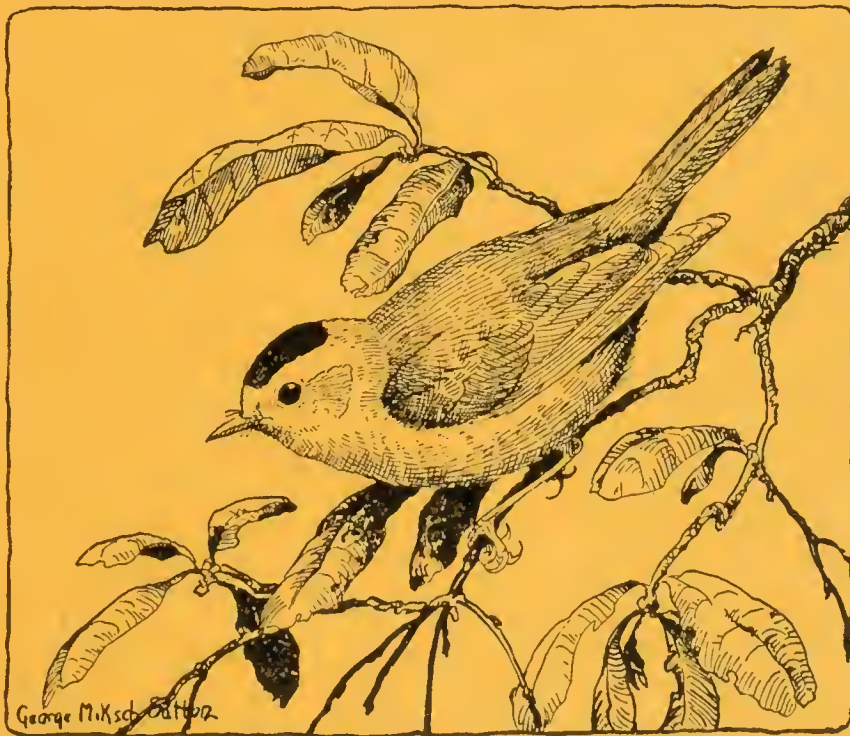
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GAMBEL SPARROW

Adult  
Immature

WHITE-THROATED SPARROW

Adult  
Immature

JUL 17 1930

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## THE CROWN SPARROWS (ZONOTRICHIA) OF THE MIDDLE WEST

BY MYRON H. SWENK

*With Colored Frontispiece by Iva B. Swenk*

The genus *Zonotrichia* is a purely North and Middle American genus of sparrows. According to the third edition of the A. O. U. Check-List (1910) it includes four species; viz., the Harris's Sparrow (*Z. querula*), the White-crowned Sparrow (*Z. leucophrys*), the Golden-crowned Sparrow (*Z. coronata*), and the White-throated Sparrow (*Z. albicollis*). The Harris's, Golden-crowned, and White-throated Sparrows are all very well-marked species, presenting so little geographic variation that no ornithologist has ever proposed any subspecific division of them. Their breeding ranges are distinct and solid, that of the Harris's Sparrow (Hudsonian Zone) apparently lying entirely north of the breeding range of the White-throated Sparrow (lower Hudsonian and Canadian Zones) and that of the Golden-crowned Sparrow (Hudsonian and Upper Canadian Zones) entirely west of it. The Golden-crowned Sparrow is a purely accidental straggler to the Middle West, so this paper does not concern itself with that species. The breeding range of the White-throated Sparrow extends south to northern Michigan, Wisconsin, Minnesota, and North Dakota, and it migrates commonly through the Middle West, wintering from the Ohio River Valley, northern Missouri, and eastern Kansas southward.

In marked contrast to the three species just mentioned, the White-crowned Sparrow of the last (1910) A. O. U. Check-List would seem to present considerable geographic variation. That authority recognizes a typical subspecies, the White-crowned Sparrow (*Z. l. leucophrys*), as occupying during the breeding season not only a large area in northeastern North America (Hudsonian and extreme Upper Canadian Zones) but several apparently isolated areas in the high mountains of the western United States, extending north in the Rocky Mountains to southwestern Alberta and southeastern British Columbia; a northwestern subspecies, the Gambel's Sparrow (*Z. l. gambeli*), as

occupying a large area (in the same zones) covering most of Alaska and western Canada, extending south in the Rocky Mountains to western Montana; and a Pacific coast subspecies, the Nuttall's Sparrow (*Z. l. nuttalli*), as occupying a narrow area along the coast (Humid Transition Zone) from southern British Columbia to central California.

Recently, Dr. Joseph Grinnell (1928) has proposed to separate the somewhat paler colored, more northern examples of *Z. l. nuttalli* occupying the coast region from southern British Columbia to extreme northwestern California as a distinct subspecies, *Z. l. pugetensis*, restricting typical *nuttalli* to the coast area of California. Since neither *nuttalli* nor *pugetensis* extends to the Middle West, they and the problems they present are not importantly involved in the present paper, but the White-crowned Sparrow and the Gambel's Sparrow, both of which are common migrants through this region, do present a problem of considerable interest to the ornithologists of the interior. A leading question in the mind of the writer at this moment is, does the treatment accorded these birds in the last (third) edition of the A. O. U. Check-List, which has been very recently endorsed by Dr. Grinnell (1928), and which the writer understands is likely to be continued in the forthcoming fourth edition of the Check-List, accord best with the known facts concerning them?

The diverse and varying opinions of our leading systematic ornithologists as to the correct relationship of the Gambel's Sparrow to the White-crowned Sparrow have caused the taxonomic placement of the former to be shifted several times since it was first described—as a distinct species—by Thomas Nuttall in 1840, from specimens taken the last of August at Fort Walla Walla, Washington. Authors subsequent to Nuttall, between 1840 and 1872, including Gambel (1843), Baird (1858), Coues (1866), and others, continued to regard the paler birds of the West as constituting a distinct species from the black-lored *Z. leucophrys*. In 1872 both Allen and Coues for the first time formally questioned the specific distinctness of *gambeli* from *leucophrys*, and wrote the former as a variety of the latter, Coues including also the Nuttall's Sparrow under the name "*var. gambelii*".

Then in 1873 Ridgway, recognizing the difference between the larger and paler white-lored bird now known as the Gambel's Sparrow and the smaller and darker white-lored bird of the Pacific Coast now known as the Nuttall's Sparrow, but erroneously thinking that the name "*gambelii*" of Nuttall applied to the latter form, proposed the name *intermedia* (=Intermediate Sparrow) for the former bird, and at the same time continued to give both birds the status of varieties of



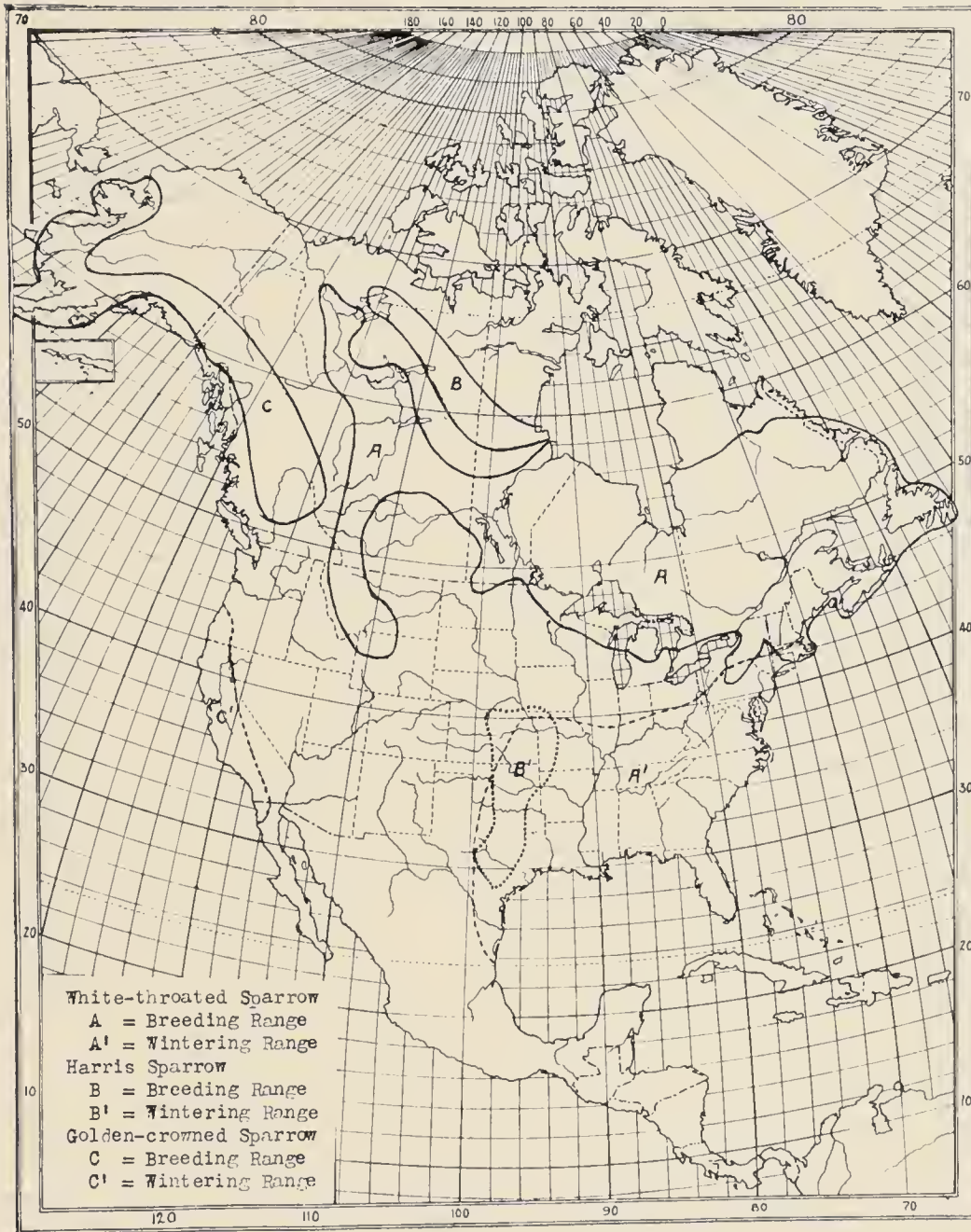


FIG. 1. Map showing approximate breeding and wintering ranges of the White-throated, Harris's, and Golden-crowned Sparrows.

the White-crowned Sparrow. In this disposal of them he was followed by Baird, Brewer, and Ridgway (1874), Coues (1874), and others. But some authors continued to regard both *intermedia* and the Pacific Coast form wrongly called "*gambelii*" as full species, and that was the disposal made of them in the first A. O. U. Check-List when it appeared in 1886 (Nos. 555 and 556).

However, a number of writers failed to follow the A. O. U. Check-List in this matter, but wrote both *intermedia* and "*gambelii*" as subspecies of *leucophrys*. Still others, again following the lead of Ridgway (1880), wrote *intermedia* as a subspecies of the Nuttall's Sparrow, which was still regarded as the true *gambeli*. In 1890, in the second supplement to the Check-List, the A. O. U. Committee made "*gambelii*" a subspecies of *leucophrys*, and similar action was taken with both *intermedia* (554a) and "*gambelii*" (554b) in the second edition of the A. O. U. Check-List, which appeared in 1895. Somewhat later Ridgway (1899), having examined specimens from the type locality of "*gambelii*", reported that he found them to represent the form that he had previously named *intermedia*, which name therefore became a synonym of *gambeli*, while the new name *nuttalli* (=Nuttall's Sparrow) was proposed for the Pacific Coast bird that had so long been miscalled "*gambelii*". This is the present status of these birds, as recognized by the A. O. U. Committee.

The commonly accepted criteria of subspecies, as the writer understands them, are that during the breeding season they shall occupy geographically separated areas within the range of the species as a whole, and that their differentiating characters shall intergrade with each other, either by so gradual a transition, or by so much overlapping of characters, that no point of trenchant separation of the two forms can be found. The question arises, how do the White-crowned and the Gambel's Sparrows align with regard to these criteria?

Regarding the occupancy of geographically separated breeding areas, we have the evidence presented by J. H. Riley, who in 1913 pointed out that in the Mount Robson, British Columbia, region of the Canadian Rockies both *leucophrys* and *gambeli* were apparently nesting at the same places and without intergradation. In 1914, Saunders reported that apparently both *leucophrys* and *gambeli* were summer residents in the mountains of Teton and northern Lewis and Clarke Counties in northwestern Montana, and that there was evidently a distinct difference in their songs. In 1926 Swarth clearly showed the overlapping of the breeding ranges of *leucophrys* and *gambeli* in southeastern British Columbia, southwestern Alberta and

northwestern Montana, and again pointed out the lack of intergradation between the two forms, which he wrote as distinct species. Quite evidently, then, while the breeding range of *leucophrys* extends northward in the Rocky Mountains through western Montana and on north along the Alberta-British Columbia boundary, that of *gambeli* extends southward over the same area. We have, therefore, these two forms occupying the same territory over a large area within their respective breeding ranges, a condition that is incompatible with the conception of their status as subspecies.

Now regarding the matter of intergradation between *leucophrys* and *gambeli*. Do they gradually merge into each other, or do birds occur that are intermediate in characters between the two? Admittedly they are very close—about the only important difference being that in the White-crowned Sparrow the upper lores are black and cut the white superciliary stripe from the bill, while in the Gambel's Sparrow the upper lores are whitish, thus making the white superciliary stripe continuous to the bill. But this difference, though slight, is definite and trenchant. In fact, partly because of their unsuspecting nature, these sparrows can usually be approached quite closely in the field, and with the help of a good field glass the ornithologist can quickly and definitely identify the Gambel's Sparrow from the White-crowned Sparrow in the great majority of cases. The writer has not examined a great number of skins of these two sparrows—probably less than fifty of them altogether—but he has never seen one that could not very definitely be placed as either *leucophrys* or *gambeli*, while the large number of birds that he has clearly seen in the field were placed quite as definitely. On this point Swarth (1926) has written:

“I am using the binomial name for this bird in the conviction that the three white-crowned sparrows, *leucophrys*, *gambelii*, and *nutalli* are three distinct species. There are various trenchant external characters of plumage and other parts distinguishing them, there are just as notable differences of song, and the breeding ranges and migration routes also are indicative of specific differences. As regards external characters, while I am aware that there are various published statements of the existence of intergradation between these forms, these assertions are all rather vague. In this museum [of Vertebrate Zoology] there are approximately 200 specimens of *leucophrys*, 270 of *gambelii*, and 200 of *nutalli*. There is not one equivocal specimen in this series, not one that can be said to illustrate in even the slightest degree intergradation between any of the forms. Nor have I seen

intermediates in other collections. If any such do sporadically occur it seems to me that they should be regarded as hybrids rather than geographic intergrades.”

Dr. Grinnell (1928) subsequently took issue with Swarth on his statement that the three forms *leucophrys*, *gambeli*, and *nuttalli* were trenchantly separated, and that in a series of about 670 specimens representing these forms “not one can be said to illustrate in even the slightest degree intergradation between any of the forms”, stating that he was able to find specimens from among the birds inhabiting the northern part of the range of *nuttalli*—to which he applied the new subspecific name *pugetensis*—that were intermediate in characters between *gambeli* and typical *nuttalli* from west-central California. But although he regarded *gambeli*, *pugetensis*, and *nuttalli* all as subspecies of *leucophrys*, Grinnell made no claim of finding intermediate characters or intergradation between *leucophrys* and *gambeli*, and his arguments would not seem to invalidate the findings of Riley and Swarth on that point. Possibly *gambeli*, *pugetensis*, and *nuttalli* may be conspecific, but it seems to the writer that the best evidence points to their collective specific distinctness from the White-crowned Sparrow (*leucophrys*), and in view of this evidence he sees no logical alternative to so regarding them.

A search through the literature for citations of evidences of actual subspecific intergradation between *leucophrys* and *gambeli* has been rather barren of results. As Swarth (1926) has said, assertions of this sort are “all rather vague”, and one is rather drawn to the conclusion that such intergradation has been assumed because of the great similarity of the two birds, rather than actually demonstrated. Baird, Brewer, and Ridgway (1874) do refer to intergrades from the Humboldt Mountains, Nevada, but they do not make very clear the nature of the intergradation. Coues (1905) says “some specimens resemble *leucophrys* on one side of the head, and *intermedia* (= *gambelii*) on the other.” That is at least a definite statement; but, as Swarth has suggested, if such birds occur they are far better accounted for on the basis of hybridity than on the basis of gradual subspecific intergradation. It seems probable to the writer that it is the great general similarity between *leucophrys* and *gambeli* that has mainly argued for their specific merging. As Grinnell (1928) puts it “there is that approximate degree of uniformity of characters in the three major forms (*leucophrys*, *gambelii*, and *nuttalli*) as to make of them excellent subspecies; but the likenesses between them are so outstanding, as compared with other species of *Zonotrichia* (*albicollis*, *coronata*, *querula*),

that an indication of the really close mutual inter-relations among them would be lost by according the forms of *leucophrys* full specific rank." With this conclusion, however, the writer does not concur. On the same basis we would have to merge the Meadowlark and the Western Meadowlark, the Clay-colored and the Brewer's Sparrow, and others. As well write the Least Flycatcher (*Empidonax minimus*) as a subspecies of the Traill's Flycatcher (*E. trailli*), in spite of their differences in song, eggs, etc., because the two have a marked uniformity of characters and outstanding likenesses. They are in fact much more difficult to separate than are the White-crowned and Gambel's Sparrows.

The difference in song between the White-crowned and Gambel's Sparrows has been noted by Saunders (1914 and 1929), Swarth (1926), and others, but it is not a point upon which the writer would lay a great deal of emphasis as indicating the specific distinctness of the birds. This is because their songs, especially those of the White-crowned, seem to be subject to considerable geographic variation. The song of the white-crowns of the Northeast consists typically of a soft, plaintive, clearly whistled introductory note, followed by a couplet of louder but shorter clearly whistled notes, which in turn are followed by a second couplet or triplet of rapidly diminishing, burred-toned notes and a final still more diminished, usually burred note, and may be given as "oh-che-che, che-che, che" or — — — — —. In northern Montana, from Mrs. Bailey's (1918) description, this song is apparently lengthened to an eight-toned song, that might be given as "oh, che-che-che, che-che-che, che", or — — — — — — — —, and in the Sierra Nevada, according to the same writer (1902), is shortened to a five-toned song which might be given as "oh, oh, che-che-che", or — — — — —. The typical full song of the Gambel's Sparrow consists of a clearly whistled introductory note, followed by from three to five usually shorter, plaintive, clearly whistled notes and a final burred note, that may be given as "oh, che-che-che-che-e", or — — — — —. Saunders (1914) says of the songs of both in their common breeding ground in northwestern Montana that "the song which evidently belongs to *gambelii* is like that of *leucophrys* but shorter, with three or four of the terminal notes omitted. I have never heard any but the longer song in southern Montana, where I believe only *leucophrys* breeds." But it is doubtful if the northern Montana song of *gambelii* is appreciably shorter than the Sierra song of *leucophrys*, or even that of the Northeastern song of that bird. However, the songs of the two differ, as judged from migrating birds of both species heard in

Nebraska, and from the songs of *gambeli* heard during the spring in southern Arizona, in the clearer, less husky quality of all of the notes beyond the introductory one in *gambeli*, which also has a less sharply marked crescendo and diminuendo in its song.

Not only are the breeding ranges of the White-crowned and Gambel's Sparrows well defined, though in part overlapping, but the same is true of the wintering ranges of the two birds. The White-crowned Sparrows of northeastern North America move southwest across the New England, North Atlantic, and North Central States to their wintering range, which extends from the valleys of the Potomac and Ohio Rivers and southern Missouri, Kansas, and Colorado south to southeastern Kentucky, eastern Tennessee, southern Mississippi, Louisiana, and Texas, and central Mexico (about lat.  $19^{\circ}$ ). The white-crowns of the higher mountains of the West move more directly south. The Gambel's Sparrows move south, along the valleys of the West and across the Great Plains, to a wintering range lying in general somewhat north and west of that of the White-crowned Sparrows, from southern Washington, western Oregon, western and southeastern California, central Arizona, western New Mexico, central Colorado, central Kansas, and west-central Missouri south to south-central Texas, north-central Mexico (about lat.  $24^{\circ}$ ), and southern Lower California. The two species winter, then, in the same localities, over a large area covering southern Colorado, southern Kansas, west-central Missouri, Oklahoma, central and western Texas, New Mexico, and northern Mexico. These birds apparently largely pass over the northern plains—eastern Colorado, Wyoming and Montana, the Dakotas, Nebraska, Iowa, and Minnesota—each spring and fall, the White-crowned in the spring from southwest to northeast and the Gambel's from southeast to northwest, and the reverse in the fall. Nebraska is in the direct path of the migration of both.

In Nebraska the White-crowned Sparrow is a common migrant, especially in the spring, west to about the 98th meridian, but west of that line it rapidly becomes increasingly less common across the state, though it is hardly a rare bird even in extreme western Nebraska. The Gambel's Sparrow is a very common migrant over the western two-thirds of Nebraska and even in the eastern one-third is distinctly more common than the White-crowned Sparrow. Westwardly in Nebraska the Gambel's Sparrow greatly predominates over the White-crowned. In 1920 Dawson found Gambel's Sparrows migrating commonly through Sioux County, extreme northwestern Nebraska, from September 26 to October 9, but noted only one White-crowned Spar-

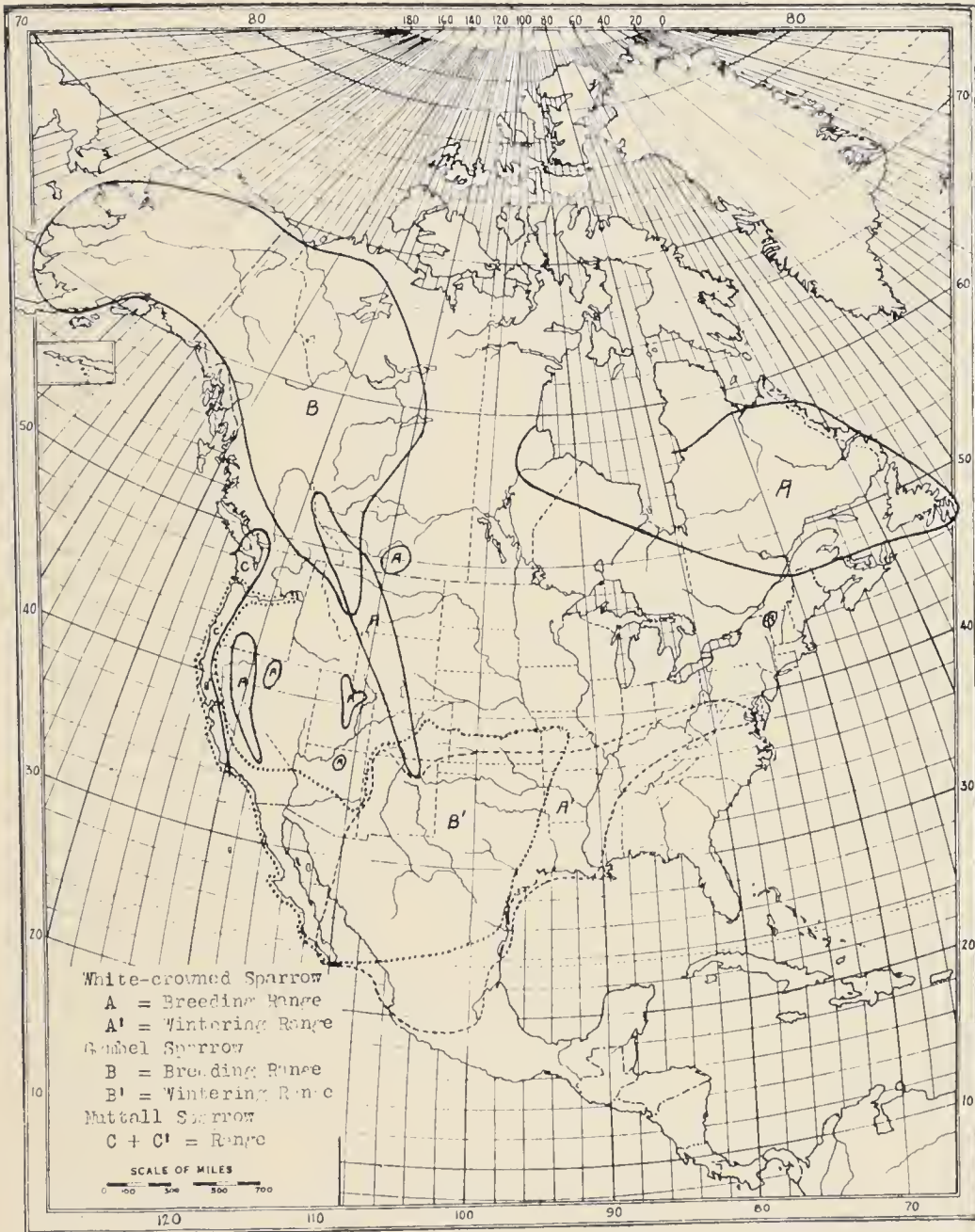


FIG. 2. Map showing approximate breeding and wintering ranges of the White-crowned, Gambel's, and Nuttall's Sparrows. Breeding ranges taken from H. S. Swarth, Univ. Calif. Publ. Zool., 30, fig. J (1926).

row during this period (on September 30). At Kearney, Buffalo County, in central Nebraska, the Gambel's Sparrow is distinctly the more common of the two. Four out of five crown sparrows taken there in the spring of 1914 (April 23 to May 20) were Gambel's Sparrows. Similarly, the Gambel's outnumbers the White-crowned at Hastings, Adams County; Red Cloud, Webster County, and Superior, Nuckolls County. Of thirty-three crown sparrows trapped at Fairbury, Jefferson County, in the years 1924 to 1928, inclusive, by the Misses Callaway, twenty-one were Gambel's Sparrows (April 29 to May 16) and twelve were White-crowned Sparrows (April 27 to May 21). At Lincoln, Lancaster County, taking 104 carefully made field observations, covering a period of years and including both spring and fall dates, the Gambel's Sparrow constitutes 59 per cent and the White-crowned Sparrow 41 per cent of the birds observed. In the spring the ratio of the two species at Lincoln is about as 5 to 3, while in the fall it is about as 2 to 1, the Gambel's Sparrow thus predominating at both seasons. The Gambel's Sparrow is about twenty-eight per cent as common in the fall as it is in the spring at Lincoln; the White-crowned Sparrow about twenty-one per cent.

The writer cannot help but believe that the paucity of records of the Gambel's Sparrow for at least the tier of states east of Nebraska is more due to a lack of careful discrimination of the birds seen in the field than an actual great rarity of that species, a suspicion strengthened by the very recent records of Zimmer and Gregory (1929) of specimens of this bird from Huron Mountain, Marquette County, Michigan, October 12, 1924; Beach, Lake County, Illinois, October 6, 1906; and Waukegan, Lake County, Illinois, May 14, 1922, found confused with the White-crowned Sparrow in Chicago collections. Other published records are from Minneapolis, Minnesota, October 5, 1873; May 17, 1878; May 6, 1879 (Roberts, 1879); Decatur County, Iowa, spring (Trippe, 1872); Forest City, Iowa, October 5, 1894; October 3, 1896 (Anderson, 1907); Racine, Wisconsin, April 20, 1871, by P. R. Hoy, and Madison, Wisconsin, May 17, 1919 (Taylor, 1920); and Jackson County, Missouri, February 25, 1917 (Harris, 1919). It is interesting to note that this sparrow has wandered east even to Ithaca, New York, April 30, 1898, by L. A. Fuertes (Eaton, 1914) and to Mount Pleasant, South Carolina, October 23, 1925 (Wayne, 1926).

The published statements regarding the relative migratory movements of the White-crowned and Gambel's Sparrows through the interior country are, at first examination, conflicting and confusing. For example, Cooke (1888) says that in the Mississippi Valley the Gam-



bel's arrives *after* the White-crowned in the fall and *follows* it northward in the spring. At Manhattan, Kansas, he says that in the fall of 1883 the first specimen of the Gambel's Sparrow was taken by Prof. D. E. Lantz on October 9, at least a week after the White-crowned had passed southward, while in the spring of 1884 the Gambel's Sparrow was first seen on May 7, which was eleven days later than the northward migration of the White-crowned. But for New Mexico he states (in Bailey, 1928) "there is no doubt but that *gambeli* moves north in the spring *earlier* than *leucophrys* and birds taken, May 1, 1904, at Rinconada (Surber), and noted, May 15, 1915, at State College (Merrill), probably represent nearly its final departure from the State." The White-crowned, he states "largely concludes its spring migration in May" but mentions several instances of its occurrence in New Mexico well into June (1-11). Again Sclater (1912) says for Colorado that the Gambel's Sparrow arrives "rather *earlier* than the White-crowned, very quickly passing on north to its breeding grounds." He says it arrives as early as September 8 in the fall and as early as March 18 (Pueblo) in the spring, reaching Colorado Springs about the last week in March, while the White-crowned does not reach that place until about the last week in April. In Boulder County, Betts (1913) gives the Gambel's Sparrow as arriving March 20 and the White-crowned as arriving April 24 to 28.

A close analysis of the available migration data for the two species in Nebraska, which state lies directly in the migration path of the birds wintering in eastern New Mexico, Texas, and Oklahoma, partially accounts for these apparently discrepant statements. The earliest fall migrants of both the Gambel's and the White-crowned Sparrows appear in extreme western Nebraska. Quite possibly these first fall arrivals come together from the common breeding area of the two species, only a few hundred miles to the northwest. At Mitchell, Scotts Bluff County, in 1916, C. E. Mickel and R. W. Dawson noted the first Gambel's Sparrow on September 8 and the first White-crowned Sparrow on September 9. But neither of them become common, even in western Nebraska, until after the middle of September (17 to 26), shortly after which they appear in central and eastern Nebraska also. In northeastern Nebraska Cary (1900) gave the fall dates at Neligh, Antelope County, for both as September 22 to November 1. The earliest dates for Lincoln are September 28, 1913, for the Gambel's, and September 28, 1893 for the White-crowned. The average of the first dates for the Gambel's Sparrow in ten falls in southeastern Nebraska is October 13 and for the White-crowned Sparrow in five

falls is October 3. The Gambel's remains until the average date of October 29 at Lincoln, where its latest date is November 6, 1910. The average date for the White-crowned for the same locality is October 23 and its latest date there (and for the state as well, except for one dubious winter record) is November 2, 1907. At Red Cloud, Webster County, C. S. Ludlow noted the Gambel's Sparrow on the late date of November 24, 1921. It is obvious that the Gambel's Sparrow tends to remain north of the 40th parallel later in the fall than does the White-crowned Sparrow, which retires the farther south for the winter period.

From the above it is apparent that during the fall migration of these birds through eastern Nebraska, the White-crowned Sparrow is distinctly the earlier of the two. In the spring migration both species are much more in evidence in Nebraska than in the fall, possibly because in the spring the bulk of them take a more direct route to their breeding grounds. This is especially true of the White-crowned. The earliest spring date on record for the Gambel's Sparrow is for Hastings, Adams County, March 31, 1925, and the average date in six springs in that locality is April 20. The earliest spring date for the White-crowned Sparrow at Hastings is April 9, 1925, and the average date in six springs is April 23. At Red Cloud, Webster County, both the Gambel's and White-crowned Sparrows first arrived in fourteen springs from April 23 to May 6, with the average (April 30) the same for both species. At Lincoln, dates of first arrival of the Gambel's Sparrow in eighteen springs are April 19, 1899 to May 10, 1924, and for the White-crowned Sparrow in sixteen springs are April 10, 1925 to May 10, 1924, the average date being May 1 in both cases. At Fairbury, Jefferson County, dates of first arrival in five springs are April 28, 1929 to May 8, 1925, averaging April 30, for the Gambel's, and April 16, 1928 to May 2, 1926, averaging April 24, for the White-crowned. These data show that in central Nebraska the vanguard of *gambeli* precedes *leucophrys* in the spring advance, while farther east in Nebraska the reverse is true.

Thus, between the plains bordering the foothills of the Rocky Mountains in Colorado, and eastern Nebraska, there is a great variation in the northward spring movement of the Gambel's and White-crowned Sparrows. In Colorado the Gambel's precedes the White-crowned by about four weeks; in central Nebraska it precedes by a few days; in eastern Nebraska it arrives at about the same time or a few days later than the White-crowned. In other words, as we proceed eastward from the main line of sharply northwestward migration of the Gambel's Sparrow, along the foothill plains, and it becomes

gradually less common, there is a slowing up of its northward movement, as compared to the White-crowned Sparrow, which moves both northwestward and northeastward on a broad front. The table at the end of this paper shows a similar slowing of the migration of the White-throated Sparrow from east to west. A slowing up of the northward movement of the Harris's Sparrow towards both the western and eastern peripheries of its regular migrational path is evident also from an analysis of the data on its migration presented by Swenk and Stevens (1929). This phenomenon is in fact observable in connection with the migration of many birds, and may be designated the *peripheral lag* of the migration movement.

The Gambel's Sparrow was last seen at Lincoln in four springs from May 13 to 18, an average date of May 15, while the White-crowned was last seen in five springs from May 11 to 18, an average date of May 14. The latest dates for the Gambel's are May 20, 1914, at Kearney (C. A. Black) and June 17, 1926, at Hastings (Mrs. C. W. McCaskill). The latest dates for the White-crowned are May 21, 1918, at Red Cloud (C. S. Ludlow), May 21, 1927, at Fairbury (Misses Callaway), June 9, 1919, at Kimball (Mickel and Dawson, 1920), and June 22 and 23, 1916, at Mitchell (do.). A study of all of the available data for several localities indicates that the range of dates of the spring migration for the Gambel's Sparrow is somewhat shorter than for the White-crowned, and that the migration reaches its crest somewhat more quickly. On the other hand, the bulk of the white-crown passes through somewhat more quickly than in the case of the Gambel's Sparrows.

Our four species of *Zonotrichia* move across eastern Nebraska in their migrations in a rather definite sequence. In the fall migration the White-crowned comes first, followed shortly by the White-throated and Harris's, the former preceding along the Missouri River, the latter farther west, and last of all arrives the Gambel's Sparrow. In the spring migration the Harris's Sparrow moves north first, during March. During the last week in April and the first few days in May the White-throated, White-crowned, and Gambel's move north, the White-throated preceding in eastern Nebraska, the Gambel's preceding in central and western Nebraska, the White-crowned slightly preceding the Gambel's in eastern Nebraska and slightly following it in western Nebraska. These relative movements of the four species may be shown in the following table of data, in which is given the number of years of observation and the average date first seen and average date last seen

for both the fall and spring migrations, in several Nebraska localities, for the Harris's, White-crowned, Gambel's, and White-throated Sparrows.

## FALL MIGRATION

## Harris's Sparrow

Sioux City:	19—Oct. 6	17—Nov. 11
Omaha:	6—Oct. 9	
Lincoln:	25—Oct. 7	12—Dec. 20
Fairbury:	4—Oct. 4	
Hastings:	4—Oct. 11	

## White-crowned Sparrow

Sioux City:	9—Oct. 4	5—Oct. 15
Lincoln:	2—Oct. 2	6—Oct. 23
Fairbury:	3—Oct. 3	
Hastings:	1—Oct. 9	1—Oct. 16

## Gambel's Sparrow

Lincoln:	9—Oct. 12	4—Oct. 29
Fairbury:	1—Oct. 17	1—Oct. 30

## White-throated Sparrow

Sioux City:	11—Sept. 30	14—Oct. 25
Omaha:	3—Oct. 8	2—Oct. 30
Lincoln:	13—Oct. 8	11—Oct. 31
Fairbury:	5—Oct. 10	
Hastings:	5—Oct. 17	

## SPRING MIGRATION

## Harris's Sparrow

Hastings:	3—Mch. 14	
Red Cloud:	8—Mch. 21	
Fairbury:	2—Mch. 3	1—June 4
Lincoln:	20—Mch. 14	20—May 14
Omaha:	2—Mch. 20	6—May 10
Sioux City:	17—Mch. 29	21—May 17

## White-crowned Sparrow

Hastings:	6—Apr. 23	1—June 17
Red Cloud:	14—Apr. 30	1—May 21
Fairbury:	5—Apr. 24	1—May 21
Lincoln:	16—May 1	5—May 14
Omaha:	5—May 3	1—May 14
Sioux City:	19—May 3	16—May 15

## Gambel's Sparrow

Hastings:	6—Apr. 20	
Red Cloud:	15—Apr. 30	
Fairbury:	5—Apr. 30	
Lincoln:	18—May 1	4—May 15

## White-throated Sparrow

Hastings:	6—May 2	1—May 18
Red Cloud:	11—May 2	1—May 13
Fairbury:	4—Apr. 23	1—May 15
Lincoln:	19—Apr. 25	16—May 11
Omaha:	5—Apr. 25	3—May 13
Sioux City:	21—Apr. 27	18—May 14

## LITERATURE CITED

- Allen, J. A. 1872. Bull. Mus. Comp. Zool. 3:167, 177.  
 Anderson, R. M. 1907. Proc. Davenport Acad. Sciences 11:321-322  
 A. O. U. Committee. 1886. Code of Nomenclature and Check-List N. A. Birds, ed. 1.  
     1890. Auk 7:65.  
     1895. Check-List N. A. Birds, ed. 2:230-231.  
     1910. Check-List N. A. Birds, ed. 3:261-263.  
 Bailey, F. M. 1902. Handbook of Birds of Western U. S.:339.  
     1918. Wild Animals of Glacier National Park:177.  
     1928. Birds of New Mexico:752-756.  
 Baird, S. F., Cassin, J., and Lawrence, G. N. 1858. Rept. Expl. Pacific R. R. 9:460.  
 Baird, S. F., Brewer, T. M., and Ridgway, R. 1874. A History of N. A. Birds, Land Birds, 3:514.  
 Betts, N. D. 1913. Univ. of Colo. Studies 10:208-209.  
 Cary, M. 1900. Proc. Nebr. Orn. Union 1:26.  
 Cooke, W. W. 1888. Bull. 2, Div. Econ. Orn., U. S. D. A.:196.  
 Coues, E. 1866. Proc. Acad. Nat. Sci. Phila.:84.  
     1872. Key to N. A. Birds, 1st ed.:145.  
     1874. Birds of the Northwest:156.  
     1905. Key to N. A. Birds, 5th ed.:439.  
 Dawson, R. W. 1921. Wilson Bull. 33:36.  
 Eaton, E. H. 1914. Memoir 12, New York State Mus., pt. 2:303.  
 Gambel, W. 1843. Proc. Acad. Nat. Sci. Phila.:262.  
 Grinnell, J. 1928. Condor, 30:186-189.

- Harris, H. 1919. Trans. Acad. Sci. St. Louis, 23:298.  
 Mickel, C. E. and Dawson, R. W. 1920. Wilson Bull. 32:77.  
 Nuttall, T. 1840. Manual Orn. U. S. and Canada, 2nd ed., 1:555.  
 Ridgway, R. 1873. Bull. Essex Inst. 5:198.  
 1880. Proc. U. S. Nat. Mus. 3:179.  
 1899. Auk 16:36-37.  
 Riley, J. H. 1913. Canadian Alpine Journal, special no.:66-67.  
 Roberts, T. S. 1879. Bull. Nutt. Orn. Club 4:153.  
 Saunders, A. A. 1914. Condor 16:138.  
 1929. Handbook 7, New York State Mus.:26-27.  
 Sclater, W. L. 1912. A History of Birds of Colorado:364-366.  
 Swarth, H. S. 1926. Univ. California Publ. Zool. 30:123-124, fig. J.  
 Swenk, M. H. and Stevens, O. A. Wilson Bull. 41:132-156.  
 Taylor, W. 1920. Auk 37:299-300.  
 Trippe, T. M. 1872. Proc. Boston Soc. Nat. Hist. 15:273.  
 Wayne, A. T. 1926. Auk 43:100-101.  
 Zimmer, J. T. and Gregory, S. S., Jr. 1929. Auk 46:244-245.

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## STATUS OF GAMBEL'S SPARROW IN MICHIGAN

BY JOSSELYN VAN TYNE

One of the most interesting by-products of the bird-banding which has been carried on with ever increasing vigor in Michigan during the last ten years has been the great increase in our knowledge of the status of several of our rarer sparrows. Perhaps the most striking case is that of the Gambel's Sparrow (*Zonotrichia gambeli*) formerly unknown in the State and now found to be of regular occurrence. The credit for the discovery of the occurrence of this species in Michigan must go to a bird-bander, M. J. Magee. For, although his "specimen" was the fourth to be taken in the State, he was the first to differentiate it from the White-crowned Sparrow. When Magee wrote to the University of Michigan Museum in 1925 about his discovery, I examined the series of *Zonotrichia leucophrys* in the Museum collection and discovered the two Berrien County Gambel's Sparrows listed beyond. Gregory's specimen from Marquette County also passed as a White-crowned Sparrow until A. J. Van Rossem, happening to look through the Gregory collection, detected its true identity.

The known records of the Gambel's Sparrow in Michigan may be summarized as follows:

- 1918—May 6. Berrien County, Birchwood Beach. N. A. Wood, collector. No. 52252 Univ. of Mich. Museum of Zoology. Adult female.  
 1918—May 13. Berrien County, Birchwood Beach. N. A. Wood, collector. No. 52250 Univ. of Mich. Museum of Zoology. Adult male.

- 1924—October 12. Marquette County, Huron Mountain Club. S. S. Gregory, Jr., collector. No. 397 Collection of Stephen S. Gregory, Jr. Immature male. (*Auk*, 46, p. 244).
- 1925—May 21. Chippewa County, Sault Ste. Marie. Trapped and banded by M. J. Magee. (WILSON BULLETIN, 38, 1926, p. 163). Identified by sketch sent to U. S. Biological Survey and to University of Michigan Museum of Zoology.
- 1927—May 5. Ingham County, East Lansing. Trapped and banded by J. W. Stack. Identified by Stack and Dr. K. Christofferson. Photograph sent to U. S. Biological Survey and University of Michigan Museum of Zoology.
- 1927—September 27. Chippewa County, Sault Ste. Marie. One trapped and banded by Magee. "A young bird; repeated the next day."—M. J. M.
- 1927—October 10. Chippewa County, Sault Ste. Marie. Two young birds trapped and banded by Magee.
- 1928—May 7. Chippewa County, Sault Ste. Marie. One adult trapped and banded by Magee.
- 1928—May 16. Chippewa County, Sault Ste. Marie. One adult male trapped and collected by Magee and sent to the U. S. Biological Survey. Now skin No. 61937 University of Michigan Museum of Zoology.
- 1928—May 18. Chippewa County, Sault Ste. Marie. One adult trapped and banded by Magee.
- 1929—May 12. Ingham County, Lansing. One trapped and banded by Fred E. Ludwig.

It is apparent therefore that the Gambel's Sparrow occurs in Michigan with some regularity. Since it is found in company with the more common White-crowned Sparrow and presumably comes as readily to banders' traps, the catch of the two species over a series of years should give some indication of the actual abundance of the Gambel's Sparrow. Mr. M. J. Magee has kindly furnished me with the following table of numbers banded by him at Sault Ste. Marie.

	<i>Zonotrichia leucophrys</i>	<i>Zonotrichia gambeli</i>
1925.....	16	1
1926.....	23	0
1927.....	15	3
1928.....	20	3
1929.....	20	0
	—	—
	94	7

These figures indicate a Gambel's Sparrow population at the Sault of over seven per cent of the numbers of White-crowned Sparrows. In Berrien County in May, 1918, two of the three "White-crowned Sparrows" collected by N. A. Wood were *gambeli*. On the other hand sixteen skins from Washtenaw, Huron, and Tuseola Counties in southeastern Michigan in the University of Michigan Museum of Zoology are all *leucophrys* as were 220 trapped and banded by the Wing brothers at Jackson since 1925.

Now that it is known that the Gambel's Sparrow is to be expected in Michigan it will be interesting to see whether that knowledge will greatly increase the number of occurrences reported during the next few years.

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## THE SEQUENCE OF THE MOLT

BY LYNDS JONES

Dr. Witmer Stone's paper entitled "The Molting of Birds, with Special Reference to the Plumages of the Smaller Land Birds of Eastern North America", published in the January issue of the *Proceedings of the Academy of Natural Sciences of Philadelphia* (1896, pages 108-167), is largely based upon museum specimens. It contains no detailed description of the sequence of molt in any species, and as the title implies, is primarily concerned with the sequence of plumages rather than with the molt proper.

Dr. Jonathan Dwight's paper entitled "The Sequence of Plumages and Molt of the Passerine Birds of New York", published in the *Annals of New York Academy of Sciences* (Vol. 13, 1900, pages 73-360), gives a generalized account of the sequence of the molt, but also is primarily concerned with the sequence of plumages.

It is my purpose, in this paper, to give in detail the sequence of the molt in the adult Bobolink as a typical representative of the Passerine birds in particular, and as a point of departure for making comparisons of the molt in other groups. The material that I have had to work on includes Gray Ruffed Grouse, Killdeer, Mourning Dove, Kingbird, Crested Flycatcher, Bobolink, Cowbird, Meadowlark, Bronzed Grackle, Vesper Sparrow, Song Sparrow, Towhee, Bank Swallow, and Catbird, all specimens in the flesh. In the cases of the Bobolink, Cowbird, and Bronzed Grackle many specimens representing all stages of the molt have been handled, and with the Cowbird and

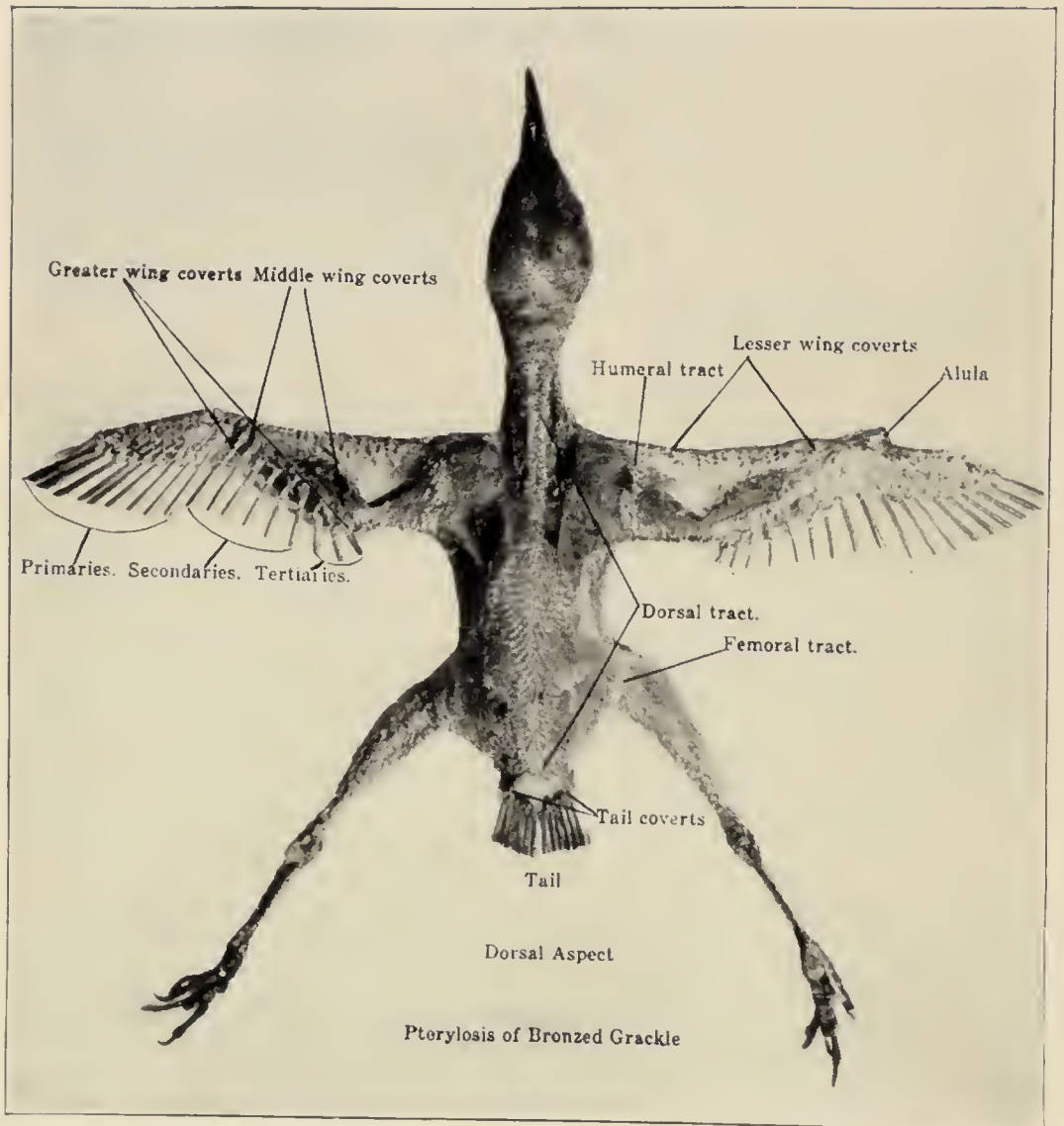


FIG. 3. Dorsal aspect of the Bronzed Grackle, showing pterylae.



Bronzed Grackle the college campus roost of these birds has furnished much valuable material.

Dr. Stone suggested that there is probably some individual variation in the order of the molt within the species, and in the handling of the abundant material in the three species of Icteridae I found this to be true, but only in exceptional cases, where the specimen was clearly abnormal in other respects, was this variation marked, so that it is possible to state that a certain order of molt is the normal one for a given species. It is this normal molt in the case of the Bobolink (*Dolichonyx orizivorus*) that I wish to give here.

Feathers from the various tracts which are lost at the same time are "grouped".

Group 1. Tenth primary and covert, central row of dorsal tract, central row of humeral tract, extreme forehead, outermost greater wing covert, innermost middle wing covert, a row on each side of the central row of the pectoral tract, the anterior row of the femoral tract. The 9th and 8th primaries drop so soon after the 10th that the other tracts merely lose more feathers so that the areas being molted spread. When the 7th primary is shed the lowermost and outermost lesser wing covert is shed, with a considerable spread of the dorsal tract laterally, at least three rows of the humeral tract, the forehead to near the crown, the pectoral tract has widened and extended forward to the throat and backward to include the abdominal tract.

Group 2. Sixth primary, all of the greater and middle wing coverts, the middle pair of tail feathers, the outermost upper and under tail coverts, under wing coverts, top of head, and the throat, with still more spreading of the other tracts before mentioned. With the fall of the 5th primary there is merely more spreading of the general molt.

Group 3. Fourth primary, outer secondary, 2d tertiary.

Group 4. Third primary, 2d secondary, 1st and 3d tertiaries.

Group 5. Second primary, 4th secondary, bastard wing.

Group 6. First primary, 5th and 6th secondaries, nape, and completion of molt of all other tracts, except scattered feathers in the general body plumage.

As both Dr. Stone and Dr. Dwight have pointed out, the order of molt is such that no part of the bird's body is left bare at any time, except that the forehead may be bare for a day or two. And at no time is the bird rendered flightless, or even tailless. But the tail feathers are shed in pairs rapidly and its upper and under coverts

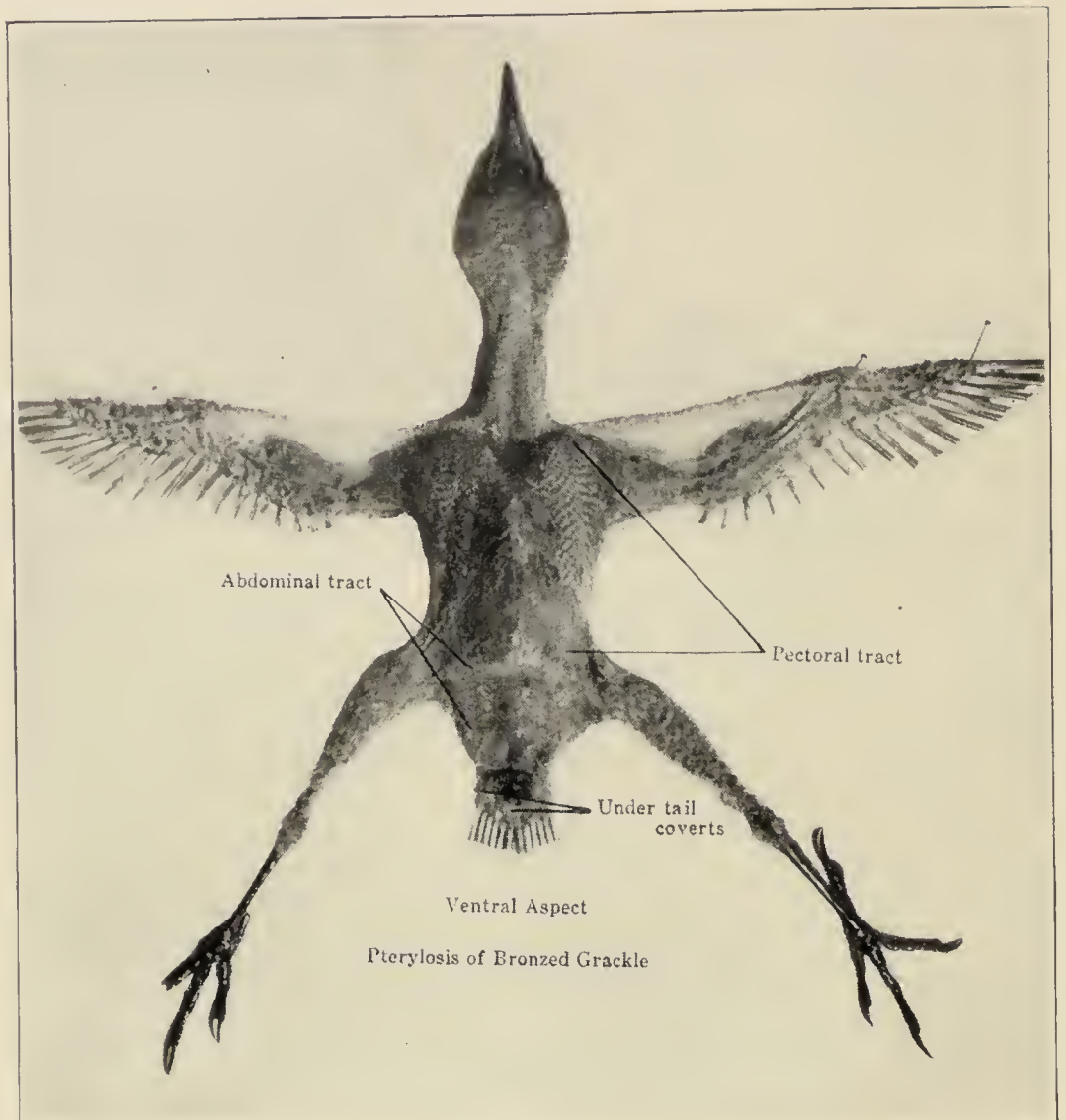


FIG. 4. Ventral aspect of the Bronzed Grackle, showing pterylosis.

are shed as rapidly, so that for a short time the bird shows a stubby tail.

In working out the order of molt in the primaries I have given the innermost as number 10 for convenience. Of course some species have only nine; in which case the molt of the outermost, which would properly be called number 1, but in my annotation would be 2, marks the completion of the molt, except for the scattered body feathers mentioned. They seem to persist after the regular molt, possibly as an added protection to the body.

I have made use of groups of feathers involved in the several stages of the molt because there is some variation in the exact order of feather loss. Thus it is usual for the molt to begin in the middle of the expanded dorsal tract and from that center spread forward and backward in this tract, and for the 10th primary to drop out after this spreading has begun. The primaries and secondaries seem to be held in their sockets more firmly than are the body feathers, and therefore might often cling after they had been pushed partly out by the new feather.

I have no data on the length of time that it takes a bird to shed its plumage and get a new one. Banding might settle this point. But in any case birds banded during July and August ought to be examined for evidence of molt and the results recorded carefully.

It is assumed that the old feathers are pushed out of the follicle in which they grew as a necessary consequence of the growth of the new feather in the same follicle. Of course this is true, but I have good evidence that many of the old feathers are pulled out by the bird. In fact, I have seen them do it. Under the campus roost of the Bronzed Grackles and Cowbirds, an account of which occupies the whole of WILSON BULLETIN No. 15, feathers that were shed during the night littered the ground. I gathered the larger feathers every morning. I have a complete series of the primaries and tail feathers. Many of these feathers have a broken place on one of the vanes. I was unable to account for this until I saw a flock of Cowbirds that was waiting for an opportunity to steal into the roost, busily engaged in pulling feathers out of their plumage. When I gathered these feathers they had the telltale broken places in one vane. An individual that happened to be within ten feet of me was digging away at his wing, and when I saw him pluck the feather out and drop it I went at once and picked it up. It had the broken place in the vane. Of course I am not claiming that all the feathers are plucked out. Probably few of them are.

In the other Passerine birds the molt of which I have studied there is a close conformity to the method that I have given for the Bobolink. In most of the species there is no molt of the flight feathers in the young of the year. Just which species do molt all of the plumage is a topic for study.

I was surprised to find that while the Gray Ruffed Grouse shed its feathers rapidly the order of shedding was much the same as that of the Passerine birds. Likewise, the Mourning Dove had much the same order of molt, but its progress was so slow that a new feather was fully half grown before the one next to it was shed. The Killdeer did not show material differences in the order of molt.

It is well known that some ducks and gallinaceous birds shed their feathers so rapidly that they are practically naked and unable to fly for some days. The woodpeckers shed the middle pair of tail feathers last, and the Kingfisher has his own method.

As I have suggested above, study of the molting of birds can and ought to be a regular part of the bird bander's privilege. Many birds have partial molts at various times in the year. It would be well if every bird banded were examined for the purpose of determining whether or not it showed evidences of molt.

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## BREEDING OF THE LEAST TERN IN IOWA

BY WILLIAM YOUNGWORTH

The Least Tern (*Sterna antillarum*) has been observed in the Sioux City region quite regularly by various persons during the summer months in recent years—perhaps for the last twenty years, at least. It usually appears during the last week of May, and remains often throughout August. There has been some local discussion from time to time as to the probability of the birds breeding here.

In 1885 Agersborg (*Auk*, II, page 289), writing on "The Birds of Southeastern South Dakota", and dealing with Clay, Yankton, and Union Counties, says of the Least Tern, "Summer resident; breeds".

W. W. Cooke, in 1888 ("Bird Migration in the Mississippi Valley", page 58), perhaps with the preceding report in mind, makes the following statement concerning this bird: "Chiefly coastwise, but passes up the Mississippi Valley to Dakota and Minnesota. Breeds abundantly along the Gulf coast in Louisiana and Texas; also in the interior; known to breed in Kansas and Dakota".

In 1915 Dr. Visher (WILSON BULLETIN, XXVII, page 324) refers to the same species as follows: "This interesting bird has nested regularly for many years along the Vermilion River, near the town of Vermilion, and also at the mouth of the stream, a few miles away. Nests have been found on several occasions. The colonies are small, consisting of not more than seven or eight pairs."

For several seasons Least Terns have been summer residents at a small lake within the city limits of Sioux City, Iowa. This particular lake is without islands or other suitable nesting sites, and the writer felt for a time that the birds were non-breeding birds.

The yearly return of the Least Terns in 1929 came on May 19, and from that date the birds were closely watched. A large sandbar in the Missouri River about one-half a mile from the lake, was discovered to be their home. During the early summer the adults began to carry minnows to this bar, to feed the young birds. It was noted that very little food was collected from the river, as this small lake apparently furnished an abundance of fish for both the young and adults.

On August 7 we heard a sort of begging call, and soon two young Least Terns were seen flying after some adults. They were guiding the youngsters to this fine feeding ground. These young terns were very awkward on the wing and their numerous clumsy dives were interesting to watch. The old birds brought several more fledglings from the river and soon all the young were resting on the water. The parents would fly to the young, alight on the water, and proceed to feed them with small fish.

The young terns, with their stubby tails, rather short full wings, and plump appearing bodies represented quite a contrast to their slender and graceful, winged parents. The hunt for food was over and as the sun slid behind the huge packing plants, which border little Half Moon Lake, the terns, young and old, arose in a loose flock and flew to their favorite sandbar for the night.

SIoux CITY, IOWA.

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## BREEDING OF THE LEAST TERN ON THE MISSISSIPPI RIVER

BY ALBERT F. GANIER

I first became acquainted with the Least Tern (*Sterna antillarum*) on the Mississippi River near Vicksburg, Miss., where it is fairly common and well distributed. Upon its arrival in the spring it may be seen in flocks of from six to fifty, skimming the muddy waters in search of food or, for variety, repairing to the shallow sloughs, "old rivers", and barrow pits behind the levees. While it is untiring in

its flight, nevertheless it will alight on the sandbars, on drifting logs or, inland, on stumps or muddy shores. In its snow white dress, black cap and yellow bill, a more dainty or prim little bird could not be imagined. During the first few years of my acquaintance with this species I spent much time searching for its nest on the sandbars and other places it frequented, but without success. It was not until in later years that I realized my non-success was due to searching in May and early June and that these little terns usually delay their breeding until mid summer when danger from high water is over.

On Middle Bar, on the Mississippi River above Tiptonville, Tenn., I found my first nests in early June, 1921, but it was not until June 20 that they were found to have eggs. Two weeks prior to the latter date I found the little colony very much interested in a small area of the sandbar several hundred feet from the water's edge and well out from the willow growth. Many were sitting on the sand where there was an abundance of small scattered rocks and slag and on my approach, arose to join those in the air in noisy clamor. Careful search showed that no eggs had yet been laid but a number of little depressions had been formed in the sand. I marked the situation and secured from Albert Noll, my boatman, a promise that he would return at a later date and advise me of results. This he did on June 20, collecting two sets of two and three eggs respectively, which he forwarded to me and which are now in my collection. Incubation was estimated at four and eight days. I have had no opportunity to revisit this or other likely localities since then, at the proper season.

On August 3, 1928, Mr. Ben B. Coffey of Memphis, found four nests containing eggs on a Mississippi River sandbar, five miles north of that city. He has very kindly furnished me the data to include in this sketch. On July 31 he made his first visit to the bar, having waited for the unseasonably high water to subside, and found about fifty of the terns flying about. At their point of greatest interest he found several of the little depressions in the sand surrounded by many of their tracks. On August 3 he revisited the bar and found three nests containing two eggs each and another with one, all of which he left. There were thirty or forty of the terns about and, regrettably, four dead ones lay near by, having apparently been shot. Two days later he returned and found only two nests with two eggs and a single egg half covered by blown sand. These two sets which he collected and forwarded to me for preparation, proved to be incubated seven and nine days. Reckoning their total incubation period at 14-16 days, as given by Bent, it is apparent that they were deposited

about July 27 and 29. There was only one "indication" of a new nest on August 5. On this date there were about twenty of the Least Terns in the neighborhood. There were also four Black Terns on the bar, this being an unusually early date for their arrival. On August 3 and 5, there were also observed Wood Duck, Little and Great Blue Herons, and a number of small shore birds, unidentified for lack of time. The fisherman, in whose boat Mr. Coffey went to the bar, said that during his three years of residence there the terns had nested each summer.

On July 7, 1929, he again visited the above described nesting colony and found six nests, on slightly higher ground. One con-

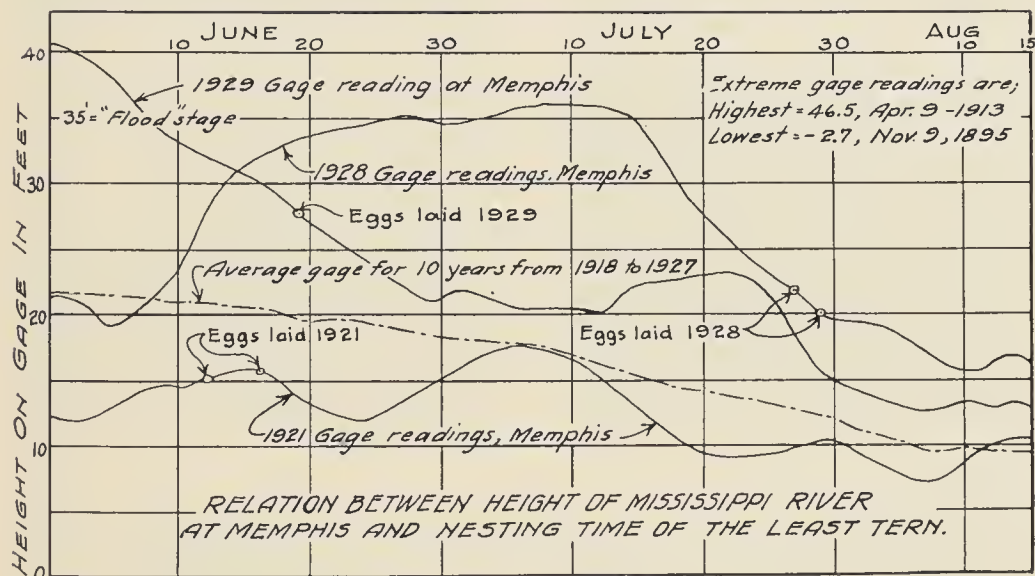


FIG. 5. Graph showing relation of nesting time of the Least Tern to the water level.

tained one egg, two held two eggs, while one held one young, two or three days old. Returning on July 14 he found thirteen occupied nests, including those of the previous visit. They were in two groups, about a hundred yards apart. Of eggs or young, one held three, seven held two, and five held one. A number of photographs were taken of the nests. On photographing the young they would stand panting in the sunshine for only a few moments and then run into the shadow of the photographer's leg. The nests were situated 150 to 200 feet from the water's edge. The following 1929 river data are pertinent. The bar emerged from the river on June 12 when the gauge read 32.0. The first eggs were laid June 19 with the gauge at 27.6. On the visit of July 7, the gauge read 20.2, and on the 14th it read 21.4.

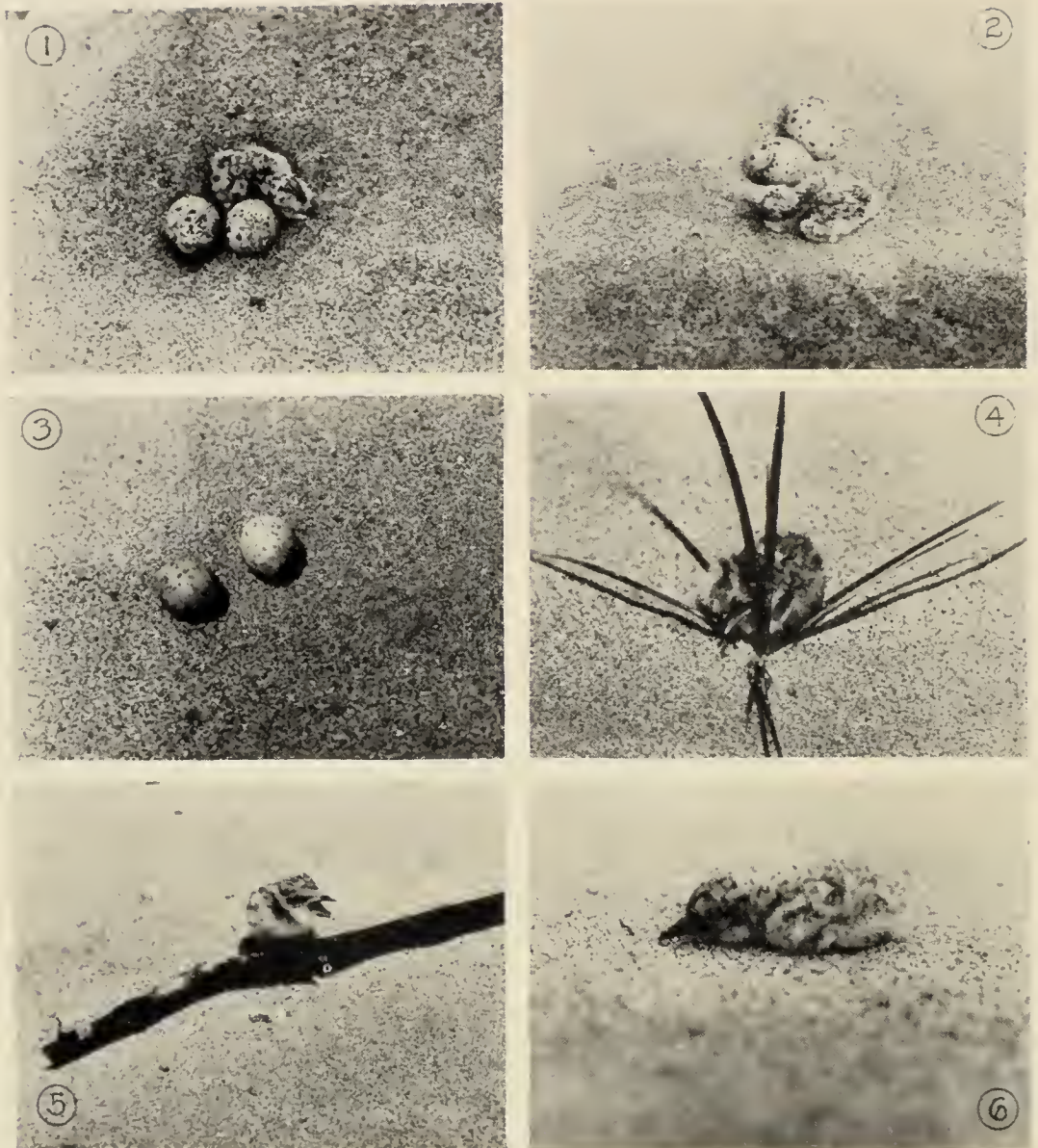


FIG. 6. Nests of the Least Tern near Memphis, Tenn. 1 and 2, eggs and young, six hours old, on the wind-blown sands. 3, two eggs in situ. 4, young seeking shade of blades of grass. 5, young showing effect of heat. 6, young at ease, about one day old.



A study of the Memphis River gauge chart (appended) shows the relation between the stage of the water and the nesting of this species, and that until the sandbars are well out of water no nests may be expected. The line of average for ten years past indicates that this date would be about June 18 or whatever date, after the middle of June, the water falls to around twenty-two feet on the gauge. It is probable that small nesting colonies of Least Tern may be found every ten or fifteen miles along the river and, due to isolation and such wide distribution, disturbance by humans should not be a great factor in their decrease. At the present time they seem to be holding their own. Sandstorms on the bars are frequent and it is likely that drifting sand covers and destroys many of their eggs and possibly young as well.

The present breeding range of the Least Tern is known to be from Massachusetts, along the South Atlantic and Gulf coasts and up the Mississippi as far as St. Louis. I am unable to find a specific breeding record, however on inland waters with the exception of Bent's quotation from Mabbetts's forty-year-old record near Natchez, and perhaps Bartsch's notes in the *Auk* for January, 1922, p. 101. The latter, on August 1, 1907, near Cairo, Ill., and on August 12, at the confluence of the Duck and Tennessee Rivers in Tennessee, observed these birds carrying food in their bills, supposedly to young birds on their nests. This food carrying habit, however, is by no means a sure index to the presence of nearby nests. The adult birds feed their young for weeks after they have left their breeding grounds and at such time they visit sloughs, ponds, lakes, and rivers far from their regular breeding places. Even prior to the nesting season, the birds have a pretty habit of feeding each other during the weeks of courtship. On Reelfoot Lake, Tenn., where these terns are common at that time, I have seen one of them sit on a floating log and be repeatedly fed by another, presumably its mate, and presumably a male, the sexes being alike. The recipient takes the attitude of a young bird, with wings quivering and half open. Mr. Coffey noted the same performance during June at Memphis.

NASHVILLE, TENN.

## COMMON TERNS NESTING NEAR TOLEDO, OHIO

BY LOUIS W. CAMPBELL

Little Cedar Point, Lucas County, is the tip of a peninsula ten miles northeast of Toledo extending one and a half miles north into Lake Erie. This peninsula, forming the dividing line between the Lake and Maumee Bay on the south side, consists of marsh land with a higher border of sand beach. As this marsh is owned by a hunting club, and is not open to the public, the point itself is accessible only by water. The writer, however, received permission to cross the hunting club grounds and all trips to the Point were made on foot. Little Cedar Point consists roughly of a sandbar 1500 feet long and 250 feet wide. About 1000 feet from the end of this bar is a narrower place through which the lake storms at times cut a channel approximately 100 feet wide, in which the water is from a few inches to three feet in depth depending on the direction of the wind. This year, because of high lake levels and northeast winds, this channel was open from April to August, cutting off the end of the point from the mainland. Half-way between this cut and the end of the bar is a small house in which fishermen dwell most of the year.

On June 9, 1929, there were about fifty Common Terns (*Sterna hirundo*) at the Point. Seeing that quite a few were performing their mating antics, I determined to revisit the location at a later date. Returning on June 20, I was surprised to find the number of terns increased to 500 with 200 or more sets of eggs, all located near the end of the sandbar. July 7 found the eggs unhatched, but on August 4 there were fifty-five young, in all stages from tiny chicks just out of the egg to juveniles barely able to fly. A number of eggs had been destroyed by the severe storm of July 19. On August 10 many young birds were still unable to fly but no newly hatched ones were seen. By September 2 all were at home in the air.

The nesting of this little colony of Common Terns is probably the first record for the mainland of the state of Ohio, although, as I have shown, the site was technically an island at the time. With regard to the distribution of the species in this district, Professor Lynds Jones in his "Birds of Cedar Point and Vicinity" (1910), states, "The only breeding places thus far discovered are upon Big and Little Chieken Islands and upon the reef of Chiek when it is sufficiently uncovered by water; upon North Harbor, Starve Island, the gravel ridge at the west end of Middle and over the top of the Rattle of Rattlesnake Island." Of these, only Starve Island and Rattlesnake Island are within the boundary of the United States.

Whether or not the Common Terns have ever nested previously at the Little Cedar Point, I, personally, am unable to say, as this is the first year I have had access to the place. An old fisherman, told me, however, that there had been a colony once before, "many years ago" during a period of high water. The most obvious explanation of this year's nesting would be that the high lake levels had cut down the usual breeding areas and driven the birds to new locations. Another fact that would seem to show that the terns were desperately in need of a nesting site is that the fishing shack, inhabited by several men, was within 300 feet of the nearest nest. These fishermen pulled their nets daily and their boats plied back and forth to the city of Toledo. When one considers the inherent shyness of colony-nesting birds, the courage of this group is worthy of note.

TOLEDO, OHIO.

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## A LETTER FROM ROBERT RIDGWAY

BY FRANK L. BURNS

The following letter from Robert Ridgway, written so short a time before his death, contains some information that will be of general interest; and it is with the thought of sharing this information with the many admirers of Mr. Ridgway that I offer the letter for publication.

LARCHMOUNT  
1030 South Morgan Street  
OLNEY, ILLINOIS

December 31, 1928.

Mr. Frank L. Burns,  
Berwyn, Pennsylvania,

My dear Mr. Burns:

In reply to your inquiry of the 28th inst., just received, I have to say that it is impossible for me to forecast the appearance of the two as yet unpublished volumes of "Birds of North and Middle America." My work on Part 9 has been completed for some two or three years, and in the preparation of Part 10, the concluding volume, I am now on the home stretch. If my health and strength hold out this should be completed by the end of next summer, at the farthest. I think it is not fully realized by most people who are interested that the labor of preparing this book is becoming more difficult each year. This is caused mainly by the enormous increase in ornithological literature, all of which has to be studied and bibliographical refer-

ences made, but I am now handicapped by the inability to work as steadily as I formerly could—in fact have reached an age (79 years on my next birthday) when it would be better for me if work of this kind should be dropped altogether.

My own part in the completion of the last two volumes will, necessarily, consist in the treatment of the higher groups (down to families only in Part 10 but to genera in Part 9, with compilation of full synonymies down to subspecies in both); in other words, the real labor, indeed the drudgery, leaving for others the interesting work of describing the species and subspecies. Naturally, I wish that it were possible for me to do the latter myself, but, obviously, I cannot.

Very truly yours,

ROBERT RIDGWAY.

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## CHIMNEY SWIFT BANDING OPERATIONS AT CHATTANOOGA

BY WYMAN R. GREEN

We have confined our bird banding operations at Chattanooga almost wholly to Chimney Swifts (*Chaetura pelagica*) for the reason that these birds visit our city in tens of thousands. It seems to be a favorite stopover place for them. Especially in September and October they come in enormous numbers, on their way south. Most of our operations so far have been during these two months. Not so many are observed as they pass on their way north in the month of May. Possibly their north and south migrations are not over the same route.

There are many chimneys available in Chattanooga and a large number are used. It is a veritable paradise for anyone interested in the banding of Chimney Swifts. We first began our operations in October, 1928, when the birds were moving south. We banded a few again in May as they passed through going north, and in September and October of 1929 we again set our traps and banded on a more extensive scale, as the swifts were returning southward.

The accompanying tabulation summarizes the banding operations to date so far as our local work is concerned.

It will be noted that a total of 3,737 swifts were banded during the period from October 16, 1928, to October 19, 1929. During this time we captured seventeen swifts that had been already banded by other operators. Throughout the whole of our banding work we have had fifty-four returns. It is significant that on October 8, 1929, we had at least one return from each of our three previous catches. Also

on October 19, 1929, we had at least one return from each of our four previous catches. That we had no returns on May 25, 1929, when we banded only ninety-one birds is not specially significant, since the number of birds examined was so small, while at each succeeding catch we examined from about 1,000 to 5,000 birds.

Unfortunately we were obliged to set free nearly 9,000 swifts, as our tabulation shows, without banding them, because we were not able to get sufficient bands. We hope that this handicap can be removed before resuming the work again.

Perhaps the most interesting aspect of this work emerges when we consider the birds taken which have been banded by other workers. Of these we have taken seventeen. Three of our birds have been taken elsewhere. Of the 1,000 swifts banded October 16, 1928, two have been reported as taken in Canada. Bird No. B72,601 was captured by Mr. E. J. Pifher, at Trout Lake, North Bay, Ontario, June 21, 1929, (See Fig. 8). This is about half way between the eastern end of Lake Erie and the south point of Hudson Bay. Bird No. B72,496 was taken three days later at Markstay, Ontario, by Mr. A. Chevrier. It is rather remarkable that these two birds banded at Chattanooga at the same time, should be taken eight months later within three days of the same date, in Ontario. The only other one of our birds that we have heard from so far was another one banded at the same time as these two, but which was taken only five months later at Decatur, Tenn., by Mr. Noah Bales.

Of the seventeen banded birds we have taken during our operations thirteen were banded at Charleston, W. Va., by Mr. I. H. Johnston. Two of these we took in October, 1928. One had been banded in 1926 and the other in 1927.

Among the 7,000 swifts trapped in September, 1929, were eight others which had been banded by Mr. Johnston in the years 1927 and 1928. There was also one that had been banded at Kingston, Ontario, in June, 1929, by Mr. R. O. Merriman, another banded at Thomasville, Ga., in October, 1926, by Mr. H. L. Stoddard, and another banded at George School, Pa., in May, 1927, by Mr. John Bartram.

Among the 2,700 trapped in October, 1929, were three more birds banded at Charleston, W. Va., by Mr. Johnston, in 1926 and 1927, and one which is of special interest, was banded at Lafayette, Ind., in September, 1929, by Mr. S. E. Perkins.

Only eleven days later we set our traps for the last time this season and captured 955 swifts, but none of these wore bands that had been placed on by other workers. There were, however, thirty

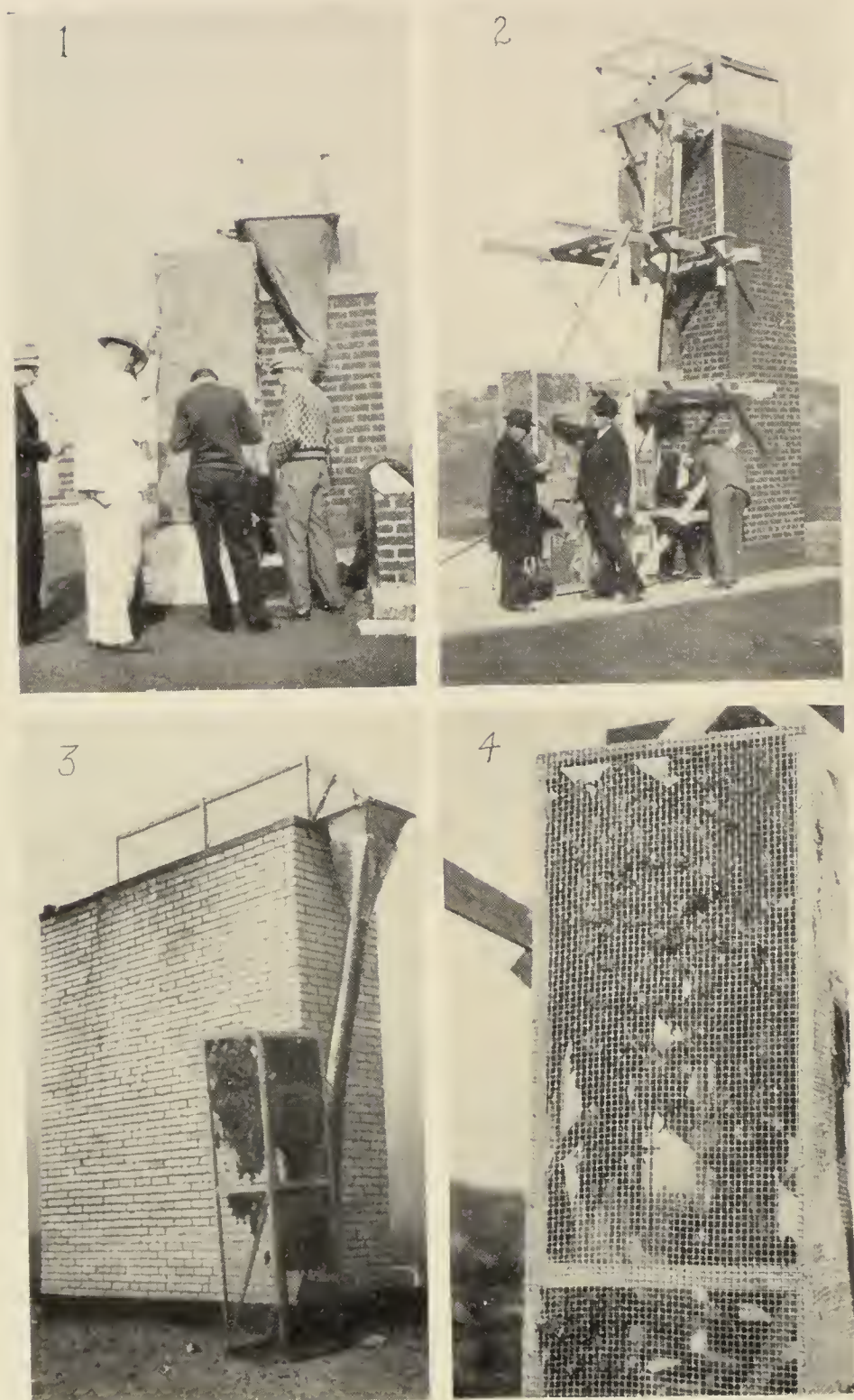


FIG. 7. Chimney Swift banding operations at Chattanooga. 1, the author, in white, and students at work on the roof of the main building of the University of Chattanooga. 2, a temporary trap on the Clemons Bros.' furniture store. 3, trap and receiver containing about 800 Chimney Swifts. 4, close-up view of one of the receivers showing how the swifts cling to the walls. 1 and 2 by Henry Howard.

birds that bore bands that we had placed on them. Of these a few were from each of our four previous catches.

We have used a considerable variety of traps, as to shape, size, and construction. Naturally the size and type of trap may be conveniently modified to suit the particular chimney on which it is to be used. The accompanying illustration (Fig. 7) shows one of our most satisfactory traps and a receiver which is designed to hold several thousand birds. In general our traps have all resembled the one here shown, being much the same as other banders are using. (See Miscellaneous Publication No. 58, of the United States Department of Agriculture). Hence a detailed description would be entirely superfluous. In all of our traps we have used a transparent sheet of celluloid at one end. Our experience indicates that it is better to place this sheet at an angle, say of forty-five degrees, rather than to have it strictly vertical as it is in all of the traps of other workers, so far as I am informed. This arrangement deflects the birds downward into the funnel, or hopper, the first time they strike the sheet. In my previous traps, with sheet vertically placed the birds would often flutter against the sheet and then try to find a place to alight in the cage. In my first experience my trap walls became practically lined with swifts. I remedied this in part by substituting black oil cloth for the burlap walls of the trap, and by eliminating all roughness inside the traps.

By considering a certain habit the swifts have on entering the chimneys in the evening one can appreciate the great importance of maintaining an unobstructed right of way through the trap into the receiver when the birds once decide to come out of the chimney. Perhaps everyone has observed that the swifts circle about for a time in the evening before starting into the chimney. Then in cases where there are thousands of birds concerned a few will dart in, literally pouring in for a few moments, but it will be observed that the rate of entrance slows down perceptibly, and after a few seconds, completely ceases for perhaps half a minute, or even longer sometimes. I imagine that this is to give those that entered time to get settled in their places. Then the process is repeated, until the last bird enters. So when the birds are coming out if the passage becomes the least bit obstructed by fluttering birds this same instinct operates, as I believe, to call a halt, until the fluttering birds either fall down the chute or find a perch in the cage, or possibly go back down the chimney again. It is obvious that if possible all of the flock should come out at their first attempt.

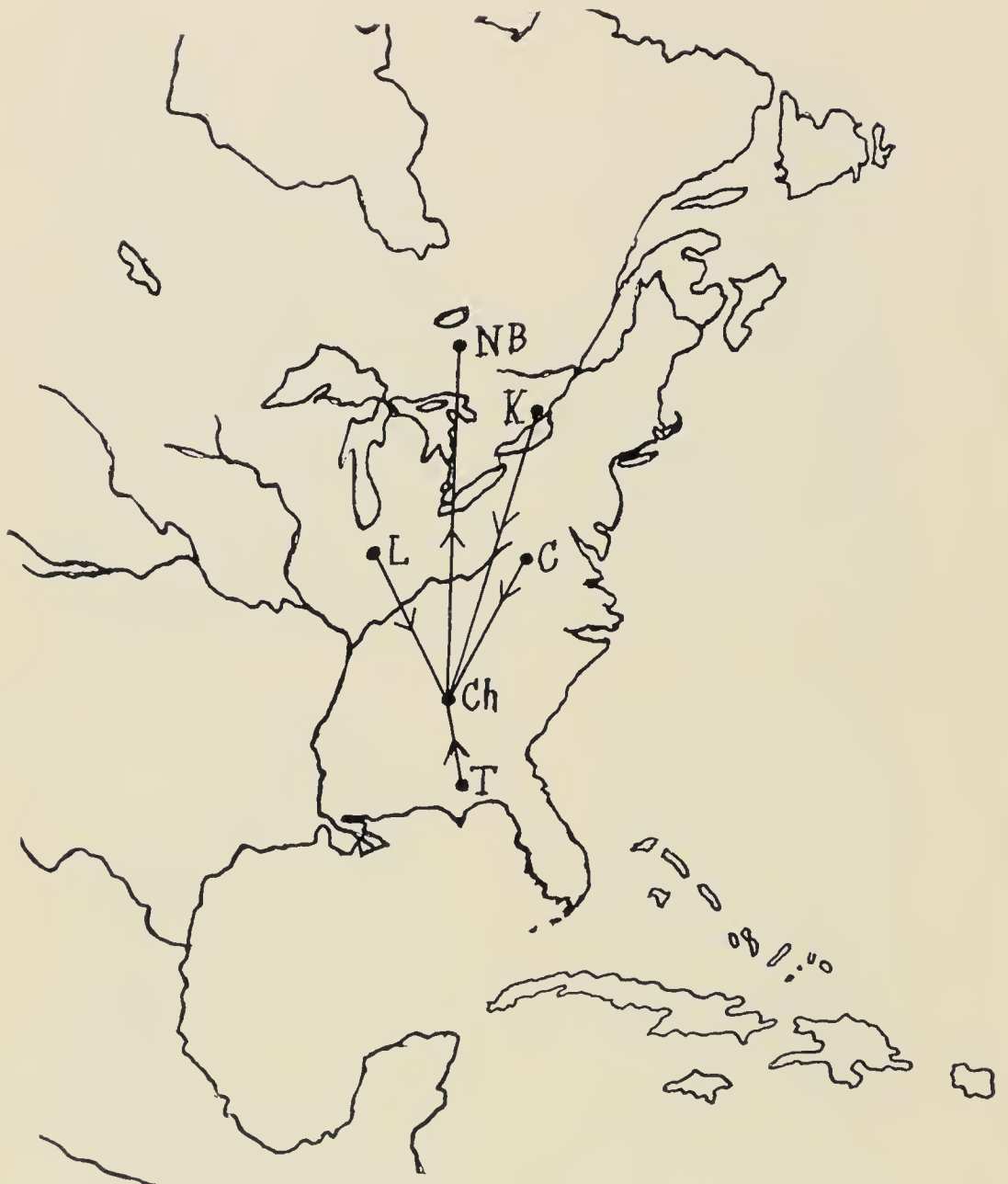


FIG. 8. Eastern portion of North America which is involved in this study of Chimney Swifts. The banding was done at Chattanooga, Tennessee (Ch). Birds were taken which had been banded at Thomasville, Georgia (T), Lafayette, Indiana (L), Charleston, West Virginia (C), and at Kingston, Ontario (K). Some of the birds banded at Chattanooga were taken later at North Bay, Ontario (NB). The study indicated a number of migrations of minor importance which are not shown on the map. It will be seen that returns up to date indicate a certain degree of convergence of Chimney Swifts in the fall migration. Obviously banding stations are needed in northeastern Canada, southern Florida, the West Indies, Central America, and South America.



In the case of tall chimneys it is very inconvenient if the swifts congregate in the trap. We believe that with the transparent sheet placed at an angle as indicated there will be very few birds which ever strike it a second time before being deflected into the funnel leading to the receiver.

Now let us consider a few details with reference to the receiver or gathering cage. If one is trapping on a large chimney which may harbor 6,000 or 7,000 swifts at one time he needs a large receiver or several small ones which can be easily handled. An essential feature of a receiving cage is that it must provide ample room for all of the birds in it to cling to its walls. If swifts are allowed to flutter about in the trap and become partially exhausted before coming into the cage, they may accumulate on the floor of the receiver and smother. After experience indicated the necessity I made the large cage shown in the illustration. It is about seven feet tall and approximately two feet in the other two dimensions. We have found it more convenient to use a single large receiver. When several thousand birds come out in a few minutes one is saved the trouble of changing the cages. Every little saving counts when one has several thousand birds to band.

All four sides and the two ends are made of one-half inch mesh hardware cloth. The bottom, being constructed of the same material as the sides and top, makes it possible for the few birds that do become exhausted and drop to the bottom of the receiver, to get plenty of air and thus avoid suffocation. The receiver, in case there are many birds, should be slightly raised off the ground so there is the most complete ventilation for the swifts that may come to rest on the floor of the cage.

With a cage which is tall several men may stand about it and inspect the legs of the birds attached to its walls for specimens which are already banded. Very little or no stooping is necessary.

In a receiver of this size it is convenient to have four openings for removing the swifts. They should be about nine inches square. In a cage six or seven feet tall they should be placed, one in each of the four walls, so that all parts of the cage may be easily reached. This desideratum is realized when two of them are located about eighteen inches from the bottom in opposite walls, and the other two are about four feet from the bottom, opposite each other, in the other two walls. Thus half a dozen workers may have ample access to the birds at the same time and not be in each other's way.

TABULATION OF THE DATA ON BANDING CHIMNEY SWIFTS

DATA ON LOCAL BANDING				DATA ON CHIMNEY SWIFTS BANDED ELSEWHERE			
Date and Station	Birds Banded Numbers Used	Released Not Banded	Bearing Local Bands	Bearing Strange Bands	Place of Banding	Date of Banding	By Whom Banded
Oct. 16, 1928 Old H. S.	1000 B72001 to B73000	900	None	LSURV 19735 BISURVB 15195 None	Charleston W. Va. Charleston W. Va.	Sept. 18, 1926 Sept. 15, 1927	I. H. Johnston I. H. Johnston
	91 C6410 to C6588	None	None				
May 25, 1929 Univ.	1500 623301 to C25000	5500	8 banded Oct. 16, 1928 B72285 B72286 B72041 B72541 B72594 B72431 B72873 B72039	BISURVA 82771 BISURVB 1265 BSURVB 14419 BISURVEY 14983 B14094 C28449 C28640 C27800 C28596 A107321 B97875	Thomasville, Ga. George School, Pa. Charleston W. Va.	Oct. 1, 1926 May 26, 1927 Sept. 15, 1927	H. L. Stoddard John Bartram I. H. Johnston
					Charleston W. Va. Charleston W. Va. Charleston W. Va. Charleston W. Va. Charleston W. Va. Charleston W. Va. Charleston W. Va. Kingston, Ontario	Sept. 15, 1927 Sept. 15, 1927 Sept. 15, 1927 (?) (?) (?) Sept. 14, 1928 June 7, 1929	I. H. Johnston I. H. Johnston I. H. Johnston I. H. Johnston I. H. Johnston I. H. Johnston I. H. Johnston R. O. Merriman
Oct. 8, 1929 Clemens	1146 C32001 to C32197 and C36051 to C37000	1559	11 banded Oct. 16, 1928 B72039 B72098 B72118 B72122 B72486 B72575	BISURV 15978 BIOLSURV 197202 (both on same bird)	Charleston, W. Va. Charleston, W. Va.	Sept. 15, 1927 Sept. 17, 1926	I. H. Johnston I. H. Johnston

TABULATION OF THE DATA ON BANDING CHIMNEY SWIFTS—Continued

DATA ON LOCAL BANDING				DATA ON CHIMNEY SWIFTS BANDED ELSEWHERE			
Date and Station	Birds Banded Numbers Used	Released Not Banded	Bearing Local Bands	Bearing Strange Bands	Place of Banding	Date of Banding	By Whom Banded
			B72694 B72789 B72809 B72849 B72970	BISURV 14860 BISURV 14112 BIOLSURV 469234	Charleston, W. Va. Charleston, W. Va. Lafayette, Ind.	Sept. 15, 1927 Sept. 15, 1927 Sept. 6, 1929	I. H. Johnston I. H. Johnston S. E. Perkins
			2 banded May 25, 1929 C6463 C6499				
			4 banded Sept. 21, 1929 C23586 C23717 C23867 C24893				
Oct. 19, 1929 Central H. S.	None	955	7 banded Oct. 16, 1928 B72378 B72398 B72497 B72593 B72602 B72665 B72746	None			
			1 banded May 25, 1929 C6446				
			9 banded Sept. 21, 1929				
			13 banded Oct. 8, 1929				
Totals	3737	8914	54	17			

Note: Three swifts banded October 16, 1928 have been recaptured elsewhere: B72601 by E. J. Pifher at Trout Lake, North Bay, Ontario, June 21, 1929; B72496 by A. Chevrier at Markstay, Ontario, June 24, 1929; B72707 by Noah Bales, Decatur, Tenn., April 20, 1929.

A narrow strip of tin may be bent around the edges of these doors to cover the cut edges of the hardware cloth, so as to avoid the possibility of tearing the clothing when reaching in after the birds. A piece of burlap about fourteen inches square is hung over each door on the inside of the cage. This effectively prevents the escape of the birds and makes easy their rapid removal.

In closing, let us consider briefly some plans for the future. Since the swifts do not always go to the same chimney each evening but use several different roosting places, we have planned to do some experimenting, when they return again next year, to determine the extent of these local movements. We hope to organize our men into groups, so that we can trap all of the birds at the different chimneys the same day, at intervals for the month or two that the swifts are present. Several objects would be accomplished by this procedure. Aside from discovering the local movements we can determine how long individual birds remain in the locality, and most important of all, we will have an opportunity to band every unbanded swift that visits the region.

We hope soon to get in touch with everyone in America who is interested in swift banding. With the co-operation of many workers much can be accomplished in a very short time with birds like these that can be banded in such enormous numbers. There is an enthusiastic group of workers in Chattanooga. We are definitely planning to become the blue-ribbon swift banders of America. We intend to band from 10,000 to 20,000 swifts by the end of October, 1930. I realize that it is a hazardous thing to announce our ambition, but if this announcement inspires a formidable competitor in this field, or indeed a score of them, so much the better. In the interest of our common objective they will all be welcome.

UNIVERSITY OF CHATTANOOGA,  
CHATTANOOGA, TENN.

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## SOME NEW BIRDS FOR OKLAHOMA FROM OKMULGEE AND TULSA COUNTIES

BY EDITH R. FORCE AND W. H. KOONS

The purpose of this account is to amplify the records of the bird life of Oklahoma. These records are of especial interest because the geographical position of the state makes it a region of unique climatic changes, for it is the cross roads of the humid east and the arid west, of the cold north and the warm south. For this region a wide range in

the variety of habitat and birds may reasonably be expected. Comparatively few ornithological records of this region have been made. Therefore it is hoped that this account will be of use in the compilation of a more complete check-list for eastern Oklahoma.

Of the nine species and subspecies listed herein, six are first records for the state, and the other three the only specimens of which there is known to be a record.

With the exception of the Magnolia Warbler, which is a sight record, the specimens have been collected in Okmulgee and Tulsa Counties and the disposals indicated. The identifications have been made by Dr. H. C. Oberholser, Bureau of Biological Survey, Washington, D. C., and Dr. Frank M. Chapman, American Museum of Natural History, New York City. Grateful acknowledgment is made for this assistance in the identifications, as well as for the inspiration and advice of Mrs. Margaret M. Nice upon whose suggestion the present account was undertaken.

**GREAT BLUE HERON.** *Ardea herodias herodias*. Transient. One specimen (O. H. S. No. 46) was collected by W. H. Barton in the fall of 1924 and another, (O. H. S. No. 113) by Renola Bonstein, October 10, 1925. This latter specimen was destroyed after it, together with the O. H. S. No. 46, had been identified by Oberholser. This bird is at present in the High School Museum, at Okmulgee. It is a new state record. November 5, 1925, a specimen was collected in Oklahoma County by Ralph Miller, and identified by Oberholser. The specimen is in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. "*A. h. wardi* is the form of the Great Blue Heron that breeds in eastern Oklahoma. Kirn reports a colony in Osage County and Prier states that it breeds in Cherokee County."\* Frequent sight records have been made between spring and December 1, since the year 1924 in Tulsa County (Koons). Mrs. A. Gilmore, taxidermist, in the city of Tulsa, has a male and female (A. G. Nos. 68a and 68b), a nest and a set of four eggs collected in Tulsa County, March 15, 1923, which are undoubtedly *A. h. wardi*.

**KRIDER'S HAWK.** *Buteo borealis krideri*. A male was collected in the winter of 1923-1924 by W. H. Barton, and recorded as O. H. S. No. 89. Another male (O. H. S. No. 94) was shot by R. E. Francis, a poultry raiser, as the hawk was capturing a Leghorn hen. The stomach contents of the hawk revealed an adult undigested mouse. Specimen O. H. S. No. 94 is very light in color as compared to the fuscous specimen collected earlier. They are both in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. These are the

first specimens of this subspecies identified for Oklahoma. Since then a skin in the University of Oklahoma has been referred to this form by Oberholser; it bears the data, "0-69, male, October 15, 1924, Bryan County.—E. D. Crabb."

EASTERN GRASSHOPPER SPARROW. *Ammodramus savannarum australis*. Transient. A male (O. H. S. No. 6) collected by Mark Moore, Jr., and Edith R. Force, October 15, 1926, is a new state record. The specimen after being identified by Oberholser was placed in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. The breeding Grasshopper Sparrow of this region belongs to the western subspecies; specimens taken in the summer near Tulsa have been identified by Dr. A. Wetmore.\* In the collecting it was very easy to get within four feet of this bird, as it fluttered along close to the ground in the dry grassy meadow, about 4 P. M. A number of them were seen later on the sunny hillside. Mrs. W. D. Elrod, Okmulgee, Oklahoma, records the Grasshopper Sparrow in a list of birds seen close to Christmas, 1925. W. H. Koons observed the Grasshopper Sparrow on a frozen mud hole January 18, 1925, evidently attempting to get a drink of the water he could see below.

MAGNOLIA WARBLER. *Dendroica magnolia*. Rare transient. One individual observed April 13, 1924 (Koons). This is a new state record. It is one of the "birds whose occurrence is to be expected." "In Kansas a rare transient; in Arkansas one recorded by Smith in Washington County, May 22, 1924, while Warren collected one in Baca County, Colorado, May 12, 1905."\*

MONTANA JUNCO. *Junco oreganus montanus*. Winter resident. A male collected by W. H. Koons, March 4, 1925, was photographed, painted and later sent to Oberholser who identified it as belonging to this subspecies. This bird is abundant every year. In 1924 one could count at least a thousand in a three mile tramp along the base of the cliffs of Lost City, Tulsa County. They were extremely numerous that year in many places within a radius of ten miles of the City of Tulsa. They were again numerous during the winter of 1926-1927, but not nearly so many as in 1924. This is a new state record.

SWAMP SPARROW. *Melospiza georgiana*. Transient and winter resident. A specimen collected by W. H. Koons March 20, 1926, was photographed and painted by him and sent to Oberholser, who stated it belonged to this species. Although numerous sight records have been listed,\* this is the only specimen of which we have a positive identification.

TENNESSEE WARBLER. *Vermivora peregrina*. Transient in eastern part of the State. A specimen collected April 27, 1927, by W. H. Koons was sent to Chapman, who identified it as this species. It is the only specimen recorded. Several others have been seen the last of April and the first of October each year since 1924, the last observation being October 10, 1927 (Koons). Mrs. Nice records having seen others near Talequah, May 6, 1923.\*

GRAY-CHEEKED THRUSH. *Hylocichla minima aliciae*. Uncommon transient. A male (W. J. H. No. 58) was collected May 2, 1927, by W. H. Koons at Sand Springs, Tulsa County, and photographed and painted by him and sent to Oberholser for identification. The specimen, which is the only one on record for the State, is in the collection of the Wilson Junior High, Tulsa, Oklahoma. Several sight records have been made as follows: "Cherokee County—fairly common, May 5-6, 1923 (Nice); Cleveland County—uncommon spring transient, seen between April 27 and May 9 (Nice); Beaver County—rare migrant at Gate (Lewis)."\*

SOUTHERN ROBIN. *Planesticus migratorius achrusterus*. Resident. One specimen (O. H. S. No. 30) was collected in the spring of 1924 in Okmulgee County and is in the Okmulgee High School Museum. Another (O. H. S. No. 116) collected on May 4, 1926, from the same region is in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. A male (W. J. H. No. 29) collected March 12, 1927, at Joe's Station, Tulsa County, by W. H. Koons is in full spring plumage. An immature male (W. J. H. No. 43) was collected April 4, 1927, by Harry Williams. Both of these, which are in the collection at the Wilson Junior High School, Tulsa, have been identified by Oberholser as belonging to this subspecies. Mrs. A. Gilmore, taxidermist, of Tulsa, collected an immature male June 15, 1927, and a nest with five eggs, April 29, 1927. She states they nest any time between March and May. Other nestings were reported May 18, 1926, in Okmulgee County. The Robins are abundant in eastern Oklahoma. December, 1926, flocks containing immature birds were seen in Okmulgee County (Force). This is a new state record, since the specimens previously identified belonged to *P. m. migratorius* and *P. m. propinquus*.

TULSA, OKLAHOMA.

\*Nice, Margaret Morse, and Leonard Blaine. 1924. The Birds of Oklahoma. University of Oklahoma Bull. No. 286.

RECENT BIRD RECORDS FROM NORTHEASTERN COLORADO  
AND THEIR SIGNIFICANCE IN CONNECTION WITH  
GEOGRAPHICAL DISTRIBUTION

BY F. L. FITZPATRICK

INTRODUCTION

The present paper deals with the bird life of the plains region of northeastern Colorado, a broad level area traversed by the South Platte River and its tributaries which have their origins in the mountain streams of the Eastern Slope.

It must be remembered that this area, although in itself large, is but a small portion of the State of Colorado. Some species of birds common to the southern part of the State are uncommon or absent in this region. And of course a much different avian fauna is found in the mountains of the western portion of Colorado. Necessarily, some of the species that nest in the mountains during the summer are found on the eastern plains during the migration seasons. However, the most common north and south migration route follows the foothills region of the Eastern Slope. As will be noted from a study of the appended notes many of the earliest spring arrivals were seen in this zone. So the migrating birds tend to follow a fairly well defined route and do not spread out across the eastern plains indiscriminately. Sclater, (1912), records 392 species of birds from Colorado of which 106 are rare or casual and 167 are non-breeding migrants.

The investigations upon which these notes are based were carried on in 1924 and 1925 when the writer was a member of the Faculty of Colorado State Teachers College, located at Greeley. Greeley is situated in the plains region, some thirty miles east of the foothills and on the eastern edge of the migration route already referred to. Its location marks the junction of the South Platte and the Cache la Poudre Rivers and there are many ponds, lakes and reservoirs in the surrounding region which is largely irrigated and under cultivation.

The notes and records are drawn from almost daily observations made in or within a fifteen-mile radius of Greeley except in those instances wherein other localities are specifically designated. In making the observations all sorts of places were visited, particularly lakes, ponds, groves along the rivers and creeks, dry sagebrush land, parks, and city streets. One interesting and noteworthy fact is that a large majority of the smaller birds live in the near vicinity of towns or farm groves, obviously because of the presence of bushes and trees



in these localities. Not all of the species in the region came under observation. For instance, the smaller marsh-dwelling forms such as rails were not sought in the course of the investigation. Nevertheless, the observations form a fairly accurate basis for determining the relative abundance of most species and some of the records appear to have special significance in connection with geographical dissemination.

## FAUNAL LIST

PIED-BILLED GREBE. *Podilymbus podiceps*. The status of this species in northeastern Colorado seems to be somewhat indefinite but it is not supposed to be as common as the Eared Grebe, *Colymbus nigricollis californicus*. Strangely enough no members of the latter species were recorded but a pair of Pied-billed Grebes were observed near Greeley on April 15, 1924.

RING-BILLED GULL. *Larus delawarensis*. A common migrant.

BONAPARTE'S GULL. *Larus philadelphia*. Sclater, (1912), gives a half dozen fall migration records for this species. The writer has one record, May 29, 1924, near Julesburg.

FORSTER'S TERN. *Sterna forsteri*. This species is a fairly common summer resident in northeastern Colorado. Observations indicate that it has considerable value as an insect-destroying species in this region. Flocks of these birds fly about over the fields seeking grasshoppers and other insects throughout the summer.

BLACK TERN. *Chlidonias nigra surinamensis*. A common summer resident in Weld County.

MERGANSER. *Mergus americanus*. One record near Eaton, October 9, 1924.

MALLARD. *Anas platyrhynchos*. Sclater, (1912), termed this species the most common duck in Colorado. In the plains region it was seen commonly from April to July and from October to December.

GADWALL. *Chaulelasmus streperus*. This species proved to be very common in Weld County and remained to nest in some of the shallow lakes during the summer.

GREEN-WINGED TEAL. *Nettion carolinense*. A common migrant and a summer resident. Most common during April and October.

BLUE-WINGED TEAL. *Querquedula discors*. A common migrant and resident. The largest numbers of this species were observed during the fall migration, October 9, 1924.

SHOVELLER. *Spatula clypeata*. One record, June 8, 1924, at Julesburg.

PINTAIL. *Dafila acuta tzitzihoa*. A common migrant. In the fall this species gathers in large flocks, frequenting the lakes near Loveland in the daytime and repairing nightly to the nearby wheat fields to feed.

CANVAS-BACK. *Marila valisineria*. One record of eight individuals, near Greeley, October 9, 1924. No records of the supposedly more common Redhead, *Marila americana*, were obtained.

LESSER SCAUP DUCK. *Marila affinis*. Fairly common during the migration season, especially in April and November.

CANADA GOOSE. *Branta canadensis canadensis*. Fairly common as a migrant.

BITTERN. *Botaurus lentiginosus*. This species was twice recorded; June 14, 1924 and July 21, 1924.

GREAT BLUE HERON. *Ardea herodias*. One of the most common birds in northeastern Colorado. The earliest spring record was April 15, 1924. This species nests in colonies together with the Black-crowned Night Heron. One of these colonies was visited by Dr. F. C. Jean of Colorado State Teachers College and the writer in 1924. It was located on the Cache la Poudre River near Windsor. The colony was about a third of a mile in length and the nests were located in the tops of the cottonwoods and willows on both banks of the stream. One moderately large tree contained nine nests and from four to five nests were found in many trees. This particular colony has evidently been in existence for some time because items in the literature of the region make occasional reference to it. Another smaller heronry was located on the eastern bank of the South Platte River some twenty miles east of Greeley. The subspecific status of this heron was not determined.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius*. Also a very common summer resident.

SANDHILL CRANE. *Grus mexicana*. One record from Chamber's Lake. This locality is in the mountains but the record is included because this species is so rare.

COOT. *Fulica americana*. A common migrant and summer resident. Recorded from Julesburg, Loveland, Greeley, and many other localities. The largest number of individuals were observed during the fall migration, October 9, 1924.

WILSON'S PHALAROPE. *Steganopus tricolor*. Occasional migrant and summer resident.

AVOCET. *Recurvirostra americana*. Two records; May 11, 1924 and June 21, 1924, both from Loveland.

WILSON'S SNIPE. *Gallinago delicata*. A common migrant. Earliest spring record, May 4, 1924. Latest fall record, November 26, 1925.

MARBLED GODWIT. *Limosa fedoa*. One record, May 10, 1924. Sclater, (1912), lists this species as a rare migrant.

YELLOWLEGS. *Totanus flavipes*. One record, May 10, 1924.

WESTERN WILLET. *Catoptrophorus semipalmatus inornatus*. Fairly common. Earliest record, May 10, 1924.

SPOTTED SANDPIPER. *Actitis macularia*. A common summer resident along the South Platte and its tributaries.

LONG-BILLED CURLEW. *Numenius americanus*. One record, May 9, 1925.

KILLDEER. *Oxyechus vociferus*. A very common summer resident in the South Platte valley. Without doubt the most common representative of the shore bird group.

BOB-WHITE. *Colinus virginianus virginianus*. Found occasionally in the South Platte bottoms. A few individuals were seen near Greeley from time to time. Cooke, (1900), states that this species was introduced at Grand Junction in 1891 and that it was a native species at Wray on the eastern border of the State. It seems that this species has been extending its range westward.

INTRODUCED PHEASANT. Supposedly a hybrid stock of *Phasianus colchicus* and *Phasianus torquatus*. The most common gallinaceous bird in the plains region.

BAND-TAILED PIGEON. *Columba fasciata fasciata*. One record of four individuals, May 2, 1925.

WESTERN MOURNING DOVE. *Zenaidura macroura marginella*. A very common summer resident. Nests in the trees about towns for the most part. The young are hatched about the end of June. The first spring appearance recorded was on April 10, 1925.

TURKEY VULTURE. *Cathartes aura septentrionalis*. One record of seven birds from Fort Morgan, June 8, 1924.

MARSH HAWK. *Circus hudsonius*. The most common summer resident of the hawk group with the possible exception of the Sparrow Hawk. Practically a resident species; the earliest record being January 15, 1924, and the latest December 12, 1924.

SHARP-SHINNED HAWK. *Accipiter velox*. One record, May 11, 1925.

COOPER'S HAWK. *Accipiter cooperi*. One record, May 2, 1925.

KRIDER'S HAWK. *Buteo borealis krideri*. One record, December 8, 1924.

WESTERN RED-TAIL. *Buteo borealis calurus*. Fairly common. Records range from April 22, 1924 to December 12, 1925.

PRAIRIE FALCON. *Falco mexicanus*. One record, October 4, 1924.

SPARROW HAWK. *Cerchneis sparveria*. A common summer resident. Earliest spring record, March 21, 1925, at Longmont.

LONG-EARED OWL. *Asio wilsonianus*. Two records; December 12, 1924, at Kersey, and April 22, 1925, at Greeley.

BURROWING OWL. *Speotyto cunicularia hypogaea*. Very common summer resident wherever there are prairie dog towns.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus*. Cooke, (1900), does not mention this species. Sclater, (1912), terms it a rare summer visitor. It was observed nesting at Greeley in 1924 and 1925. This is another species that appears to be extending its range westward.

BELTED KINGFISHER. *Ceryle alcyon*. A common summer resident. Earliest record, January 15, 1924.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus*. An abundant summer resident, particularly in the towns. It arrives rather late, the earliest record being March 16, at Loveland.

LEWIS'S WOODPECKER. *Asyndesmus lewisi*. Ordinarily an inhabitant of the mountain forests this species was observed occasionally on the plains adjacent to the foothills during the coldest weather.

RED-SHAFTED FLICKER. *Colaptes cafer collaris*. A common bird in or about towns during most of the year. Earliest record, January 30, 1924.

POOR-WILL. *Phalaenoptilus nuttalli nuttalli*. One bird recorded on May 28, 1924. It was captured alive, having flown into a house. Its captors pronounced it an "owl".

WESTERN NIGHTHAWK. *Chordeiles virginianus henryi*. A common summer resident. Earliest record, May 28, 1924.

KINGBIRD. *Tyrannus tyrannus*. A common summer resident, more common toward the eastern border of the State.

ARKANSAS KINGBIRD. *Tyrannus verticalis*. Also a common summer resident. More common than *T. tyrannus* as far west as Greeley but less common than *T. tyrannus* northeast of Fort Morgan.

CASSIN'S KINGBIRD. *Tyrannus vociferans*. Occasional summer resident.

SAY'S PHOEBE. *Sayornis sayus*. Common summer resident. Earliest record, April 10, 1925.

HAMMOND'S FLYCATCHER. *Empidonax hammondi*. One record, May 14, 1924.

DESERT HORNED LARK. *Otocoris alpestris leucolaema*. An abundant resident.

MAGPIE. *Pica pica hudsonia*. An abundant resident.

BLUE JAY. *Cyanocitta cristata*. Apparently this species is extending its range westward in a rather marked fashion. Cooke, (1900), does not record its presence. Sclater, (1912), states that: "The Blue Jay has only recently been recorded from Colorado." One pair nested at Greeley in the summer of 1924 and two pairs were observed nesting in the summer of 1925.

LONG-CRESTED JAY. *Cyanocitta stelleri diademata*. This species is seen commonly in the plains region during the cold weather when it is driven down from the higher levels.

WESTERN CROW. *Corvus brachyrhynchos hesperis*. Common in the northeastern region and as far south as Denver. According to Sclater it is rare in other parts of the State. Possibly this species is also extending its geographical range to the southwest.

PINON JAY. *Cyanocephalus cyanocephalus*. One record, April 17, 1925.

COWBIRD. *Molothrus ater ater*. Two records; April 17, 1925 and April 25, 1925.

YELLOW-HEADED BLACKBIRD. *Xanthocephalus xanthocephalus*. An abundant summer resident in the South Platte and Cache la Poudre valleys. Earliest record, May 3, 1925.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus*. Another abundant summer resident. Earliest record, January 15, 1924. Common on January 20 of that year. These records, however, are not typical; ordinarily this species is not well represented until the first week in April.

WESTERN MEADOWLARK. *Sturnella neglecta*. An abundant summer resident. Earliest record, April 1, 1924.

BULLOCK'S ORIOLE. *Icterus bullocki*. A common summer resident, arriving about the first of June.

BREWER'S BLACKBIRD. *Euphagus cyanocephalus*. A common summer resident. First record, April 17, 1925.

BRONZED GRACKLE. *Quiscalus quiscula aeneus*. Appeared periodically in large flocks. Also seems to be extending its range westward.

HOUSE FINCH. *Carpodacus mexicanus frontalis*. An abundant summer resident in the vicinity of towns.

ARKANSAS GOLDFINCH. *Astragalinus psaltria psaltria*. Two records; May 12, 1924 and May 17, 1924.

PINE SISKIN. *Spinus pinus*. One record, May 11, 1925.

HOUSE SPARROW. *Passer domesticus*. Common at all times. It was noted that this species flocked to the fields and vacant lots to eat grasshoppers when they made their first appearance in numbers.

WESTERN VESPER-SPARROW. *Pooecetes gramineus confinis*. One record, May 12, 1925.

WESTERN SAVANNAH SPARROW. *Passerculus sandwichensis alaudinus*. One record, May 4, 1924.

WESTERN GRASSHOPPER SPARROW. *Ammodramus savaunarum bimaculatus*. One record, May 12, 1925.

WESTERN LARK SPARROW. *Chondestes grammacus strigatus*. One record, April 10, 1925.

WHITE-CROWNED SPARROW, *Zonotrichia leucophrys leucophrys*, and Gambel's Sparrow, *Zonotrichia leucophrys gambeli*. Common in the migration season. The White-crowned Sparrow is a summer resident.

WESTERN CHIPPING SPARROW. *Spizella passerina arizonae*. One record, April 10, 1925.

CLAY-COLORED SPARROW. *Spizella pallida*. One record, May 11, 1925.

GRAY-HEADED JUNCO. *Junco phaeonotus caniceps*. Two records; April 1, 1924 and April 6, 1924.

GREEN-TAILED TOWHEE. *Oberholseria chlorura*. One record, July 11, 1925, from Fort Collins. This species was common at higher altitudes along the Eastern Slope.

BLACK-HEADED GROSBEAK. *Hedymeles melanocephalus*. A common summer resident in and about towns. First arrival noted on May 12, 1924.

LAZULI BUNTING. *Passerina amoena*. Common summer resident. Appeared in numbers about the middle of June.

LARK BUNTING. *Calamospiza melanocorys*. An abundant summer resident east of Fort Morgan. Abundant at Julesburg. Less common at Greeley. A few records from the foothills region between Loveland and Fort Collins.

CLIFF SWALLOW. *Petrochelidon lunifrons lunifrons*. A summer resident in 1924 and 1925.

BANK SWALLOW. *Riparia riparia*. Although supposedly rare in Colorado this species was observed nesting near Greeley in 1924 and 1925. A colony was located in a sandy bank not far from the Cache la Poudre River. The colony contained about twenty adult birds.

RED-EYED VIREO. *Vireosylva olivacea*. One record, June 8, 1925, near Fort Collins.

YELLOW WARBLER. *Dendroica aestiva*. An abundant summer resident. The first arrivals were noted on May 12, 1924 and May 13, 1925. Young birds were able to fly on July 13, 1924.

AUDUBON'S WARBLER. *Dendroica auduboni auduboni*. Common during the migration season. First spring arrivals noted on May 13, 1925.

REDSTART. *Setophaga ruticilla*. One record, May 12, 1924.

DIPPER. *Cinclus mexicanus unicolor*. Typically a bird of the mountain streams, this species was recorded from the foothills region near Loveland on February 15, 1924.

WESTERN MOCKINGBIRD. *Mimus polyglottos leucopterus*. A regular but not common summer resident. Recorded on May 12, 1924 and June 30, 1925.

CATBIRD. *Dumetella carolinensis*. A fairly common summer resident in the neighborhood of towns.

BROWN THRASHER. *Toxostoma rufum*. One record, May 28, 1925.

WESTERN HOUSE WREN. *Troglodytes aedon parkmani*. One record, May 28, 1925.

RED-BREASTED NUTHATCH. *Sitta canadensis*. One individual of this species was attracted to a piece of suet placed on a window sill on several occasions during January and February, 1924.

LONG-TAILED CHICKADEE. *Penthestes atricapillus septentrionalis*. Three records; January 15, 1924, April 1, 1924, and May 28, 1925.

RUBY-CROWNED KINGLET. *Regulus calendula calendula*. One record, February 15, 1924.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. A common migrant. First spring record on May 12, 1924.

WESTERN ROBIN. *Planesticus migratorius propinquus*. An abundant summer resident. First spring record on February 15, 1924.

MOUNTAIN BLUEBIRD. *Sialia currucoides*. Common as a migrant. First arrival noted on March 4, 1925, near Loveland.

#### SUMMARY

The chief inference drawn from two years of study of the birds in this region was that certain species are tending to extend their ranges into Colorado from the northeast. After all, this is not at all surprising, in fact it is just what might be expected under the existing circumstances. A new region has been opened to agricultural pursuits, insects that feed upon the crops have become abundant, and the birds which feed upon the insects extend their ranges as an adjustment in the economy of nature.

Perhaps we should expect a more marked movement than has actually materialized. However, there are at least two factors that would tend to hinder or delay such an extension of geographical ranges. The region has its own native fauna which would offer strong competition for any new species. For instance, the House Finch seems to have no difficulty in holding its own in competition with the House Sparrow. Then too, the irrigated and cultivated region consists of a belt of land lying along the foothills. Aside from the South Platte Valley which extends into Colorado diagonally from the northeast, the eastern plains are comparatively barren and treeless. Hence there would be little incentive for a westward movement of birds except along the Platte River.

The species which seem to have become more common in northeastern Colorado in recent years are the Bob-white, the Yellow-billed Cuckoo, the Blue Jay, and the Bronzed Grackle. To this list might be added the Kingbird, the Western Crow, and the Bank Swallow.

Just how important such a movement, if it really exists, may prove to be is a question that cannot be answered at the present time. It would seem possible, however, that the movement might become more marked as more land in northeastern Colorado is opened to cultivation.

COE COLLEGE.

CEDAR RAPIDS, IOWA.



# THE WILSON BULLETIN

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## EDITORIAL

THE ANNUAL MEETING for 1930 of the W. O. C. will be held at Cleveland, Ohio, in conjunction with the meeting of the American Association for the Advancement of Science, and the dates have been fixed for Monday and Tuesday, December 29 and 30. It is not too early now to begin to plan a paper for this meeting.

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THE COLORED PLATE in this issue again appears through the courtesy of the Nebraska Ornithologists' Union. Through it we are pleased to introduce a new artist and a new engraver; Miss Iva B. Swenk is the artist, and the Bureau of Engraving, Minncapolis, is the engraver. Professor Swenk's paper on the crown sparrows, in this issue, is a fitting supplement to the Harris's Sparrow article of last year.

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DURING the present year our Secretary has been making a sustained effort to increase the net total of our membership to a point where we can continue regularly the increased size of the BULLETIN. From the beginning of the year to June 1 he has received 136 new member applications. This is an excellent showing and we all trust that he may more than double that number during the remainder of the year. Each member may be of very great assistance by sending additional nominations to the Secretary, who will then extend invitations.

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WORD has been officially sent out that one lone Heath Hen, the last of its race probably, still survives on Martha's Vineyard Island. When the annual Heath Hen census was made March 28 to April 4, 1930, only one male bird was counted, presumably the same one noted in the census one year ago and from time to time since.

FOR SEVERAL YEARS we have been keeping a record of such complete sets of the WILSON BULLETIN as we have learned about incidentally. Only eighteen sets have thus come to our attention, and these are, for the most part, of the "new series". So far as our information goes the only complete set of the "old series" is in the possession of Dr. Jones. Not all of the sets listed below are complete with originals—a number of them contain the reprints; Dr. Jones' set has the originals, but we can not say how many others. We will be glad to learn of other sets, and will print the list again if it is materially increased.

1. Dr. Guy C. Rich, Hollywood, Calif.
2. Dr. J. Grinnell, Berkeley, Calif.
3. Dr. Walton I. Mitchell, Berkeley, Calif.
4. Prof. Tracy I. Storer, Davis, Calif. Nearly complete.
5. Prof. Junius Henderson, Boulder, Colo.
6. T. C. Stephens, Sioux City, Iowa.
7. Prof. A. W. Schorger, Madison, Wisc.
8. University of Wisconsin Library, Madison, Wisc.
9. R. M. Barnes, Lacon, Ill.
10. Clarence Bretsch, Gary, Ind. Nearly complete.
11. Prof. Lynds Jones, Oberlin, Ohio.
12. Oberlin College Library, Oberlin, Ohio.
13. Maunsell S. Crosby, Rhinebeck, N. Y.
14. Bradshaw H. Swales. Deceased.
15. Dr. H. C. Oberholser, Washington, D. C.
16. Smithsonian Institution, Washington, D. C.
17. U. S. National Museum, Washington, D. C.
18. Royal Hungarian Institute of Ornithology, Budapest, Hungary.

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The Seventh International Ornithological Congress was announced to take place during the first week of June at Amsterdam, Holland. This Congress was held at five-year intervals until interrupted by the war. The Third Congress was held in Paris in 1900, next in London in 1905, and then in Berlin in 1910. The meetings were resumed in 1926 with the Sixth Congress in Copenhagen.

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IN THE ORIGINAL COPY of his paper on the Crown Sparrows, in this issue of the BULLETIN, Professor Swenk cited the specific name of the Gambel's Sparrow as *gambelii*, in conformity with Opinion 8 of the International Zoological Commission, but departing from the spelling given in the third edition of the A. O. U. Check List. The Editor, not being an expert on nomenclature, relies entirely upon the latter for the spelling of scientific names; this is done in the interest of uniformity. Hence an endeavor is made to bring papers into conformity with the A. O. U. Check-List—even when the International Code may be to the contrary. We will just as conscientiously follow the forthcoming check-list, even in a reversal of previous usage.

## GENERAL NOTES

Conducted by M. H. Swenk

**The Red-shafted Flicker in Tulsa County, Oklahoma.**—Although the Red-shafted Flicker (*Colaptes cafer collaris*) was reported by Miss Edith R. Force as occasional at Tulsa, Oklahoma, and vicinity (The Birds of Tulsa County: Proc. Okla. Acad. Sci., ix, p. 69, 1929), the first specimen known to be collected in this locality was taken eight miles southwest of Tulsa on January 20, 1930. The specimen is now in our personal collection.—MR. AND MRS. A. E. GILMORE, *Tulsa, Okla.*

**Early Robins on Long Island.**—Three Robins (*Planesticus migratorius migratorius*) were seen at Brightwaters, Long Island, New York, on February 12, 1930. The record for Long Island, as given in Griscom's Birds of the New York City Region (1923), is February 23. However, Raymond H. Torrey of the New York Evening Post, reports Robins at Alley Pond, near Douglaston, on February 8, 1930.—WARREN J. WILLIS, *Bellerose, L. I., N. Y.*

**The Olive-sided Flycatcher in Iowa.**—During the latter part of August, 1928, T. C. Stephens, Stubert Stephens, and the writer made a tour of the Iowa State Parks. The purpose was to see our parks and to make observations of bird life.

The presence of migrating Olive-sided Flycatchers (*Nuttallornis borealis borealis*) was noteworthy. The first bird was listed near Rice Lake in Worth County on August 24; then at the following places: August 25 at Fort Atkinson in Winneshiek County; August 27 at Backbone State Park in Delaware County; August 28 near Mt. Vernon in Linn County, and at Iowa City in Johnson County; August 29 near Mt. Pleasant in Henry County. August 30 at Keosauqua State Park in Van Buren County; August 31 near Indianola in Warren County and near Winterset in Madison County; and September 1 at Devils Backbone State Park in Madison County.—WILLIAM YOUNGWORTH, *Sioux City, Iowa.*

**Concerning a Young Snowy Egret in Maryland.**—In going over a flock of white herons at Chesapeake Beach, Maryland, September 6, 1929, the writer detected one individual which up to the present time has not been definitely identified. A group of three birds were under observation for at least fifteen minutes, at a distance of perhaps fifty feet, 8x binoculars being used. Two of these individuals were without question first year Little Blue Herons (*Florida caerulea*), the bill with its varying shades of blue, greenish lores, the slate-blue tipped primaries, and the greenish-yellow legs and feet being very readily seen. The third member of this group had a pure black bill, yellow lores, but the legs were the same color as that of the other birds, and when they jumped up, this one had no markings on its primary tips, being pure white. The sun was directly overhead, and as the day was cloudless, light conditions were excellent.

I believe that this third bird was the Snowy Egret (*Egretta candidissima candidissima*) and a bird of the year. Forbush (Birds of Massachusetts, i, p. 330, 1925) has this to say: "legs and feet at first olive (Audubon); young in October have legs yellowish-green marked black and toes greenish-yellow." This is the only statement that I can locate that tallies with the bird I saw. I wish that some one with a definite knowledge on this point would settle the question for me.—WILLIAM HOWARD BALL, *Washington, D. C.*

**Crossbills in Michigan.**—When winter storms sweep the North and the ground is covered deep with snow, as one wanders through field and wood only a few bird species are present. Such was January 28, 1923, as, warmly dressed, I had waded through the snow to a little tamarack swamp near Battle Creek. There had been very few birds observed, but voices came to me from the marsh indicating that here the birds had selected a winter feeding place. It had been here, on a cold snowy day two weeks previous, that both a Bluebird and a Robin had been noted, joined in search for food with the Chickadees, Nuthatches, Downy and Hairy Woodpeckers, Brown Creeper, Tree Sparrows, and Juncos. Also the Pine Siskin, a covey of Quail and one Ruffed Grouse.

These birds were again there except that nothing could be found of either the Bluebird or Robin. Two Cardinals had joined the flock, also a Song Sparrow near the grassy edge of the marsh and some Blue Jays. But most of all, seven birds in a larch tree attracted my attention. They were eating seeds apparently from small cones. They were Red Crossbills (*Loxia curvirostra minor*). Their whistling calls and noisy rustling of cones while feeding readily located them.

But these birds were only part of the flock, several others being observed, while nearer to the ground, eating seeds, was another crossbill, a lighter colored bird with two distinct white wing bars and a black tail. This was a White-winged Crossbill (*Loxia leucoptera*), and proved quite unafraid, allowing me to approach within five or six feet before flying. When, the next week, on February 4, I returned, there were four of this species observed and none of the Red Crossbills. Since then neither of the species has ever been observed. Each winter the little tamarack swamp is searched, but each year brings the same result—no crossbills.—LAWRENCE H. WALKINSHAW, *Battle Creek, Mich.*

**A Phoebe Nest in an Abandoned House.**—While passing by an abandoned farm two miles west of Burton, Ohio, on June 5, 1927, a pair of the Phoebe (*Sayornis phoebe*) were noticed flying in and out of a two by three inch opening in a broken window pane of the kitchen. The opening was closed, and on entering the house the nest was found on a wooden mantel about five feet above the floor. Alarmed by the warning cries of the parent birds, the five young left the nest, flying to the entrance window, where one of them, together with the adult birds, succeeded in escaping. The remaining four were marked with bands numbered 193548, 193549, 193550, and 193551.

Scattered on the floors of the farm buildings were many poultry feathers, similar to those which had apparently been used in the construction of the nest, but due to the interval of several years since the farm had been abandoned, all parasites must have disappeared from the feathers, as no parasites were to be found either on the young or in the nest.

If it is true that the male usually selects the territory or general location of the nesting site while the female does the greater part of the nest building, then in this instance the male bird showed a successful pioneering spirit in selecting this location, but the female was more conservative and built the customary moss covered nest, though the green color of the moss contrasted sharply with the yellow painted mantel and cream colored wall paper.—E. C. HOFFMAN, *Lakewood, Ohio.*

**The Lark Sparrow Nesting in Schuyler County, Illinois.**—While studying the nesting habits of birds during the past summer (1929), a nest of the Lark Sparrow (*Chondestes grammacus grammacus*) was brought to my attention. This nest was located on June 20, by Earl Ward, a farmer, who lives four miles southwest of Pleasant View, Illinois. The nest was found in a corn field, about 150 yards from the barn and 100 yards from an adjoining clover field. It was placed in a small depression at the base of a hill of corn, and was protected from view by a smartweed. One could approach to within six or eight feet of the nest and the old bird would sit perfectly quiet. A visit to the nest on July 15 revealed that it had been abandoned. At this time the smartweed was cut aside and a photograph made. There are comparatively few birds that nest in the corn field, and perhaps this is not a common nesting site for the Lark Sparrow.—R. O. MALCOMSON, *Sioux City, Iowa.*

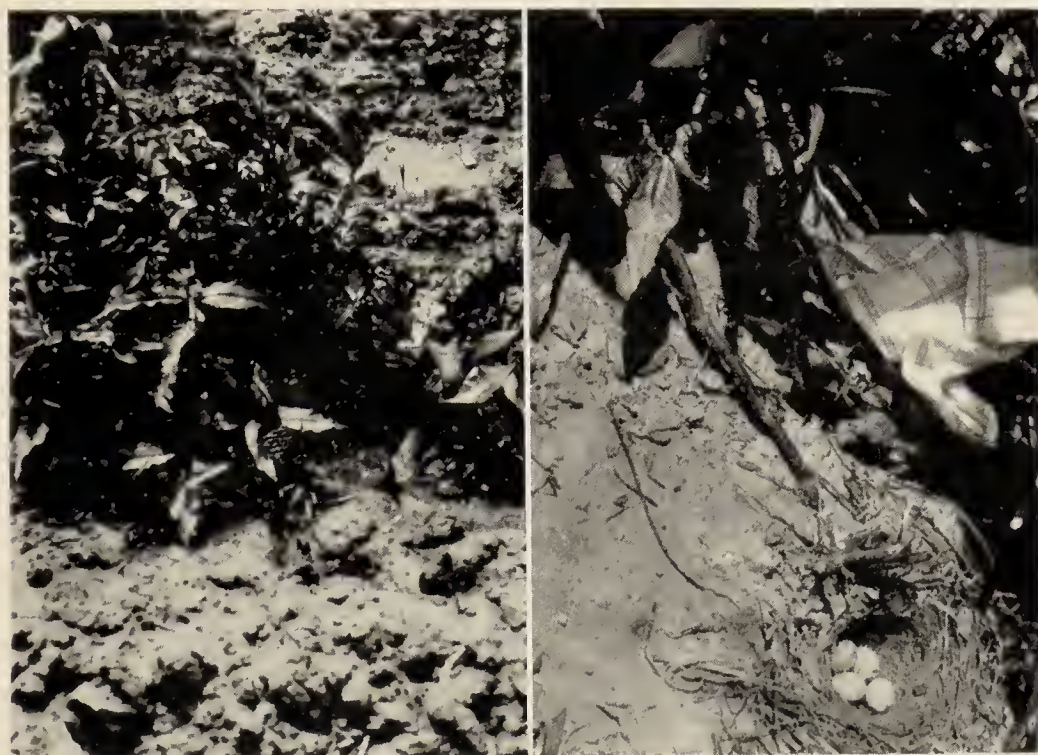


FIG. 9. Nest of the Lark Sparrow in a corn field, concealed (left), and exposed (right).

**The Fall Migration at Cleveland's Public Square.**—The Public Square in Cleveland consists of four sections with small patches of grass containing a few shrubs, small plane trees and flower beds, hemmed in by busy streets and tall buildings. Each of the sections is crossed by sidewalks which bear a heavy pedestrian traffic.

The normal bird life of the Square consists of a large flock of pigeons. As an adjunct to this flock there are many English Sparrows, which live upon the leavings from the pigeons' table. In recent years the Starlings have come to use the Square as a roosting place in winter, but are usually lacking during the day and all summer.

All this does not seem to portray a place which would be attractive to native wild birds, even as a stopping place in migrations, but between September 6 and December 5, 1929, a period of just three months, I was fortunate enough to identify twenty-one species, as follows:

Species	First Record	Last Record	No. of Days Seen	Largest No. in One Day
Herring Gull .....	Nov. 8		1	1
Sparrow Hawk .....	Sept. 7	Nov. 7	6	2
Least Flycatcher .....	Sept. 7		1	1
White-crowned Sparrow .....	Oct. 2	Oct. 16	11	4
White-throated Sparrow .....	Sept. 16	Nov. 25	52	23
Tree Sparrow .....	Nov. 6	Nov. 20	10	1
Slate-colored Junco .....	Oct. 4		1	1
Song Sparrow .....	Sept. 30	Dec. 5	36	2
Lincoln Sparrow .....	Sept. 18	Oct. 8	15	3
Swamp Sparrow .....	Oct. 1	Nov. 15	28	2
Tennessee Warbler .....	Oct. 2		1	1
Black-throated Blue Warbler.....	Oct. 8		1	1
Blackpoll Warbler .....	Sept. 30	Oct. 4	4	2
Palm Warbler .....	Sept. 10	Sept. 11	2	1
Northern Yellowthroat .....	Sept. 6	Oct. 3	15	3
Catbird .....	Oct. 2	Oct. 7	4	1
Winter Wren .....	Nov. 7	Nov. 14	7	1
Golden-crowned Kinglet .....	Oct. 14	Oct. 25	3	3
Ruby-crowned Kinglet .....	Oct. 2	Oct. 15	5	1
Olive-backed Thrush .....	Oct. 2		1	1
Hermit Thrush .....	Oct. 7		1	1

At least one visit was made every day in this period, with the exception of Sundays, of which there were thirteen, and three other days. There were only seven days on which no uncommon birds were found and six of these were in the last week, following cold weather and a heavy snow storm.

One of the most interesting features observed was the change in temperament which occurred in a number of species soon after their arrival. The most outstanding example of this change was the Winter Wren, apparently one of the most timid birds once its curiosity is satisfied, which fed in the grass not two feet from a dozen watchers, and allowed a man to reach down and pick it up. When the bird was replaced on the ground it hopped a few feet away and resumed its feeding, although it was careful not to allow a repetition of the incident. Others, especially the White-throated Sparrows and Swamp Sparrows, soon became quite fearless and not only held their own against the English Sparrows, which bullied them at first, but finally became the undisputed masters of their particular grass plots or shrubs. This attribute of fearlessness made the birds much easier to study, particularly in the case of the more obscurely marked species, such as the Lincoln's Sparrows and Blackpoll Warblers, both of which permitted approach within three or four feet without more than a casual interest in the observer. All of the birds seemed to have full use of their faculties and apparently were not injured or disabled in any way.

Of the twenty-one species observed, two may be expected to appear at intervals throughout the winter, the Sparrow Hawk, which winters about the cornices of office buildings in the downtown section of the city, and the Herring Gull, which frequently flies low over the Square on foraging trips along the nearby Guyahoga River, and from Lake Erie which is about a half mile north of the Square. The other nineteen species evidently occurred strictly as migrants. The

largest number of species seen in one day occurred on October 2, a cold, cloudy day with a gale blowing in from the lake, when eleven species, totalling thirty-two or more individuals, were found. The close proximity of the Lake is the probable answer to the question of such unexpected luck at bird study in this place. In the spring migration, when so many birds were not seen, they probably start their flight across the Lake from a point inland from the city, and pass over the Square while they are still fresh and strong. The sparrows and other granivorous species should be able to find plenty of crumbs and scraps of food, but it is a question just how much food is available to insectivorous birds in this grimy, noisy spot, where only oriental plane trees and willows have been able to survive the smoke and other impurities of the air.—WILLIAM H. WATERSON, *Cleveland, Ohio.*

**Intimate Nestings of the Brown Thrasher.**—While myself and family were living on a farm near Thornburg, Iowa, some years ago, we had a thriving rose bush standing directly in front of the kitchen window and close up; so close in fact that some of the foliage and roses touched the glass. One season the Brown Thrashers (*Toxostoma rufum*) made their home in this rose bush. Their nest was twenty inches from the window glass. Just inside the window stood a sofa upon which our little girl, about three years old, was playing and frolicking around a good share of the time. This did not disturb the birds in the least. And what glorious floods of melody, chanting, and advice the male bird used to give us from the top of a tree near by!

But, alas, during the time the birds were incubating a fearful wind and rain storm came and whipped the rose bush about so badly that the nest was blown out and the broken eggs scattered over the ground. Their next and successful attempt was in an Osage hedge fence forty feet from the front door.

More recently a pair of Brown Thrashers made their nest in some grape vines on top of the garden fence near our residence in the city. A public alley, frequented by autos and other vehicles as well as by pedestrians and dogs, passed one side of this fence. Near the other side was a private walk over which members of the family passed many times each day. Yet the birds successfully raised a brood of three young at this place.—E. D. NAUMAN, *Sigourney, Iowa.*

**Canada Geese Review a Parade of Ducks.**—Mrs. M. A. Hall has recently described to me the following interesting observation: "On January 26, 1929, I witnessed from my hunting blind a very remarkable performance, participated in by Canada Geese and several species of wild ducks. My blind is on the point at the east side of John's cove, on the Gulf of Mexico shore about a mile east of Wakulla Beach, Florida.

"It had been foggy all forenoon and I was waiting in the blind for the geese to come in to the marshes on the tide. About 3 p. m. the fog lifted and I saw directly opposite me across the little channel a single file of between 250 and 300 Canada Geese. These geese were all facing my way, heads up and not feeding. In a few minutes ducks began to come in on the tide between me and the geese. They were not feeding, merely swimming and drifting. There were several species of ducks—some 300 Mallards and Black Ducks, also Redheads, Canvasbacks, Baldpates, Blue-winged Teal, Scaups, and Mergansers. Besides these there were about a dozen ducks that I took to be Old Squaws.

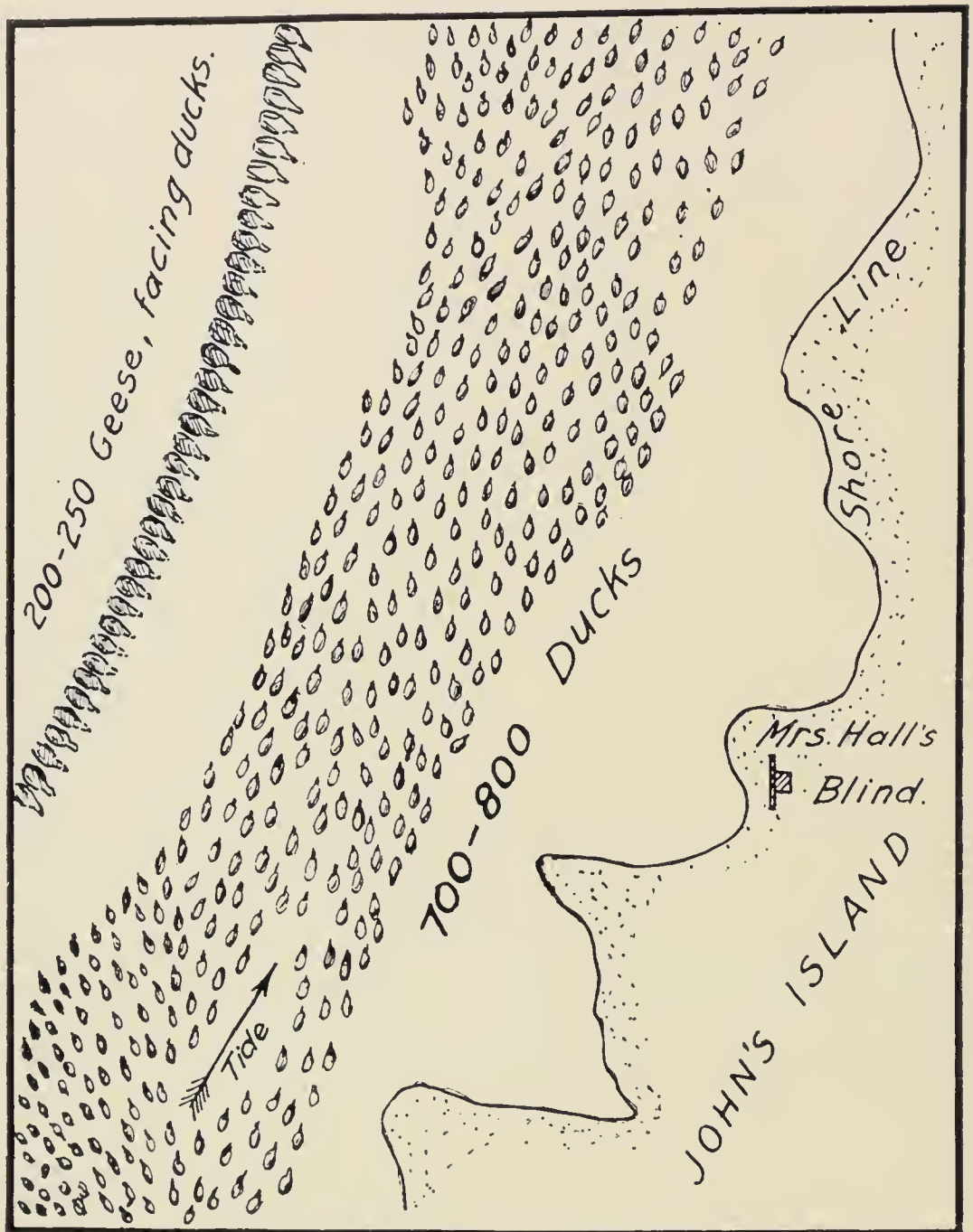


FIG. 10. Diagram of the "duck parade" as described in Mr. Fargo's note.

"Other ducks of these species would from time to time fly in from the Gulf and join the flock, until there were from 700 to 800 ducks assembled. No other ducks were in sight anywhere. The assembled flock of ducks continued to drift or swim along with the tide and none were feeding although this is their favorite feeding place. The ducks were in a great mass formation, the geese in a close single rank, heads up facing the ducks.

"For a time the geese passed slowly along on the tide, but when the ducks had all passed by the geese turned about and swam upstream. The parade was over. The ducks went to feeding.

"I have watched and hunted wildfowl here for many years, but never before have I seen any performance like this one. Was it accidental or had it some significance?"—WILLIAM G. FARGO, *Jackson, Mich.*



## ORNITHOLOGICAL LITERATURE

BIRDS OF MASSACHUSETTS AND OTHER NEW ENGLAND STATES. Part III. Land Birds from Sparrows to Thrushes. By Edward Howe Forbush. Issued by authority of the [Massachusetts] Legislature, 1929, and distributed by the Secretary of the Commonwealth (Room 118, State House, Boston). Pp. i-xlviii+1-466. Col. pls. 63-93 (30). Figs. 68-97. Distribution maps, 17, text figs. 23, and a portrait of Mr. Forbush as a frontispiece. Price, \$5.00.

This volume forms the third and concluding one of the series. The preceding volumes were reviewed in the *WILSON BULLETIN* for March, 1926 (XXXVIII, pp. 60-61) and for June, 1928 (XL, pp. 118-119). Before the last volume was published the author passed away, so that the entire work now fittingly becomes a monument to the life work and memory of Mr. Forbush, not alone in his native state, but in the scientific world in general.

The present volume contains a biography of Mr. Forbush by Dr. John B. May, upon whom also rested the general editorial responsibility for the entire volume. Volume III treats of all of the sparrows and of all of the families on to the end of the present A. O. U. Check-List. The text follows the same plan of the preceding volumes, and we need not repeat the comments made in our earlier reviews of this work. The third volume contains the indexes for the three volumes.

The three volumes contain ninety-three colored plates, thirty of which are in the present volume. Of the latter seven are by Fuertes, the remainder are by Brooks. This series of plates alone will make the work useful to students beyond the territory covered by the text.

No ornithological work since Coues' Key impresses us as being so generally useful to the increasing group of amateur ornithologists as this one by Forbush, taking into consideration description, illustration, and cost. It is a magnificent piece of work, for which the State of Massachusetts may be proud, and the rest of us grateful.—T. C. S.

BIRD SONG. By Aretas A. Saunders. New York State Museum Handbook No. 7, Albany, N. Y., 1929. Pp. 1-202. Price, 75 cents.

This booklet is issued as one of the "handbooks" of the New York State Museum. It may be considered monographic in the range of the treatment of the subject of bird song, though it may not be so complete in reference to the literature and in the bibliography. The appended bibliography is a very useful one, nevertheless. It would be superfluous to attempt in a review to outline the subject matter; for a glance at the table of contents suggests that almost any topic concerning bird song is discussed. The author has given considerable study to the various methods of representing bird song graphically, and the pages on this subject will doubtless be of interest to many. We judge this booklet to be among the most readable and interesting ornithological papers which have recently appeared, being devoid of technicality, yet comprehensive and scientific.—T. C. S.

THE BOOK OF BIRD LIFE. By Arthur A. Allen. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, 1930. Pp. i-xxii+1-426. Figs. 1-275, and colored frontispiece. Price, \$3.50.

So far as we know Dr. Allen holds the only college or university chair of ornithology in the country. The present volume is another evidence of his industry and achievement in this special field of biology. Perhaps the noteworthy feature of this book is the very large number of original photographic illustrations, in the making of which Dr. Allen is a past master. We marvel not so much at the technical skill, but at the patience and time necessary to secure the results. The book is divided into twenty chapters some of which cover the subjects of ancestry, classification, distribution, ecological communities, migration, courtship, home-life, adaptations, coloration and molt, economic value, and various methods of bird study, including study of nests, bird photography, bird banding, care of wild bird pets, etc., etc. It is to be seen that a wide field is covered. At the close of each chapter there is a short list of germane reading references. The text may be summarized as a simple and reliable presentation of the broader biological aspects of ornithology, and it will serve as an excellent introduction to the subject. The publishers have not made the book so attractive externally as might have been expected, but it is substantially bound and appears to be durable.—T. C. S.

THE NATURAL HISTORY OF THE DOUBLE-CRESTED CORMORANT (*PHALACROCORAX AURITUS AURITUS* (LESSON)). By Harrison Flint Lewis. Ottawa, Canada (H. C. Miller, 175 Nepcan St.), 1929. Pp. 1-94. Figures 14, including 10 halftones, 2 drawings, and 2 maps. Price, 75 cents.

Monographic papers, such as the one here mentioned, are always of the greatest interest and value. What a millenium it will be when we can have so complete a treatment of every species among North American birds! Seasonal range and migration are fully treated. All known breeding colonies of this subspecies are listed, totalling 94 colonies, with a breeding population of 21,476 birds. The author estimates that there must be enough unknown colonies to bring the total up to 115, with a total population of about 40,000. The surprising thing about these figures is that they are so small. Certainly, the future will have to balance this species very nicely in order to avert disaster.

Many new observations on courtship and mating are presented, and the author believes that the male takes the lead in this matter, as well as in the selection of the nest-site. The birds do not develop full crests until the fourth year. At the close of the paper the author enumerates various lines of needed research which will be of interest to those in position to pursue a study of this species. A very full bibliography is appended, and good bibliographies always represent labor and are correspondingly useful. One may find it difficult to keep up with all the current publications in the field of ornithology, but this paper should not be overlooked by the earnest student of birds.—T. C. S.

THE EUROPEAN STARLING ON HIS WESTWARD WAY. By Marcia Brownell Bready. The Knickerbocker Press, New York, 1929. Pp. i-xxvi+1-141. 1 colored plate. Price, \$2.

Part I is devoted to the economic value; Part II, to the song; Part III, to systematic relations and natural history. It is clear that Mrs. Bready has risen to the defense of the Starling. In dealing with the question of economic value the author has selected some of the many current facts to the advantage of this species. She very effectively plays the role of defense attorney. After presenting many facts and figures to prove the beneficial status of the Starling as an insect destroyer, the author brings in the testimony of entomologists to the effect that insect collecting has not been noticeably spoiled by the Starling's predaceous work, and thus scores twice for the bird.

The real contribution of this book probably lies in the three or four chapters on the Starling's song. Besides showing the simple beauty of the Starling's song the author carries out a philosophical analysis of this song to follow which fully requires some knowledge of harmony and counterpoint. The melodies recorded by the author as having been sung by the Starling at Bay Ridge show the use of every tone of the diatonic major scale, and the major chord and its relative minor. When one reads the melody which uses the C major triad followed by its dominant minor (G minor) triad, or the melody using all the tones of a diminished seventh chord, one is indeed tempted to acknowledge that the Starling's musical fundamentals are not much inferior to the present day music of man. Mrs. Bready's suggestion of a parallelism between the development of the Starling's song and that of human music seems therefore worthy of consideration. The reviewer is under obligation to Professor James Reistrup for collaboration in estimating the musical discussion in this work.—T. C. S.

THE SUMMER BIRDS OF THE NORTHERN ADIRONDACK MOUNTAINS. By Aretas A. Saunders. Roosevelt Wild Life Bulletin, Vol 5, No. 3, 1929. Pp. 323-499, Colored pls. 1-2, Figs. 93-160, Contour maps 7-8. Price, \$1.

This Bulletin is a convenient guide for the study of birds in the Adirondack Mountains. Some geographic and ecologic discussion precedes the catalogue of birds. Each species is discussed under the headings, description, identification, voice, occurrence, habitat. Ten pages are devoted to the relations between the birds and the forests. Finally, there is reprinted the list of summer birds of the Adirondacks originally published in 1877 by Theodore Roosevelt and H. D. Minot, including 97 species. Saunders' present list includes 121 species.—T. C. S.

BIRDS OF A LIMITED AREA IN EASTERN KANSAS. By Jean M. Linsdale. Reprinted from Univ. Kansas Sci. Bull., XVIII, No. 11, April, 1928. Pp. 517-626.

Dr. Linsdale spent 200 days in field work (during 1921-1925) in a limited area along the Missouri River in Kansas. On the basis of this work a number of papers have been published. Two papers on the ecology have appeared respectively in the WILSON BULLETIN and the *University of Kansas Science Bulletin*. The paper here noticed is an annotated list of the birds found.—T. C. S.

RELATIONS BETWEEN PLANTS AND BIRDS IN THE MISSOURI RIVER REGION. By Jean Linsdale. Reprinted from the Univ. Kansas Sci. Bull., XVIII, No. 10, April, 1928. Pp. 499-515.

This paper presents a list of the more important trees and shrubs in the lower Missouri Valley, with a discussion of the relations of bird life to them, especially touching on their use for suitable nesting sites, food, shelter, and nest materials. The text indicates keen and careful observation, and presents a most interesting collection of commonplace facts which are usually taken for granted by writers. Apparently, the author has given most attention to the location of nests; we would have welcomed a similar close account of the food relations.—T. C. S.

SOME BIRDS OF MARYLAND. By T. Gilbert Pearson. Published by the Conservation Department of the State of Maryland. Pp. 1-70, 32 colored plates. 1929.

Another attractive state brochure on the common birds, well written and beautifully illustrated. Thirty-two species are given each one page of discussion. Each species is illustrated by a colored plate—eighteen by Horsfall, six by Brooks, six by Sawyer, and two by Fuertes. The coloring of one or two of the plates is open to criticism—the one of the Barn Swallow seems to be especially faulty. While no price is stated, interested persons may probably secure a copy, so long as the supply lasts, by addressing Hon. E. Lee LeCompte, State Game Warden, 512 Munsey Bldg., Baltimore, Md.—T. C. S.

THE RING-NECKED PHEASANT—ITS HISTORY AND HABITS. By Dana J. Leffingwell. Occasional Papers of the Charles R. Conner Museum, Pullman, Washington, 1928.

We find here a very full discussion of this bird as it occurs in North America. Its general distribution throughout the world is presented rather fully. The habits and the life history are then discussed more fully than we have seen in any other paper. An excellent bibliography is included. The author reviews the evidence for and against the pheasant as an economic asset, and comes to the conclusion that the balance is in favor of the bird. But to hold this status the bird must be prevented from purloining the planted kernels of corn, by applying to the latter a coating of tar; this task devolves upon the farmer. The author found that corn so treated was delayed in germination about four days. He also states that "There seems to be no basis for the belief that pheasants destroy the nests or interfere seriously with other game birds."—T. C. S.

A SYSTEMATIC CLASSIFICATION FOR THE BIRDS OF THE WORLD. By Alexander Wetmore. Reprinted as a separate from Proc. U. S. Nat. Museum, Vol. 76, Art. 24, pp. 1-8. 1929.

This paper of eight pages gives a compact outline of the newer classification of the birds of the world, including all the categories down to, and including, families. It includes the fossil groups also. It is an extension of the same arrangement proposed by the author and the late W. deWitt Miller for the forthcoming A. O. U. Check-List and published in the *Auk* (1926, XLIII, 337-346), and based in general on the system of Gadow. A few changes from the 1926 list are noted, and the name of one superorder is misspelled. This latest arrangement is made up of 33 orders, including 190 families. Those who wish to keep informed on the progress of taxonomic ornithology will find this paper a very useful source of reference.—T. C. S.

A RECOUNT OF THE BALTIMORE ORIOLES NESTING IN MOUNT PLEASANT, IOWA. By H. E. Jaques. Proc. Ia. Acad. Sci., XXXV, 1928, pp. 305-306.

In the winters of 1921 and 1927, after the leaves had fallen from the trees, the author and his students made a count of the nests of this species in the town, and also kept track of the kinds of trees occupied. A total of 123 nests were found in 1921, and 132 in 1927. The soft maple was the preferred tree, the white elm second, boxelder third, with seven other kinds of trees used in less numbers. The constancy in oriole population over a period of six years is quite remarkable. The inference seems to be clear that the birth rate about equals the death rate—that Nature is a very clever adjuster.—T. C. S.

HOW TO MAKE A CAT TRAP. By James Silver and Frank N. Jarvis. Leaflet No. 50, U. S. Biol. Survey, Washington, D. C., 1929. Pp. 1-4. Price, 5 cents.

Full directions for making and using such a trap are given.—T. C. S.

"FRAMING" THE BIRDS OF PREY. An Arraignment of the Fanatical and Economically Harmful Campaign of Extermination Being Waged Against the Hawks and Owls. By Davis Quinn. Privately published by the author, 3548 Tryon Ave., Bronx, New York, N. Y., 1929. Pp. 1-20. Free.

The author makes a vigorous protest against the indiscriminate slaughter of the birds of prey. Considerable information on this subject is here gathered together in compact form.—T. C. S.

BIRDS AND MAMMALS OF THE MOUNT LOGAN EXPEDITION, 1925. By Hamilton Laing, P. A. Taverner, R. M. Anderson. In Bulletin 56, Annual Report for 1927, National Museum of Canada, 1929. Pp. 69-107.

Eighty-five birds and seventeen mammals are listed as a result of this expedition. The work of this expedition seems to have been done chiefly in the southwestern corner of the Yukon Territory. The annotations contain numerous critical notes of much interest and value, e. g., on the Solitary Sandpiper. We are glad to observe that a technical and scientific paper can be prepared with binomial nomenclature, as evidenced here.—T. C. S.

OSTEOLOGY OF THE CALIFORNIA ROAD-RUNNER RECENT AND PLEISTOCENE. By Leigh Marian Larson. Univ. Calif. Publ. Zool., Vol. 32, No. 4, 1930. Pp. 409-428, Figs. 1-3.

This essay will be of interest to morphologists. Most of us would not attempt to identify a Road-runner which lived 100,000 years ago. But the specialist not only recognizes the bones but points out the differences from the bones of the corresponding bird that lives today, and furthermore speculates upon the ecological relationships of the ancient race. Osteological evolution in this bird has advanced so slightly that the living race and the Pleistocene race are both referred to the same species.—T. C. S.

BIRDS OF THE PORTLAND AREA, OREGON. By Stanley G. Jewett and Ira N. Gabrielson. Pac. Coast Avifauna, No. 19, Berkeley, California, 1929. Pp. 1-54, Figs. 1-21. Price, \$2.

The authors list 186 birds for the area immediately surrounding Portland. Twenty-one introduced species and six hypothetical species are also given. A list of this kind is useful for local purposes and also to outsiders who may be spending a vacation in the region treated.—T. C. S.

BIRDS OF THE PAST IN NORTH AMERICA. By Alexander Wetmore. Report Smith. Inst. for 1928, Washington, D. C., 1929. Pp. 377-389, Pls. 1-11.

An up-to-date account of American fossil birds is presented in this paper.—  
T. C. S.

MANUAL FOR BIRD BANDERS. By Frederick C. Lincoln and S. Prentiss Baldwin. Misc. Pub. No. 58, U. S. Dept. Agric., Washington, D. C., 1929. Pp. 1-112, Figs. 1-70. Price, 30 cents.

As the title suggests this booklet is a manual of instruction for the bird bander, and, doubtless, most active banders have already received a copy of it. It includes a full discussion of traps of all kinds, minor trapping equipment, bait, bands, reports, etc. The single paragraph on the history of banding seems to be inadequate even for a publication of this kind, though the authors doubtless consider that the history has been sufficiently covered in earlier publications.—  
T. C. S.

THE BIRDS OF DANE COUNTY, WISCONSIN. By A. W. Schorger. Wisc. Acad. Sci. Arts & Lett., XXIV, 1929. Pp. 457-499.

This paper is the first installment of a local list. It follows the new classification, which the A. O. U. is expected to adopt in the new check-list. On this basis the present list covers the ground from Gaviidae to Picidae, inclusive.—T.C.S.

THE WHITE PINE WEEVIL (*PISSODES STROBI* PECK), ITS BIOLOGY AND CONTROL. By Harvey J. MacAloney. Bull. N. Y. State Coll. Forestry, III, No. 1, Feb., 1930.

We mention this entomological paper because of a page (p. 56) of discussion of the role played by birds in checking this insect pest of the forest. At least seven birds are named which feed upon the larvae of this beetle, and the Downy is the only woodpecker included. "The birds actually observed in various localities comprise the white-breasted nuthatch, downy woodpecker, chickadee, rose-breasted grosbeak and certain warblers which were not identified." This is not a positive statement that these birds uncover and eat the larvae from the leader stems of the tree, but the context affords the inference that they do; and we are left to assume that this benefits the growing tree.—T. C. S.

PROPAGATION OF UPLAND GAME BIRDS. By W. L. McAtce. U. S. Dept. Agric. Farmers' Bull. No. 1613, Washington, D. C., 1930. Pp. 1-60, Figs. 1-35. Price, 10 cents.

This is a general discussion of interest primarily to breeders. The greater part of the text refers to the methods of breeding the Ring-necked Pheasant, with some consideration of the Bob-white, Hungariau Partridge, and Wild Turkey. It may probably be assumed that this breeding work has assumed such proportions as to command the time and effort of the scientific staff of the Government. And yet there are many who believe that much of the effort in this direction will eventually work out to the distinct disadvantage of the native birds. Of course, we think that it would be far better to make it possible for these birds to breed naturally and abundantly in their own habitats, and thus to maintain the hunting supply.—T. C. S.

GAME BIRDS SUITABLE FOR NATURALIZING IN THE UNITED STATES. By W. L. McAtee. U. S. Dept. Agric. Circ. No. 96, Washington, D. C., 1929. Pp. 1-23, figs. 1-14. Price, 10 cents.

The first paragraph of this paper is as follows: "Sportsmen share the admiration of nature students for native game birds and will cooperate to the fullest extent in preventing their extermination, but they see the necessity for using exotic species also if the game supply is to be maintained or increased. Such increase is widely demanded, and to effect it necessitates the fostering of birds that respond most profitably to game-propagation methods. Where native game birds are abundant there is little or no need to plant exotic species; but where native species do not supply the demand, foreign game birds are being introduced. Let the native game birds enjoy the protection of game sanctuaries as numerous and extensive as can be afforded, but on those parts of our domain where public shooting is practiced and its continuance is desired, the practical necessities of the situation require the use of species of game birds that will produce the best results, regardless of their origin."

We may accept this meticulously worded statement as the present policy of the Biological Survey and the Department of Agriculture. "Let the native game birds enjoy the . . . sanctuaries" if they can find any, but turn the exotics loose to enjoy the world. And, dear bird lover, if you live near a game bird sanctuary, fortunately, you may now and then see a native game bird, but off the sanctuary expect only aliens. This is now the settled policy of exterminatory displacement of the Biological Survey if Circular 96 means what it implies. We do not for a moment believe that the author of this bulletin prefers exotic to native birds, and we doubt if his personal judgment approves the wholesale importation of foreign species to this country. We can not believe that the scientific staff of the Biological Survey is in favor of this. Our past and present experiences with exotic races would make us all conservative in this direction. There must be sinister pressure from some source behind a policy of this kind. What we need and want is more effort to strengthen our native species—not by artificial propagation, but by regulation and control of the environmental factors, so as to permit the birds to propagate naturally. We do not object to hunting *per se*, but excessive hunting leads to extermination, to which everyone, who has given any consideration to the matter, does object. Let us remove the demand for importation of foreign birds by increasing the abundance of the native species. This is a proper and natural field of effort for the U. S. Department of Agriculture. Importation is the line of least resistance so far as the hunting problem is concerned, and is unworthy of an organization with the potential force of a government bureau. We are constrained to believe that the outlook for native wild life is not bright under the present federal regime. We are glad to call attention to a number of instructive maps in this bulletin, viz., one showing the average annual precipitation of the world, another showing the distribution of the major classes of vegetation over the earth, the average January and July temperatures, distribution of native vegetation in the United States, etc. Then, of course, there are brief accounts of the various game birds, chiefly gallinaceous, which have been introduced into this country or which are recommended for introduction.—T. C. S.

PROPAGATION OF AQUATIC GAME BIRDS. By W. L. McAtee. U. S. Dept. Agric. Farmers' Bull. No. 1612, Washington, D. C., 1930. Pp. 1-40, Figs. 1-25. Price, 10 cents.

The whole subject of artificial propagation is here considered from the practical angle, with special attention to the Mallard and the Canada Goose.—T. C. S.

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The number of mimeographed quasi-publications seems to be increasing—two new ones having come to our attention recently. The *Raven* (Vol. I, No. 1, January, 1930) is issued by the Virginia Society of Ornithology. This publication received a small initial subsidy from the State Fish and Game Commission. (Edited by Dr. J. J. Murray, Lexington, Va., \$1.50 per year). The *Snowy Egret* is a 17-page leaflet issued by the bird students at Berrien Springs, Mich., and is substantially bound with a cover. (\$1 per year, H. A. Olsen, Berrien Springs, Mich.). We have received two more copies of the *Flicker*, issued by the Minnesota Bird Club (Charles Evans, 3250 47th Ave. S., Minneapolis, \$1 per year). The last number received was Vol. II, No. 2, March-April, 1930. *Letter of Information* is issued monthly with regularity by the Nebraska Ornithologists' Union (Prof. M. H. Swenk, Secretary-Treasurer, 1410 N 37th St., Lincoln, \$2 per year). No. 50 is the last issue. *North Dakota Bird Notes* is issued at intervals by Prof. O. A. Stevens, North Dakota Agricultural College, Fargo. The I. O. U. *Bulletin*, issued quarterly by the Iowa Ornithologists' Union has recently appeared in printed rather than mimeographed form, though it retains the same page size. The last issue received was for January-February, 1930. (Edited by Dr. F. L. R. Roberts, Spirit Lake, Iowa, \$1 per year). *Inland Bird Banding News* has issued three numbers (M. J. Magee, Treasurer, Sault Ste. Marie, Mich., \$2.50 per year). *News from the Bird Banders* is issued quarterly by the Western Bird Banding Association, and is very neatly mimeographed on a good quality of paper (Walter I. Allen, Bus. Mgr., 2057 Pepper Drive, Altadena, Calif.).

We may also mention several local publications which appear in print. The *Wren-Tit* is a four-page circular issued by the Santa Clara Valley Audubon Society four times a year (Dr. Gayle B. Pickwell, State Teachers College, San Jose, Calif. The circular alone is 25 cents per year). The *Florida Naturalist* is published quarterly by the Florida Audubon Society (edited by R. J. Longstreet, Daytona Beach, Fla., \$1 per year). We acknowledge the January and April, 1930, numbers, Vol. III, Nos. 2 and 3. The *Murrelet*, which has hitherto been issued as a mimeographed sheet by the Pacific Northwest Bird and Mammal Society, now appears as a 28-page tri-annual printed magazine, and we acknowledge Vol. XI, No. 1, January, 1930, in the new form. The rate is \$1.50 per year, subscriptions to be sent to Leo K. Couch, Old Capitol Bldg., Olympia, Wash. The *Annual Bulletin* of the Illinois Audubon Society for 1930 appeared in April, and contains the customary splendid collection of notes and information. An exceptionally fine photograph of the Wilson's Snipe provides the frontispiece. This does not purport to be a complete list of such publications, but only a record of those which we have received during the last six months or so. We are glad to give all the encouragement we can to these local organizations and publications. They help much to develop interest in ornithology, to preserve the material, and to advance the science. They are all glad to receive subscriptions from any part of the country.



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MEMBERSHIP ROLL OF THE WILSON ORNITHOLOGICAL CLUB

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Ballard, Harlan Hoge, 247 South, Pittsfield, Massachusetts.....1893  
 Burns, Frank L., Berwyn, Pennsylvania.....Founder  
 \*Jones, Dr. Lynds, Oberlin College, Oberlin, Ohio.....Founder  
 Pindar, Dr. L. Otley, Versailles, Kentucky.....Founder  
 \*Sherman, Miss Althea R., National via McGregor, Iowa.....1902  
 Strong, Dr. R. M., 5840 Stoney Island Avenue, Chicago, Illinois.....Founder  
 Widmann, Otto, 5105 Enright Avenue, St. Louis, Missouri.....1897

SUSTAINING MEMBERS

Bailey, Harold H., 206 Exchange Building, Miami, Florida.....1908  
 Baldwin, S. Prentiss, 11025 East Boulevard, Cleveland, Ohio.....1920  
 Bales, Blenn R., M. D., 149 West Main Street, Circleville, Ohio.....1923  
 Barnes, Hon. R. M., Lacon, Illinois.....1909  
 Bent, Arthur Cleveland, 140 High Street, Taunton, Massachusetts.....1893  
 Bishop, Dr. Louis B., 450 Bradford Street, Pasadena, California.....1903  
 Blain, Dr. Alexander W., 2201 Jefferson Avenue, East, Detroit, Michigan.....1902  
 Boyce, James G., 422 West Ninth Street, Texarkana, Texas.....1924  
 Brandt, Herbert W., 14507 Shaker Boulevard, Cleveland, Ohio.....1914  
 \*Bretsch, Clarence, 690 Broadway, Gary, Indiana.....1925  
 Bruen, Frank, 22 High Street, Bristol, Connecticut.....1902  
 Chambers, W. Lee, 2068 Escarpa Drive, Eagle Rock, California.....1909  
 Coffin, Lucy V. Baxter, care of Marie Baxter, 122 South West Seventh Street  
 Richmond, Indiana.....1906  
 Coffin, Percival Brooks, 5708 Kenwood Avenue, Chicago, Illinois.....1911  
 Colburn, Albert E., 716 South Flower Street, Los Angeles, California.....1928  
 Conover, Henry Boardman, 6 Scott Street, Chicago, Illinois.....1922  
 Crosby, Maunsell S., Grasmere Farms, Rhinebeck, New York.....1904  
 \*Ellis, Ralph, Jr., Jericho, Long Island, New York.....1926  
 Fordyce, George Lincoln, 40 Lincoln Avenue, Youngstown, Ohio.....1914  
 Ganier, Albert Franklin, 2507 Ashwood Avenue, Nashville, Tennessee.....1915  
 Goodrich, Mrs. Calvin, care of University Museum of Zoology, Ann Arbor,  
 Michigan.....1915  
 Gray, D. R., Box 152, Mount Pleasant, Tennessee.....1914  
 Griscom, Ludlow, Museum of Comparative Zoology, Cambridge, Mass.....1926  
 Haarer, John W., 207 St. Joseph Street, West, Lansing, Michigan.....1930  
 Kennard, Frederic Hedge, 246 Dudley Road, Newton Center, Massachusetts.....1922  
 Knickerbocker, C. K., 1214 McCormick Building, Chicago, Illinois.....1916  
 Kuser, J. Dryden, Bernardsville, New Jersey.....1913  
 Loesch, Frank J., Room 1540, 10 South LaSalle Street, Chicago, Illinois.....1928  
 \*Lyon, W. I., 124 Washington Street, Waukegan, Illinois.....1921  
 McIlhenny, Edward Avery, Avery Island, Louisiana.....†1910  
 Magee, Michael J., 603 South Street, Sault Ste. Marie, Michigan.....1919

§Deceased.  
 \*Life Member.  
 †Rejoined.

Mershon, Wm. Butts, Saginaw, Michigan.....	1910
Mills, Weir R., Pierson, Iowa.....	1914
Mitchell, Dr. Walton I., 1644 Visalia Avenue, Berkeley, California.....	1894
Monk, Harry C., Avoca Apartments, Nashville, Tennessee.....	1920
Nelson, Miss Theodora, Hunter College, 66 Court Street, Brooklyn N. Y.....	1928
Norris, Roy C., R. R. B., Richmond, Indiana.....	1921
Osgood, Dr. Wilfred Hudson, Field Museum of Natural History, Chicago, Illinois.....	1910
Perkins, Samuel E., 709 Inland Bank Building, Indianapolis, Ind.....	1924
Phelps, Frank M., 130 Cedar Street, Elyria, Ohio.....	1912
Philipp, Philip Bernard, St. Paul Building, 220 Broadway, New York, N. Y.....	1918
Rich, Waldo L., 15 Rock Street, Saratoga Springs, New York.....	1920
Richmond, Dr. Chas Wallace, 1929 Park Road, N. W., Washington, D. C.....	1922
Roberts, Dr. Thos. S., Museum of Natural History, University of Minnesota, Minneapolis, Minnesota.....	1914
Rogers, Charles Henry, Princeton Museum of Zoology, Princeton, N. J.....	1903
Saunders, W. E., 352 Clarence Street, London, Ontario, Canada.....	1902
Schaefer, Oscar Frederick, 724 Woodbine Avenue, Rochester, New York.....	1921
Scott, R. H., 109 West Main Street, Lansing, Michigan.....	1930
Shearer, Dr. Amon Robert, Mont Belvieu, Chambers County, Texas.....	1893
Simons, Joseph, Room 959, 231 South LaSalle Street, Chicago, Illinois.....	1928
Stephens, T. C., Morningside College, Sioux City, Iowa.....	1911
Stoddard, H. L., U. S. Bureau of Biological Survey, Washington, D. C.....	1916
Sutton, George Mikseh, Bethany, West Virginia.....	1920
Swenk, Prof. Myron H., 1410 North 37th Street, Lincoln, Nebraska.....	1914
*Taylor, Mrs. H. J., 2813 Channing Way, Berkeley, California.....	1916
*Taylor, Dr. A. C., University General Hospital, Madison, Wis.....	1929
Thayer, John Eliot, Box 98, George Hill Road, Lancaster, Massachusetts.....	1903
Tucker, Mrs. Carl Penwood, Mount Kisco, New York.....	1928
Uhrig, Mrs. A. B., Oconomowoc, Wisconsin.....	1926
Willard, F. C., Farmingdale, Long Island, New York.....	1924
Wing, Leonard W., R.F.D. No. 3, Jackson, Michigan.....	1924
Young, Colonel John P., Renwick Drive, Ithaca, New York.....	1913

## ACTIVE MEMBERS

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Anderson, Edwin C., R.F.D. No. 4, Dell Rapids, South Dakota.....	1921
Armstrong, Edward Elton, 2249 Calumet Avenue, Chicago, Illinois.....	†1921
Ayers, Douglas, Jr., 111 Canah Street, Fort Plain, New York.....	1924
Bachmann, Dr. Harrold, 2340 Lincoln Park, West, Chicago, Illinois.....	1928
Bailey, Alfred M., Chicago Academy of Science, Chicago, Illinois.....	1928
Bailey, Mrs. Florence Merriam, 1834 Kalorama Road, Washington, D. C.....	1911
Bailey, Mrs. Mary L., 2109 Nebraska Street, Sioux City, Iowa.....	1918
Baird, Robert L., 279 Oak Street, Oberlin, Ohio.....	1902
Bamberg, John, Y. M. C. A., Memphis, Tennessee.....	1930
Bartsch, Dr. Paul, U. S. National Museum, Washington, D. C.....	1894
Bellah, L. P., Union Station, Nashville, Tennessee.....	1926
Bennett, Walter W., 309 Warnock Building, Sioux City, Iowa.....	†1925
Bergtold, Dr. William Harry, 1159 Race Street, Denver, Colorado.....	1916
Black, J. D., Winslow, Arkansas.....	1925
Blincoe, Benj. J., Route 13, Dayton, Ohio.....	1920
Book, Miss Lois Adelaide, 733 Franklin Street, Columbus, Indiana.....	1930
Bowman, Paul W., George Washington University, Washington, D. C.....	1927
Breckenridge, Walter J., Museum of Natural History, University of Minnesota, Minneapolis, Minnesota.....	1930
Brooks, Major Allan, Okanagan Landing, British Columbia, Canada.....	1930
Bruun, Chas. A., 1510 Central Avenue, Hot Springs, Arkansas.....	1921
Bryens, Oscar McKinley, McMillan, Luce County, Michigan.....	1924
Burdick, Harold C., 232 East Bloomington, Iowa City, Iowa.....	1929
Burdick, Dr. George Merton, Box 176, Milton, Wisconsin.....	1921
Burleigh, Thos. D., 612 City Hall, Asheville, North Carolina.....	1923
Burleigh, Dr. W. J., 53 Aberdeen Place, Hillcrest, St. Louis, Missouri.....	1927

Burtch, Verdi, Branchport, New York.....	1924
Butler, Dr. Amos W., 52 Downey Avenue, Indianapolis, Indiana.....	1911
Butler, Rev. L. Ermil, First Methodist Episcopal Church, Bidwell, Ohio.....	1926
Cahn, Dr. Alvin R., 902 West Nevada Street, Urbana, Illinois.....	1917
Calhoun, Geo. R., 1 Memorial Building, Nashville, Tennessee.....	1928
Carroll, J. J., Box 356, Houston, Texas.....	1926
Cavaness, Sallie E., 600 North Main, Monticello, Arkansas.....	1923
Chapman, Dr. Frank M., American Museum of Natural History, 77th Street and Central Park West, New York, New York.....	1910
Clay, Miss Marcia B., Bristolville, Ohio.....	1925
Clow, Miss Marion, Box 163, Lake Forest, Illinois.....	1929
Coffel, Hal. H., Pennville, Jay County, Indiana.....	1929
Coffey, Ben, 1434 Bank of Commerce Building, Memphis, Tennessee.....	1927
Cole, Dr. Leon J., Agricultural-Chemical Building, Madison, Wis.....	1921
Commons, Frank W., 608 Chamber of Commerce, Minneapolis, Minnesota.....	1923
Cook, G. M., 39 Tod Lane, Youngstown, Ohio.....	1923
Cookman, Alfred, 517 McKinley Avenue, Pomona, California.....	1928
Coryell, Sherman, 1500 Hood Avenue, Chicago, Illinois.....	1920
Coursen, C. Blair, 651 East 69th Place, Chicago, Illinois.....	1927
Danforth, Stuart T., College of Agriculture, Mayaguez, Porto Rico.....	1925
Darling, A. B., 4501 Contry Club Boulevard, Sioux City, Iowa.....	1925
Deane, Ruthven, 1222 North State Street, Chicago, Illinois.....	1910
Deane, Walter, 29 Brewster Street, Cambridge, Massachusetts.....	1903
DeLury, Dr. Ralph E., Dominion Observatory, Ottawa, Ontario, Canada.....	1921
Dickey, Donald R., California Institute of Technology, Pasadena, California.....	1912
Dolman, Helen, 1010 Washtenaw Avenue, Ypsilanti, Michigan.....	1929
Donaghho, Walter, Box 532, Parkersburg, West Virginia.....	1920
Doolittle, E. A., Box 44, Painesville, Ohio.....	1925
Dorsey, George A., Box 163, Emory University, Atlanta, Georgia.....	1927
Douglas, Donald W., 917 Ninth Avenue, Grinnell, Iowa.....	1929
Dunkellberger, Harry W., Box 6, Flourtown, Montgomery County, Penna.....	1922
Dunlap, M. Sigsbee, 8163 Madison, Southgate, California.....	1926
Earl, Thomas M., R.F.D. No. 2, Xenia, Ohio.....	1921
Eddy, Samuel, Zoology Building, University of Minnesota, Minneapolis, Minnesota.....	1925
Ehinger, Dr. C. E., 730 Grand Avenue, Keokuk, Iowa.....	1926
Eifrig, Prof. C. W. G., 1029 Monroe Avenue, River Forest, Illinois.....	1907
Ekblaw, Dr. George E., 233 West Orleans, Paxton, Illinois.....	1914
Ekblaw, Dr. W. Elmer, Clark University, Worcester, Massachusetts.....	1910
Emilio, S. Gilbert, 7 Winter Street, Salem, Massachusetts.....	1930
Evans, Dr. Evan M., 550 Park Avenue, New York City.....	1929
Fargo, W. G., 506 Union Street, Jackson, Michigan.....	1923
Fetter, Dorothy, Winthrop College, Rock Hill, South Carolina.....	1927
Fields, E. A., 2111 Douglas Street, Sioux City, Iowa.....	1925
Fifield, Lewis E., 14 Beekman Street, Plattsburg, New York.....	1923
Fleming, James Henry, 267 Rusholme Road, Toronto 4, Ontario, Canada.....	1906
Flores, Ismael, 16 Basora Street, Mayaguez, Porto Rico.....	1929
Floyd, Joseph L., 1009-11 Geo. D. Harter Bank Building, Canton, Ohio.....	1903
Ford, Edward Russell, 1224 Isabella Street, Wilmette, Illinois.....	1914
Frazer, T. Atchison, M. D., Marion, Kentucky.....	1930
Gabrielson, Ira N., 516 Post Office Building, Portland, Oregon.....	1913
Gault, Benjamin True, 424 South Main Street, Glenn Ellyn, DuPage County, Illinois.....	1895
Gillespie, R., Bay City Business College, Bay City, Michigan.....	1930
Gilliam, R. A., 1123 Cedar Hill Avenue, Station A., Dallas, Texas.....	1924
Gleason, Jr., Clark H., Box 47, Placerville, California.....	1929
Gleason, Louisa R. (Mrs. Clark H.), 700 Madison Avenue, South East, Grand Rapids, Michigan.....	1921
Gloyd, Howard K., University of Michigan, Ann Arbor, Michigan.....	1925
Goddard, Henry N., Western State Normal School, Kalamazoo, Michigan.....	1926
Gowans, Ethel, 308 South Lincoln Street, Kent, Ohio.....	1925
Grass, Arthur M., 339 B Street, N. E., Linton, Indiana.....	1930

Green, Prof. George Rex, Department of Nature Education, The Pennsylvania State College, State College, Pennsylvania.....	1930
Gregory, Stephen S. Jr., Box N., Winnetka, Illinois.....	1922
Grinnell, Dr. Joseph, Museum of Vertebrate Zoology, University of California, Berkeley, California .....	1914
Guest, Marjorie Lee, State Hospital, Athens, Ohio.....	1924
Guthrie, Prof. Joseph E., 319 Lynn Avenue, Ames, Iowa.....	1922
Handley, Chas. O., Ashlund, Virginia.....	1925
Hankinson, Prof. T. L., 96 Oakwood Avenue, Ypsilanti, Michigan.....	1911
Harris, Harry, 5234 Hermosa Avenue, Eagle Rock, California.....	1924
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Haultain, Chas. Frederick, Fox Ranch, Belleville, Ontario, Canada.....	1924
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Heft, Russell D., Kingston, Ohio.....	1928
Henderson, Archibald Douglas, Belvedere, Alberta, Canada.....	1922
Henderson, Prof. Junius, 1305 Euclid Avenue, Boulder, Colorado.....	1903
Herrick, Dr. Francis H., Biological Laboratory, Western Reserve University, Cleveland, Ohio .....	1916
Hine, Professor James S., Ohio State University, Columbus, Ohio.....	1910
Hinshaw, Thomas D., 1908 Scottwood Avenue, Ann Arbor, Michigan.....	1926
Hoffman, E. C., 1041 Forest Cliff Drive, Lakewood, Ohio.....	1925
Holcombe, C. E., 2917 Ezra Avenue, Zion, Illinois.....	1927
Holt, Ernest Golsan, care of Mr. H. B. Leonard, 3951 Forty-fourth Street, Long Island City, New York.....	1926
Honywill, Albert William, Jr., 17400 Wildemere Avenue, Detroit, Michigan.....	1920
Horsky, L. O., Mailing Division, P. O., Burlington Postal Station, Omaha, Nebraska.....	1924
Howell, Arthur Holmes, 2919 South Dakota Avenue, Washington, D. C.....	1921
Hunt, Chreswell J., 810 South Eighteenth Avenue, Maywood, Illinois.....	1904
Hunt, J. Steger, 605 East Fifth Street, Tusculumbia, Alabama.....	1926
Hutchinson, Chas., 500 Crocker Building, Des Moines, Iowa.....	1930
Hyde, B. T. B., 558 Camino del Monte Sol, Santa Fe, New Mexico.....	1928
Johns, Dr. Edwin W., 645 Remington, Fort Collins, Colorado.....	†1925
Johnson, Dr. John C., State Teachers College, West Chester Pennsylvania.....	1926
Jung, Clarence S., 518 Stratford Street, Milwaukee, Wisconsin.....	1921
Kahmann, Karl W., R.F.D. No. 2, Hayward, Wisconsin.....	1914
Kee, Hunter, 36 Ninth Avenue, Marlinton, West Virginia.....	1922
Keyes, Prof. Chas. R., Cornell College, Lock Box J, Mount Vernon, Iowa.....	1925
Kirn, Albert J., Box 157, Somerset, Texas.....	1918
Krczmann, Dr. Paul E., 801 DeMun Avenue, St. Louis, Missouri.....	1924
Lambert, Earl Logan, 237 North First Street, Carthage, Illinois.....	1922
Lancaster, Esther A., Route 3, Hutchinson, Kansas.....	1927
Larrabee, Prof. Austin P., Yankton College, Yankton, South Dakota.....	1921
Laskey, Mrs. F. C., Route 9, Graybar Lane, Nashville, Tennessee.....	1928
Law, J. Eugene, Box 247, Altadena, California.....	1911
Lee, George Frederick, M. D., Ph. D., Florence, South Carolina.....	1926
§Leffingwell, Dana J., Pullman, Washington.....	1926
Lcopold, Aldo, 222 Van Hise Avenue, Madison, Wisconsin.....	1928
Levings, James Eads, 420 West Court Street, Paris, Illinois.....	1929
Lewis, John B., Amelia, Virginia.....	1924
Lewy, Dr. Alfred, 2051 East Seventy-second Place, Windsor Park Station, Chicago, Illinois .....	1916
Lindsey, E. A., Tennessee-Hermitage National Bank, Nashville, Tennessee.....	1924
Lodbell, Prof. Richard Nugent, Department of Zoology, A. & M. College, Mississippi.....	1921
Longstreet, Rupert James, Daytona Beach, Florida.....	1924
Loring, J. Alden, Owego, Tioga County, New York.....	1926
Lowe, John N., Northern State Teachers College, Marquette, Michigan.....	1927
Luther, Geo. W., DeTour, Michigan.....	1926
Lutz, Emelic, 161 West Harrison Street, Chicago, Illinois.....	1926
Lyon, Mary C., 811 North Sheridan Road, Wankegan, Illinois.....	1925

McAtee, W. L., Biological Survey, United States Department of Agriculture, Washington, D. C.....	†1911
McCabe, T. T., Barkerville, British Columbia, Canada.....	1928
McGowan, Hamilton G., 397 Fourth Street, N. E., Atlanta, Georgia.....	1928
McGregor, Richard C., Bureau of Science, Manila, Philippine Islands.....	1919
McNeil, Dr. Chas. A., 111 West Fourth Street, Sedalia, Missouri.....	1922
Madison, Allan A., Box 182, Flaxton, North Dakota.....	1927
Magann, J. Wilbur, 1111 Holley Court, Oak Park, Illinois.....	1927
Main, John Smith, 610 State Street, Madison, Wisconsin.....	1921
Molcomson, R. O., 1603 Ross Street, Sioux City, Iowa.....	†1926
Marsh, Mai, 1005 Lexington Avenue, Altoona, Pennsylvania.....	1927
Mayfield, Dr. George R., Vanderbilt University, Nashville, Tennessee.....	1917
Metcalf, Dr. Franklin P., care of Arnold Arboretum, Harvard University, Jamaica Plain, Massachusetts.....	1919
Metcalf, Dr. Zeno P., State College, West Raleigh, North Carolina.....	1900
Middleton, Raymond Jones, Marshall Street and Whitehall Road, Norristown Delivery, Jeffersonville, Pennsylvania.....	1921
Millard, Mrs. F. A., 1032 North Fourth Street, Burlington, Iowa.....	1926
Minich, Edward C., 1047 Fairview Avenue, Youngstown, Ohio.....	1923
Mitchell, Catharine Adams, 144 Fairbank Road, Riverside, Illinois.....	1915
Moore, Arthur David, 712 Phoenix Street, South Haven, Michigan.....	1922
Moore, Mrs. Nettie Purdy, 941 Starkweather Avenue, Plymouth, Michigan.....	1925
Morris, C. H., McConnellsville, Ohio.....	1911
Morse, Harry G., Huron, Ohio.....	1923
Morse, Margarette E., Viroqua, Wisconsin.....	1922
Moseley, Prof. Edwin Lincoln, State College, Bowling Green, Ohio.....	1921
Mote, G. A., Marshalltown, Iowa.....	1930
Mounts, Mrs. Beryl Taylor (Mrs. Lewis H.), Ballard Normal School, Macon, Georgia.....	1923
Mueller, Mrs. Hans, Willow Terrace, Apartment 81, Louisville, Kentucky.....	1923
Neff, Johnson A., Marionville, Missouri.....	1921
Nice, Mrs. Margaret M., 156 West Patterson Avenue, Columbus, Ohio.....	1921
Norris, Joseph P., Jr., 2122 Pine Street, Philadelphia, Pennsylvania.....	1911
Northup, Elizabeth A., 436 Warren Avenue, Youngstown, Ohio.....	1920
Oberholser, Dr. Harry Church, 2805 Eighteenth Street, N. W., Washington, D. C. ....	1894
Ohern, D. W., 915 West Fourteenth Street, Oklahoma City, Oklahoma.....	1921
Olsen, Richard E., 1120 East Ann Street, Ann Arbor, Michigan.....	1930
Ortega, James L., Box 171, R.F.D. No. 4, Santa Anna, California.....	1924
Over, Prof. Wm. H., University Museum, Vermillion, South Dakota.....	1930
Palas, A. J., 663 Forty-ninth Street, Des Moines, Iowa.....	1923
Palmer, Dr. Theodore Sherman, 1939 Biltmore Street, N. W., Washington, D. C. ....	1914
Pammel, Dr. L. H., Iowa State College, Ames, Iowa.....	1929
Parker, Herbert, South Lancaster, Massachusetts.....	1928
Pemberton, John Roy, 525 North Palm Drive, Beverly Hills, California.....	1922
Pennock, Charles John, Kennett Square, Chester County, Pennsylvania.....	1900
Phillips, Dr. John H., 2117 Blair Boulevard, Nashville, Tennessee.....	1921
Pickwell, Dr. Gayle B., Department of Natural Sciences, San Jose State Teachers College, San Jose, California.....	1925
Plapp, Doris Ann, 4140 North Keeler Avenue, Chicago, Illinois.....	1927
Plath, Karl, 2847 Giddings Street, Ravenswood Station, Chicago, Illinois.....	1916
Porter, James V., Box 266, Glenwood, Minnesota.....	1929
Pough, Richard H., 4 Lennox Place, St. Louis, Missouri.....	1924
Praeger, Prof. Wm. E., 2 College Grove, Kalamazoo, Michigan.....	1916
Prill, Dr. Albert G., Main Street, Scio, Oregon.....	1892
Quillian, Prof. Marvin C., Wesleyan College, Macon, Georgia.....	1927
Randall, Mrs. W. S., 618 East Fifteenth Street, Oklahoma City, Oklahoma.....	1925
Reed, Mrs. C. I. (Bessie P.), 1615 South Ninth Avenue, Maywood, Illinois.....	1924
Reid, Mrs. Bruce (Bessie M.), care of Gulf Refinery, Port Arthur, Texas.....	1921
Reid, Russell, 911 Sixth Street, Bismarck, North Dakota.....	1920

Richardson, W. D., 4215 Prairie Avenue, Chicago, Illinois.....	1918
Riley, Joseph Harvey, U. S. National Museum, Washington, D. C.....	1914
Roads, Katie M., 463 Vine Street, Hillsboro, Ohio.....	1914
Robinson, J. M., Box 264, Alabama Polytechnic Institute, Auburn, Alabama.....	1923
Rodock, Roy E., Lewistown State Normal School, Lewistown, Idaho.....	1928
Rosene, Walter M., Ogden, Iowa.....	1923
Ross, Marjorie Ruth, 420 Eddy Street, Ithaca, New York.....	1921
Rust, Henry J., Box 683, Coeur d'Alene, Idaho.....	1921
Sallee, Roy M., 131 North Normal Street, Macomb, Illinois.....	1930
Satterthwait, Elizabeth Allen, Webster Groves, Missouri.....	1925
Savage, James, Buffalo Athletic Club, Buffalo, New York.....	1930
Schantz, O. M., 3219 Maple Avenue, Berwyn, Illinois.....	1903
Schorger, Dr. A. W., 2021 Kendall Avenue, Madison, Wisconsin.....	1927
Shadle, Prof. Albert R., Biology Department, University of Buffalo, Buffalo, New York .....	1930
Sherwood, Jack W., Box 264, Salinas, California.....	1929
Silliman, Oscar Peny, Corner Alisal and Riker Streets, Salinas, Monterey County, California.....	1914
Simmons, Geo. Finlay, 2727 Euclid Avenue, Cleveland, Ohio.....	1928
Skinner, M. P., Jergins Trust Company Building, Long Beach, California.....	1926
Smith, Prof. Frank M., 79 Fayette Street, Hillsdale, Michigan.....	1910
Smith, Prof. Jesse L., 334 Vine Street, Highland Park, Illinois.....	1925
Smits, Lee J., 83 Hendrie Avenue, Detroit, Michigan.....	1928
Spann, Liza, Boiling Springs Junior College, Boiling Springs, North Carolina.....	1930
Spear, James, Wallingford, Pennsylvania.....	1928
Spiker, Chas. J., New Hampton, Iowa.....	1916
Spofford, Walter R., Highland Road, Berlin, Massachusetts.....	1926
Stack, Prof. Joseph W., Department of Zoology, Michigan State College, East Lansing, Michigan .....	1925
Stewart, Clare R. (Mrs. L. P.), 3475 Morrison Place, Cincinnati, Ohio.....	1923
Stickney, Gardner P., 864 Summit Avenue, Milwaukee, Wisconsin.....	1922
Stoner, Dr. Dayton, New York State College of Forestry, Syracuse, N. Y.....	1917
Strecker, John Kern, Baylor University, Waco, Texas.....	1929
Stuart, Anne, 1905 D. Street, Lincoln, Nebraska.....	1924
Stucker, Gus, 108 Bellaire Avenue, Springfield, Ohio.....	1923
Sturgis, Mrs. S. D., 2219 California Street, N. W., Washington, D. C.....	1928
Swarth, Harry S., 2800 Prince Street, Berkeley, California.....	1910
Taylor, Prof. Warner, 219 Clifford Court, Madison, Wisconsin.....	1917
Teachenor, Dix, 1020 West Sixty-first Street, Kansas City, Missouri.....	1923
Thomas, Edward S., 1116 Madison Avenue, Columbus, Ohio.....	1921
Thomas, H. H., 1124 East Main Street, Pomeroy, Ohio.....	1924
Tinker, Almerin David, 519 Oswego, Ann Arbor, Michigan.....	1909
Todd, W. E. Clyde, Carnegie Museum, Pittsburgh, Pennsylvania.....	1911
Townsend, Dr. Chas. W., Ipswich, Massachusetts.....	1916
Travis, Florence G., 1458 Mars Avenue, Lakewood, Ohio.....	1921
Tyler, Dr. Winsor M., 112 Pinckney Street, Boston, Massachusetts.....	1914
Urner, Charles A., 596 Westminister Avenue, Elizabeth, New Jersey.....	1928
Van Tyne, Dr. Josselyn, Museum of Zoology, Ann Arbor, Michigan.....	1922
Vernon, John, Box 152, R.F.D. No. 1, South Sheridan Road, Kenosha, Wis.....	1929
Visscher, Dr. Paul, Biological Laboratory, Western Reserve University, Cleve- land, Ohio .....	1924
Warren, Edward R., 1511 Wood Avenue, Colorado Springs, Colorado.....	1911
Weber, Alois J., 904 Grand Avenue, Keokuk, Iowa.....	1928
Wertz, Miss Vara M., 101 Eighth Avenue, Juniata, Pennsylvania.....	1928
Wetmore, Dr. Alexander, U. S. National Museum, Washington, D. C.....	1903
Wheeler, Rev. H. E., Alabama Museum of Natural History, University, Alabama .....	†1924
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Wilson, Frank Norman, 804 Lawrence Street, Ann Arbor, Michigan.....	1924

Wilson, Prof. Gordon, 1434 Chestnut Street, Bowling Green, Kentucky.....	1925
Wolcott, Dr. Robert H., University of Nebraska, Lincoln, Nebraska.....	1924
Wright, Dr. Albert H., 113 East Upland Road, Ithaca, New York.....	1921
Wright, Earl G., Chicago Academy of Science, Clark and Center Streets, Chicago, Illinois .....	1925
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Allen, A. F., 714 Thirty-fourth Street, Sioux City, Iowa.....	1925
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Bolt, Benj. F., 225 East Forty-sixth Street, Kansas City, Missouri.....	1917
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Buzby, Mrs. William, 221 Greene Street, Boone, Iowa.....	1930
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Cathcart, Maude Eola, Appalachian State Teachers College, Boone, N. C.....	1930
Chamberlain, Chauncey W., Hotel Hemenway, Boston, Massachusetts.....	1922
Chamberlain, Glen D., 102 Highland Place, Ithaca, New York.....	1930
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Coleman, Mrs. Thomas, Maple Bluff, Madison, Wisconsin.....	1928
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Cook, Fannye A., Crystal Springs, Mississippi.....	1925
Cook, Florence R., Grand Meadow, Minnesota.....	1930
Cook, William Bolton, Comly Avenue, Port Chester, New York.....	1930
Cottain, Clarence, Bureau of Biological Survey, Washington, D. C.....	1929
Coulter, Dr Stanley G., Purdue University, LaFayette, Indiana.....	1916
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Crabb, Alfred, 1701 Eighteenth Avenue, Nashville, Tennessee.....	1930
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Cramer, Wm. G., Apartment 10, The Nelson, 2501 Kemper Lane, Cincinnati, Ohio.....	1923
Crook, Compton N., Jr., 2207 Leslie Avenue, Nashville, Tennessee.....	1929
Cunningham, O. L., County Agricultural Agent, Post Office Building, Dayton, Ohio.....	1930
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Dolc, J. Wilbur, 51 East Stone Street, Fairfield, Iowa.....	1930
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DuMont, Mrs. W. G., 2700 Forty-ninth Street, Des Moines, Iowa.....	1929
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Hadley, Miss Theodosia, Western State Normal, Kalamazoo, Michigan.....	1923
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Hallinen, Joseph Edward, R.F.D. No. 1, Coopertown, Oklahoma.....	1922
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Haywood, Ralph, Buckley, Dement & Co., 1300 Jackson Boulevard, Chicago, Illinois.....	1929
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Herman, Mrs. E. Olney, Momence, Illinois.....	1928
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Hiett, Lawrence D., 2617 Parkwood Avenue, Toledo, Ohio.....	1929
Hillmer, Davis B., 435 Canfield Avenue, West, Detroit, Michigan.....	1926
Hilton, Dr. Davie C., 305 Richards Block, Lincoln, Nebraska.....	1918
Hissong, R. D., 1908 Ingleside Avenue, Sioux City, Iowa.....	1927
Hoag, Benjamin, Garfield, Rensselaer County, New York.....	1922
Holck, J. H., Peterson, Iowa.....	1925
Holland, Harold May, Box 515, Galesburg, Illinois.....	1915
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Ingham, Miss Loula, Nurses Home Annex, Herman Keifer Hospital, Detroit, Michigan.....	1930
Jackson, D. A., No. 5, Harrisonburg, Virginia.....	1930
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Jefferson, Mrs. Edith H., 1381 Prairie Avenue, Des Plaines, Illinois.....	1927
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Jensen, J. P., Box 364, Dassel, Minnesota.....	1926
Jewell, Mrs. W. G., R.F.D. No. 2, Irving, Kansas.....	1930
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Jones, Sterling P., 690 Bonita Avenue, Webster Groves, Missouri.....	1930
Josten, Erick, Klemme, Iowa.....	1928
Junkin, Mrs. Paul S., 300 North Main, Fairfield, Iowa.....	1930

Kalmbach, E. R., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C.....	1926
Kauffman, Howard A., Indian Springs Place, R.F.D. No. 5, Martinsville, Indiana.....	1930
Kearby, Miss Vera, George Peabody College for Teachers, Nashville, Tenn.....	1927
Kcim, Thomas Daniel, Glenndale, Prince George County, Maryland.....	1921
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LaMar, Kate E., 1253 Forty-second Street, Des Moines, Iowa.....	1930
Lancaster, L. Y., State Normal School, Bowling Green, Kentucky.....	1923
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Lewis, Merriam G., 512 Highland Road, Lexington, Virginia.....	1930
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Linsdale, Dr. Jean M., Museum of Vertebrate Zoology, University of Cali- fornia, Berkeley, California.....	1928
Livingston, Philip Atlee, Box, 302, Narberth, Pennsylvania.....	1926
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Marburger, Clifford, Denver, Lancaster County, Pennsylvania.....	1924
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Michener, Harold, 418 N. Hudson Avenue, Pasadena, California.....	1926
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Morse, George W., 318 East Ninth, Tulsa, Oklahoma.....	1920
Mossman, Pres. F. E., 3823 Garretson Avenue, Sioux City, Iowa.....	1928
Mousley, H., 4073 Tupper Street, Westmount, Montreal, Quebec, Canada.....	1922
Musselman, T. E., 124 South Twenty-fourth Street, Quincy, Illinois.....	1923
Nauman, E. D., 420 S. Shuffleton Street, Sigourney, Iowa.....	1923
Nelson, F. W., Sheldon, Iowa.....	1925
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Nelson, W. C., 4024 Grand Avenue, Des Moines, Iowa.....	1925
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Newton, Thomas Dodd, 6826 Clyde Avenue, Chicago, Illinois.....	1918
Nichols, Harvey, 559 Burton Avenue, Waterloo, Iowa.....	1930
Northcutt, Charles E., Court House, Columbia, Missouri.....	1930
Northrup, Ruby M., Department of Zoology, Oklahoma A. & M. College, Stillwater, Oklahoma.....	1926
Norton, Arthur Herbert, 22 Elm Avenue, Portland, Maine.....	1894
Paff, William A., 916 Paxinosa Avenue, Easton, Pennsylvania.....	1928
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Palmer, Walter G., 142 Linden Avenue, Clayton, Missouri.....	1930
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Peabody, Rev. P. B., 2011 Park Avenue, Topeka, Kansas.....	1930
Pellett, Frank C., Hamilton, Illinois.....	1926
Pellow, Miss Marion, Box 455, Aiken, South Carolina.....	1920
Pickens, A. L., Room 217, Zoology Building, University of California, Berkeley, California.....	1927
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Pierce, Fred J., Winthrop, Iowa.....	1921
Pierce, John T., Anita, Iowa.....	1930
Pierce, Wright M., Box 343, Claremont, California.....	1926
Pike, Herbert, Whiting, Iowa.....	1926
Pirnie, Dr. Miles D., 117 Center Street, East Lansing, Michigan.....	1928
Polk, Ben K., 3700 Grand Avenue, Des Moines, Iowa.....	1930
Potter, Julian K., 437 Park Avenue, Collinswood, New Jersey.....	1916
Preble, Edward A., United States Biological Survey, Washington, D. C.....	1929
Purcell, Miss Ethel, Bass Junior High School, Atlanta, Georgia.....	1928
Ramsden, Charles Theodore, Apartado 146, Guantanamo, Cuba.....	1914
Rapp, F. W., Vicksburg, Michigan.....	1926
Ray, Edward M., Fredonia, Kentucky.....	1929
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Reeder, J. T., 318 College Avenue, Houghton, Michigan.....	1926
Reneau, A. C., Jr., Clarksville, Missouri.....	1929
Rich, Dr. Guy C., 1820 El Cerrito Place, Hollywood, California.....	1914
Richardson, Carl, Altamont Auto Park, Klamath Falls, Oregon.....	1926
Roark, Mrs. Lonis, 926 N. Collins, Okmulgee, Oklahoma.....	1926
Robar, James E., Walworth, Wisconsin.....	1927
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Robertson, John McB., Buena Park, California.....	1926
Robl, Frank W., Ellinwood, Kansas.....	1926
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Rouse, Miss Lorene A., Berrien Springs, Michigan.....	1930
Rowan, Prof. William, Alberta University, Edmonton, Alberta, Canada.....	1925

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Ruhl, Harry D., 318½ Albert Avenue, East Lansing, Michigan.....	1926
Sampson, W. B., 1005 North San Joaquin Street, Stockton, California.....	1927
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Scudder, Dr. Walter P., Litchfield, Ohio.....	1921
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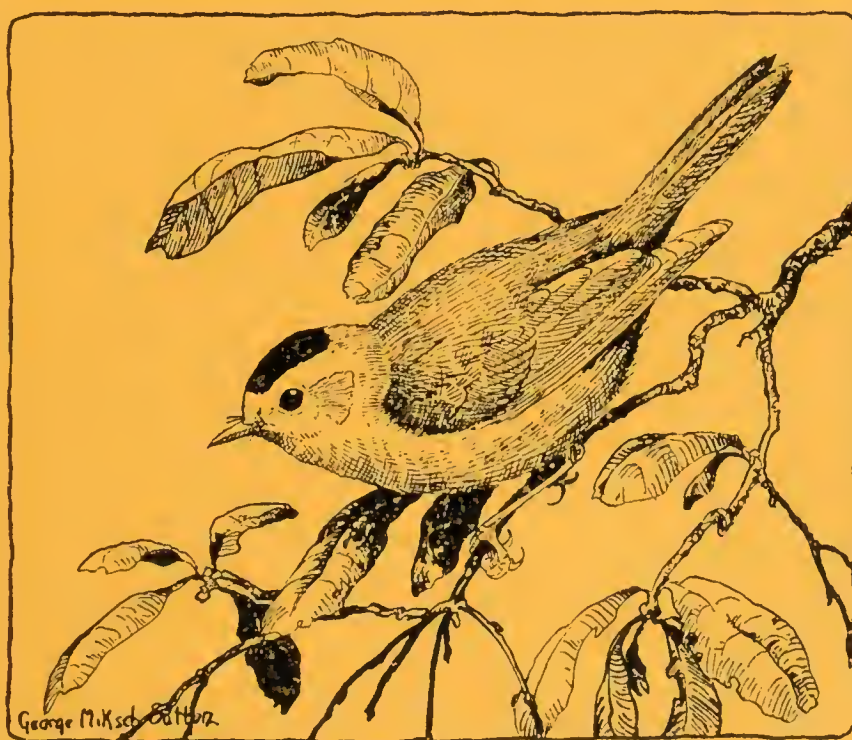
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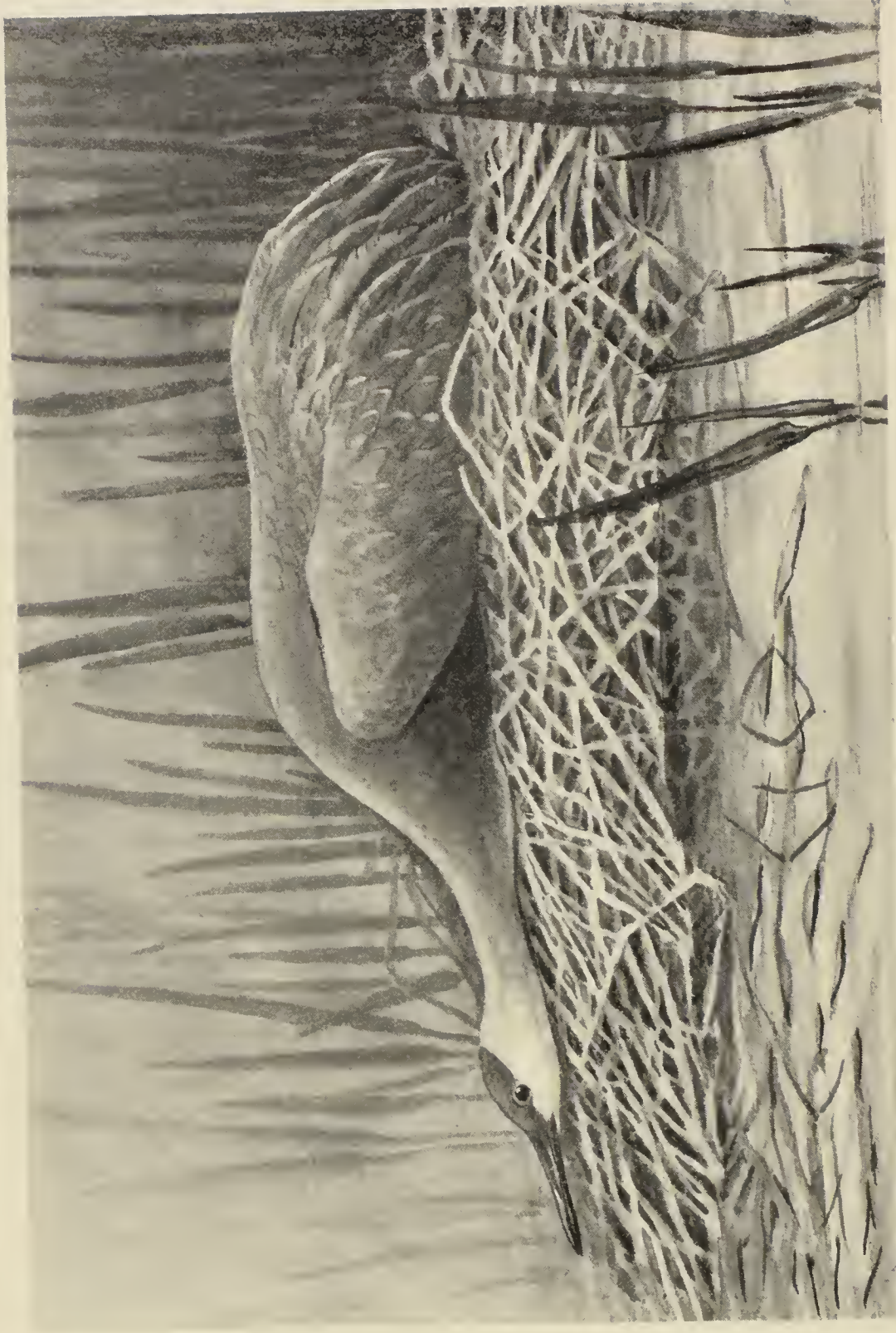
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INCUBATING SANDHILL CRANE  
Crouching in Concealing Posture.

*From a painting by George Misch Sutton.*

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## NESTING OF THE SANDHILL CRANE IN FLORIDA

BY ERNEST G. HOLT

The conclusion of a short field assignment with the Cleveland Museum of Natural History found my wife and me, at the end of February, 1924, in the famous Kissimmee Prairie region of peninsular Florida. We were stopping in the home of a hospitable cattle man of a passing regime—a house that had offered shelter to wandering ornithologists before this—and, as the infrequent mails were bringing news of increasingly severe weather in the north, we became more and more reluctant to leave the brilliant skies, luscious oranges, and teeming bird-life that were ours without greater effort than a stroll through our host's hammock. However, the clinching argument that determined we should stay was furnished by the indescribable rolling, gurgling calls of a flock of Sandhill Cranes (*Grus mexicana* (Muller)) that passed every day over the hammock in their flights to and from their feeding grounds in the river marsh.

Others have studied the Sandhill Crane along the Kissimmee and I have knowledge of a number of sets of eggs that have been taken there in the past, but examination of the literature at my disposal fails to disclose any very adequate account of the nesting of the species. Therefore, in spite of the fact that we were not equipped with proper photographic apparatus for the kind of work most needed, and that other circumstances brought about our departure right at the height of the nesting season, it is deemed wise to record in detail our observations on this vanishing species. Whatever contribution these notes may furnish is presented as an independent study, with no attempt at an exhaustive review of the literature.

### THE COUNTRY

Facing a broad marsh that extends for miles up and down the opposite side of the river. Sid Pearce's house stands amidst a magnificent assemblage of moss-bearded live oaks and stately cabbage palms in a hammock on the right bank of the Kissimmee River (Figures 2 and 3). A better place for bird-study than this riparian hammock could hardly be imagined. Without getting out of sight of the house

we recorded almost every species to be found in the whole countryside. On our first short stroll along the sandy road between the river and the jungle we saw, in or near the water, Pied-billed Grebes, Water-Turkeys, Lesser Scaup Ducks, Ward's, Louisiana, and Little Blue Herons, Wilson's Snipes, Killdeers, Kingfishers, Phœbes, Fish Crows, Red-wings, Boat-tailed Grackles, and Tree Swallows; in the hammock were Red-shouldered Hawks, Sparrow Hawks, Red-bellied Woodpeckers, Flickers, Blue Jays, Shrikes, Cardinals, Mockingbirds, and Thrashers. Myrtle and Palm Warblers were everywhere, and from the dense undergrowth of saw-palmettos issued unceasingly a subdued rustle—the scratching of scores of pairs of little Towhee feet among the fallen leaves. Later, Caracaras were seen in this same hammock; and a Pileated Woodpecker came more than once to the trees in the very yard. Such was our base.

Two miles north-northeast, on the edge of an extensive pine "island", is the little hamlet of Bassenger, its few scattered houses almost lost in a thicket of guava bushes. Between, stretches the road from Sebring, carried over the river and marsh on a series of bridges. Traffic on this road, still unimproved at the time of our visit, was not heavy, and from the bridges could be seen in the surrounding marsh a numerous and contented population of Florida Ducks, White Ibises, herons, Coots, and other water-loving species. Here too dwelt the Limpkins, which, as if sensing the approach of civilization and their impending doom, made night disconsolate with their loud lamentations. Back from the road, along the shallow edges of the marsh, a flock of a dozen Sandhill Cranes daily sought their food.

The pine "island" beginning at Bassenger extends in irregular outline for several miles to the north, east, and southeast. The timber is neither very thick nor of large size, and the dominant undergrowth is saw-palmetto. At intervals there are small hammocks of hardwood, or, more frequently, open spaces of several acres occupied by shallow ponds. On the northern edge of the "island" a pair of Bald Eagles had their aerie about fifty feet up in a tall pine. Beyond, the horizon is broken only by a few cabbage palms, and by a quadrangle of eucalyptus trees which stand as a forlorn, incongruous monument marking the burial place of the hopes and fortunes of many a poor farmer from the North. Once a hotel stood among these trees and a railway had its terminus not far distant. An orange tree more than fifteen years old had been transplanted, fruit and all, from Bassenger—and had lost a dozen years in transit. Maine potatoes were dug by the peck from beneath carefully nurtured little plants, right before the



FIGURE 2. A meander of the Kissimmee River near Bassenger. Moss-draped live oaks line the banks.



FIGURE 3. The edge of the Kissimmee Marsh. One of the cabbage palms at the right harbored a nest of Audubon's Caracara.

astonished eyes of those who had come to buy the worthless prairie. But truth will prevail. The ties of the railway became fence posts on a neighboring cattle ranch which, in its turn, has become bankrupt. Despite numerous attempts at colonization this section remains perhaps the wildest of any in the State, except the Everglades, and one may ride for fifteen or twenty miles in some directions without encountering a human habitation. Soon, however, another railroad will rattle its way over the prairies and this time it will be a branch of one of the big systems. Even while we tarried, its engineers were surveying a bridge site below Pearce's.<sup>1</sup>

Another pine-land ("Big Pine Island"), essentially like that at Bassenger, lies four or five miles west of Pearce's Hammock. Except for these and the oak hammocks along the river the country is a vast level expanse of prairie covered with stunted saw-palmetto and sparse grasses and shrubs, and dotted here and there with cabbage palms and occasional "heads" of bay, gum, or cypress. The soil throughout the prairies is sandy and infertile, appreciated only by gopher tortoises and Burrowing Owls.

Ponds are everywhere, throughout prairie and pine-land alike, and of sizes varying from the merest puddle to lakes acres upon acres in extent. All are shallow, in varying degrees, and their water content is dependent upon rain. During our stay the season was wet and the ponds exceptionally full. The greater area of most ponds is grown up with a peculiar shrub (*Hypericum fasciculatum*) which, because of its resemblance to one of the stunted conifers, is called "guinea cypress", while the centers of the deeper ponds support a rank growth of pickrel weed (*Pontederia cordata*). These two plants furnish the principal nesting material of the Sandhill Cranes. The deepest ponds often surround a central core of bay, gum, or cypress, called in the parlance of the country a "head". It is seldom possible to ride a horse to these trees. About the margins of the ponds is a border of broom-sedge or wiry grasses or sedges that is overflowed only when the ponds are very full. It is about these ponds and their immediate environs that the life of the Sandhill Crane centers.

#### THE BIRD

Even in its natural haunts the Sandhill Crane is a most conspicuous bird. Of huge size, it could scarcely be overlooked although standing motionless on the prairies; certainly not while flying with neck and legs stretched to their utmost, the great wings beating regu-

<sup>1</sup>The manuscript of this article was completed in September, 1924. The railway has since become an accomplished fact.





FIGURE 4. Nest No. 3. General view showing comparative size of the nest.



FIGURE 5. Nest No. 3. (Egg set No. 212). Detail of the nest and eggs.

larly but with quick upward jerks as if actuated by springs. And were this not enough, when it takes the air the bird gives utterance to its peculiar call that is sure to demand instant attention of anyone within range of its vibrations. Fortunately the bird realizes its conspicuousness and, except when sitting on the nest, seeks safety in flight rather than in concealment. Its extreme wariness was well impressed upon me during the many days spent in the attempt to take a couple of specimens for the museum.

The conspicuousness of the birds is apt to give a false impression of their abundance. Though easily seen, their numbers are few. An indication of actual abundance may be obtained from the following four censuses: (1) February 11, five groups of 2, 3, 3, 2, and 2, respectively, were seen on a nine-mile ride across the prairie and pine-land southwest of Pearce's; (2) February 29, on a fourteen-mile traverse to the southwest, 3, 2, 1, 2, and 2 were seen; (3) March 21, an all-day ride northeast and north of Bassenger netted 2, 2, 1, 2, 1, and 3; and (4) on March 23, a whole day's ride, again southwest of Pearce's, produced 2, 2, 2, 2, 1, 2, 2, 3, and 2 cranes. The greatest number seen in any one flock was the dozen apparently unmated birds that ranged together in the river marsh opposite Pearce's.

With the exception of this last flock all the cranes observed were found about the shallow ponds on the prairie and the edges of the pine "islands". While not necessarily in the water, no bird was ever found, even while feeding, at any great distance from it. In almost every pond a lone Ward's Heron stood guard—a solitary sentinel in neutral blue-grey—and the eye eagerly scanning his retreat for a crane often mistook him for the bird sought. However, the reverse was never true. No crane was ever passed by for a heron. In the field the crane is distinctly browner and less blue than the heron and its body is much fuller and heavier and is held more horizontally. The crane was never observed to assume the post-like posture so often affected by the heron.

Truly the Sandhill Crane is a remarkable bird, from every point of view, and no written description can do it justice. It is but another example of the truism that an animal can not be rightly understood apart from its environment. A Sandhill Crane may be seen mounted, in almost any museum, but to appreciate the living bird, pulsating with life and regal in its freedom, one must also visualize the wide-reaching prairies with a fretwork of pines against the horizon, the ponds reflecting the clear blue of the limitless vault in which floats no cloud;



FIGURE 6. A Prairie Pond. One of the myriad dotted thickly over the whole countryside.



FIGURE 7. Nest No. 4. (Egg set No. 215). The only nest found on dry ground.

above all he must himself thrill to the resonance of its wonderful voice—the essence, the very spirit of the wild free open spaces where it makes its home.

#### THE NESTS

On our long rides over prairies and pine-land we were fortunate enough to find, in all, ten nests of the Sandhill Crane. Inasmuch as the published accounts of the nesting habits of the species are rather general in their terms, we are presenting the observations we were able to make, in the same detail in which they appear in our field notebooks.

NEST No. 1. On February 28, we rode eight miles to see a nest that had been reported to us. It was a small platform of herbaceous plant stems, built up barely above the water level in the shallow margin of a prairie pond—but evidently our informant had taken the precaution to remove the eggs. No birds were seen.

NEST No. 2. February 29. A nest in process of construction was found in the deep water at the center of a pond among the pines. It was merely a flat platform of pickerel weed stalks, built among living plants of the same species. March 14, two cranes were seen near this nest, but no further work had been done on it. Probably the frequent passing of a motor truck, hauling materials for the construction of a dipping vat on this "island", caused the abandonment of the nest.

NEST No. 3. March 14. While riding across the prairie we flushed from an old burn a single Sandhill Crane which flew to a near-by pond. We followed, of course, whereupon two Sandhill Cranes left the pond and disappeared across the prairie. A short search was sufficient to reveal the conspicuous nest, a nearly flat platform of sticks and woody stems of "guinea cypress", exposed in a sparse growth of broom-sedge and "guinea cypress" near the edge of the pond (Figures 4 and 5). The structure was about two and one-half feet in diameter and was built up from the bottom, in water six or seven inches deep, until the rim was three or four inches above the surface. The two eggs, though not pipped, contained embryos that were cheeping distinctly within the shells, but fearing that others might not be found we collected them anyway. The nest was examined again on March 23, but there was no indication that the parents had made any further use of it.

The eggs (Set No. 212) measure 93.5x60.5 and 94x61 mm. The ground color of one is very pale olive-buff, of the other, almost olive-buff. Both are marked with roundish spots, rather than blotches, of cinnamon brown and with obscure spots of pale purplish tints,



FIGURE 8. Nest No. 5. General view of the grassy swale.



FIGURE 9. Nest No. 5. (Egg set No. 217). Detail of the nest and egg.  
Note the water-soaked spot at the right of the egg.

thickest about the larger ends. The darker egg has a wreath of spots about the larger end.

NEST No. 4. March 21. The flushing of the parent led to the discovery of this nest in a location we would otherwise never have searched—among the saw-palmettos and laden gall-berry bushes of the open prairie. The frail structure, composed of dried grasses and palmetto leaves, a couple of oak twigs and some green “guinea cypress”, was about two and one-half feet in diameter and was placed flat on the dry ground (Figure 7). Though situated between two ponds it was about 100 yards from the nearest water. The nest was evidently very new (as some of the grass beneath it was still green) and contained two fresh eggs.

These (Set No. 215) measure 89x60.5 and 93.5x59 mm. One is long-ovate, olive-buff with greenish cast, and blotched all over, but more thickly at the larger end, with tones of lavender and brown. The other is ovate, ground color nearest to deep olive-buff, marked all over with long blotches of wood brown and darker shades of brown and with a thick patch of blotches on the larger end (Figure 14, bottom set).

NEST No. 5. March 22. A nest about two feet in diameter, constructed of dried grasses and superimposed on a low mat of living marsh grass raked together in water about five inches deep, was discovered in a grassy swale between two large ponds on the prairie (Figure 8). The highest part of the nest rim was not over three inches above the water, and the center of the nest, in which the single egg lay, was saturated. This wet spot is evident in the accompanying photograph (Figure 9). Though the situation was entirely exposed the parent sat close until we had approached within about fifty feet.

The egg (Set No. 217), which contained a net of blood vessels, measures 99.5x61 mm. It is long oval-elliptic, the ground color olive-buff with greenish cast, and is marked with generally distributed blotches of buffy-brown and lavender tints (Figure 15, lower-right egg).

NEST No. 6. March 23. A brilliant morning had found us in the saddle as soon as breakfast was over, but success had not been measured by the miles behind us when at noon we rode into the edge of a pine “island”. Here a chain of ponds stretched away among the trees, forming open spaces like little land-locked bays. It was but logical to “ride out” these ponds, and we had not gone far when, in the distance, a lone Sandhill Crane was seen stalking sedately through the shallow water. Suddenly, as if by magic, another appeared beside



FIGURE 10. Nest No. 6. The pond in the edge of the pines. Note the dark patch of pickerel weed in the center.



FIGURE 11. Nest No. 6. (Egg set No. 218). Detail of the nest and eggs, showing comparative size.

it, and then the two sprang into the air and with ponderous wing-strokes passed out of sight among the pines, leaving, as Coues has so aptly said, an impression of "momentum from mere weight—of force of motion without swiftness". I sat enthralled. The crystal-clear atmosphere, the brilliant sunshine flooding from a cloudless sky; the rich contrasting tones of pine boles and leaves, of sere grasses and luxuriant pickerel weed; the soothing fragrance of resin warmed by a noontide sun; and the wild reverberant calls of the cranes echoing back through the pines combined to produce in my inner consciousness that peculiar feeling of well-being which comes only with perfect adjustment to the environment. But I was soon aroused by Mrs. Holt's delighted cry and pointing arm, and rode quickly forward to behold the object of our search.

There in the shallow margin of the pond where the water was only about five inches deep, the cranes had built their nest in a sparse growth of "guinea cypress" that afforded not the slightest concealment. This nest was a rather frail structure of "guinea cypress" shrubs that had been pulled up by the roots from the immediate environs, some so recently that they still bore green leaves, and was lined thinly with dried broom-sedge. The almost flat platform was about three feet in diameter, its surface but little more than two inches above the water level, and on it lay two fresh, very dissimilar eggs (Figures 10 and 11). The center of the pond, some distance away, was filled with a rank growth of pickerel weed, the "flag" of the natives.

The eggs (Set No. 218) measure 86.5x59 and 89x61 mm. Both are truncate-ovate. The first, which is the darkest of the entire collection, is deep olive-buff marked, principally about the larger end, with splotches of shades of brown from wood brown to almost black (in a few spots of especially dense pigment). The other, the lightest in the collection, is greenish white, marked, also principally about the larger end, with minute dots and small spots of lavender and buff-brown tones (Figure 11, middle set, and Figure 15, top set of eggs).

NEST No. 7. March 23. After leaving Nest No. 6 we had heard cranes calling in the direction of another pond in the pines, but we had ridden on to some cattle pens to feed our horses and eat our own lunch. Later, when we came back to this pond, everything was quiet. A couple of Ward's Herons arose without haste and flapped silently away; no other bird was in sight. Then my searching eye descried a crane standing in the pond on the farther side, but even as I tried to point it out, it disappeared—vanished utterly—though I was absolutely certain no bird had left the pond. Perhaps it had crouched;





FIGURE 12. Nest No. 7. (Egg set No. 219). Constructed of pickerel weed in the deepest part of a pond among the pines.



FIGURE 13. Nest No. 10. (Egg set No. 220). This nest was the largest and the highest above water of all examined.

but it seemed more likely that my eyes had seen a crane because that was what I most wanted to see, had for the instant constructed one of a tuft of "guinea cypress". Nevertheless we sent our animals splashing across the pond, though the nearer we approached the other side the more it seemed that my eyes had deceived me. Then, when just on the edge of a patch of pickerel weed, which almost invariably marks the deepest basins in the larger ponds, we plainly saw not a phantom, but a crane, crouched as low on its nest as its huge bulk would permit, its neck lying flat so that its red crown was visible only at short range (Frontispiece). It retained this position while I dismounted and waded slowly forward; then it arose, its feet still on the nest, and, springing into the air, flapped majestically off without uttering a sound. A few minutes later, accompanied by its mate, it returned and flew calling about the pond.

The nest was a mass of dead pickerel weed stalks raked up to form an island in water more than a foot deep, and was surrounded by a living growth of the same plant (Figure 12). Its top was a platform of uneven surface only a couple of inches above the water; plainly not high enough, for the under surfaces of the two eggs, and the nest beneath them were wet, and the pores of the eggs were stopped with what appeared to be mildew. In spite of this, however, the eggs contained small embryos that seemed to be alive.

The eggs (Set No. 219) measure 97x60.5 and 101.5x63.5 mm. Both are long-elliptic, and in color between olive-buff and pale olive-buff, marked with small irregular spots of tones of lavender and brown scattered over the whole surface, but more thickly about the larger ends (Figure 14, top set of eggs).

NEST No. 8. March 23. An uncompleted nest of dead pickerel weed was found among live plants of the same kind in the deeper part of a shallow pond on the prairie.. A pair of cranes were seen near at hand.

NEST No. 9. March 24. A new but still empty nest of "guinea cypress" and broom-sedge was discovered in the shallow margin of a pond in the outer fringe of trees on a pine "island." It was about two and one-half feet in diameter and was placed in a very exposed situation. A pair of cranes flushed from among the neighboring pines manifested considerable interest in this nest.

NEST No. 10. March 24. After an unsuccessful excursion for Burrowing Owl eggs, we were riding homeward about 6 P. M. and I was scanning a large prairie pond as a matter of routine, for we had neither seen nor heard a crane, when my eye was caught by a sug-

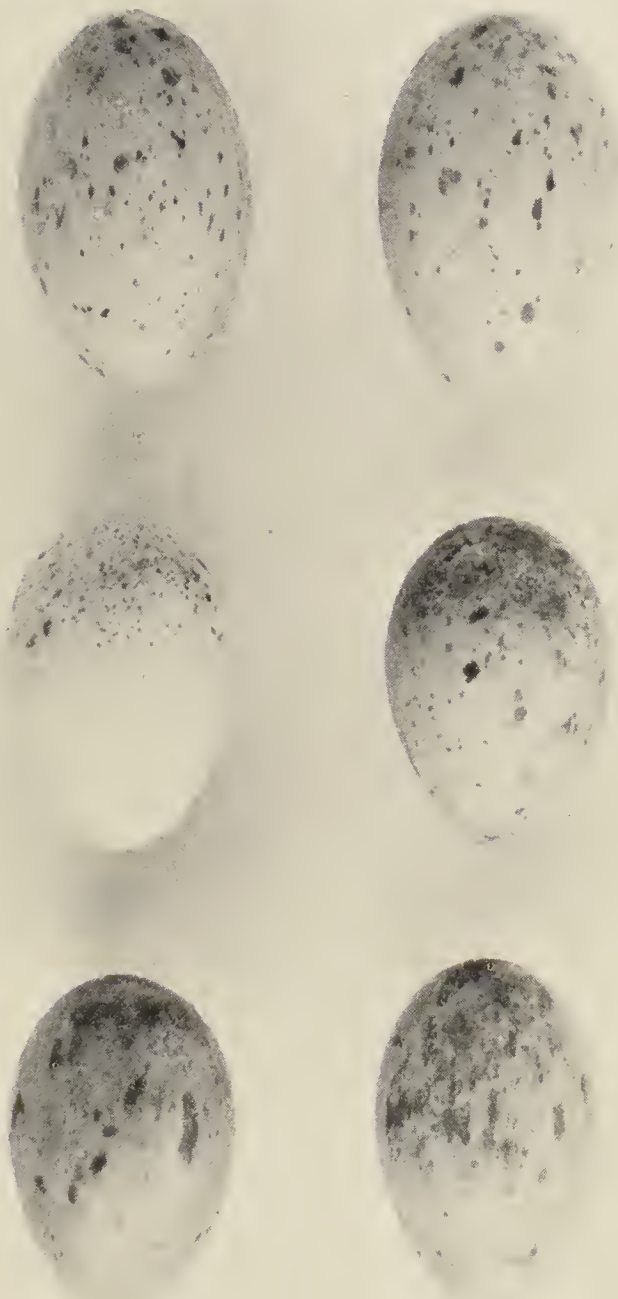


FIGURE 14. Eggs of the Sandhill Crane. Sets No. 219 (top), 218 (middle), and 215 (bottom), illustrating the variety of tones and markings.

gestive lump of gray out among the green pickerel weed. Investigation disclosed a Sandhill Crane sitting close, with head flat down on the nest in an effort to conceal the conspicuously red crown. This bird allowed an approach within fifty yards before flushing.

The nest, built entirely of dead pickerel weed, was a large, dry, firm structure about three feet in diameter with its surface raised several inches above the water, which was here about a foot deep. As the nest material would indicate, it was built among the green pickerel weed growing in the center of the pond. Of all that we examined this nest was the largest and highest above water (Figure 13).

The single egg (Set No. 220), which contained a small embryo, measures 96x59 mm. It is long-oval, sharply pointed, and in color pale olive-buff, marked with small roundish spots, principally about the larger end, of tints of olive-brown and lavender (Figure 15, middle egg).

#### HABITS

It is natural to expect some diversity of habit in such a wide-ranging species as the Sandhill Crane, and upon comparing our notes with the few meager accounts of this species which have so far been published we find that the Florida birds have seemingly developed habits peculiar to themselves. The most striking of these is that the Florida cranes are not migratory, but spend their entire lives in the same general region where they are born.

The Florida birds too seem to follow a rather definite rule in their choice of nesting sites, whereas the species as a whole exercises considerable latitude. Baird, Brewer, and Ridgway<sup>2</sup> state that in southeastern Oregon Captain Bendire found the Sandhill Crane breeding on the lowlands as well as in the highest mountain valleys, and quote Cooper to the effect that it builds its nest on some elevated spot on the ground, among ferns, where it may be partly concealed, and yet whence the approach of danger can be perceived. Gundlach (as quoted by Barbour<sup>3</sup>) reports that the Cuban Sandhill Crane hides its nest under some bush or shady tussock of high, rank grass. While, according to Coues<sup>4</sup>, Dall obtained eggs on the Yukon River that were laid in a small depression in the sandy beach, without any attempt at a nest<sup>5</sup>. Although Moore (quoted by Baird, Brewer, and Ridgway) found

<sup>2</sup>Baird, Brewer, and Ridgway. *The Water Birds of North America*. Vol. 1. Memoirs Museum of Comparative Zoology, Vol. XII. Boston, 1884, pp. 409-412.

<sup>3</sup>Barbour, Thomas. *The Birds of Cuba*. Memoirs Nuttall Ornithological Club, No. VI. Cambridge, Mass., 1923, p. 59.

<sup>4</sup>Coues, Elliott. *Birds of the Northwest*. Misc. Publications No. 3, U. S. Geological Survey of the Territories. Washington, 1874, pp. 533-534.



FIGURE 15. Eggs of the Sandhill Crane. Sets Nos. 218 (top), 220 (middle), and 217 (bottom right) illustrating the variety of form.

Florida nests placed on the driest ground, among the saw-palmettos, and we were assured by Mr. Pearce that in wet seasons the cranes often resort to such places to make their nests, our experience would indicate that the normal nesting site of the Florida Sandhill Crane is a shallow pond, preferably its margin, wherein it can construct an island of its own. The season at the time of our visit was said to be exceptionally wet, and all the ponds were very full, yet only one of the ten nests we examined was built upon dry ground.

The dry-ground nests found by Moore were formed of pliable stuff, herbs, grasses, and the like, but never of stiff material or sticks. In one instance the nest was composed of grasses plucked up by the roots, with much sand attached. Our observations convince us that the choice of nesting material is purely a matter of convenience. The nests found by us were without exception constructed of the materials nearest at hand, whether they happened to be marsh grass, pickerel weed, "guinea cypress", or saw-palmetto.

The literature and our own observations indicate considerable individual variation in the time of nesting of the Florida Sandhill Cranes. Scott<sup>6</sup> writes that at Tarpon Springs the birds mate in January, build the last of that month or early in February, and hatch their young about March 1. Childs<sup>7</sup> took a set of two eggs in Manatee County on February 15. On March 11 a young bird which already stood two feet in height was brought to Bryant.<sup>8</sup> On the same date Bryant found a nest containing two eggs in which incubation had just begun; another, containing two fresh eggs, was found on March 15; and a third, also discovered on March 15, contained two eggs nearly hatched. Our first eggs were found on March 14 and were ready to hatch, while ten days later we found a new nest in which the eggs had not yet been deposited.

The eggs themselves exhibit the greatest diversity in both color and form. This is true of those of the birds of even a restricted area like the Bassenger region, as may be seen by referring to Figures 14 and 15. Nevertheless, it is remarkable that the greatest color difference among the eggs of our collection should occur between two

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<sup>5</sup>These were probably the eggs of the Little Brown Crane, a closely related form.

<sup>6</sup>Scott, W. E. D. *A Summary of Observations on the Birds of the Gulf Coast of Florida*. The Auk, Vol. VI, 1889, p. 152.

<sup>7</sup>Childs, John Lewis. [Letter quoted by Editor.] The Oologist, Vol. XIX, 1902, p. 56.

<sup>8</sup>Bryant, Henry. [Paper read before the Boston Society of Natural History.] Proceedings Boston Society of Natural History, Vol. VII, 1859-1861, p. 14.

eggs of the same set (No. 218; Figure 14, middle set, and Figure 15, top set).

Cranes, unlike their long-legged cohabitants of the ponds — the herons — are præocial and their young are able to run about very shortly after hatching, but, according to Bryant the young remain with their parents until fully grown, and are fed for a long time by regurgitation. They do not fly until they are as large as the adults, but run with great speed, and hide like young partridges.

Cooper, so we are told by Baird, Brewer, and Ridgway, saw returning flocks of Sandhill Cranes passing northward over the Colorado Valley about the 13th of March. "At this season they rise from the ground by laborious flappings, circling around higher and higher, until they get so far up as to seem like flocks of butterflies, and they gradually move northward." Other authors mention the soaring of the Sandhill Crane, but in Florida such a phenomenon is never observed. The explanation of this is, no doubt, that soaring is correlated with migration, and the Florida birds are non-migratory. Apparently they never voluntarily take the air except to pass from place to place, and at such times rise to no greater height than necessary to clear the obstacles in their paths.

According to Baird, Brewer, and Ridgway, the Sandhill Crane does not usually frequent the seashore, nor is it often found in wet places, but prefers dry prairies, ploughed fields, sandy hills, and like places, and in this respect is unlike the heron family. Barbour says the Cuban Sandhills are not often seen about water. The Florida birds, it is true, spend a large part of their time feeding on the dry prairie, and, as in other regions, are attracted by burned areas, but their lives are so centered about the ponds, and they were so plainly attached to the river marsh that we find it impossible to disassociate them from a watery environment.

#### A WARNING

In days gone by the Sandhill Crane bred over most of the great interior plains of North America, from western Canada southward, and during migration was often found in large flocks. Coues relates that thousands of Sandhill Cranes repaired each year to the Colorado River Valley, flock succeeding flock along the course of the great stream, from their arrival in September until their departure the following spring. Those immense flocks are now no more, and as a breeder the bird has withdrawn farther and farther to the north until today its nest is rarely found in the West south of the Canadian border. Moreover, it is found in no great numbers north of it. Recent faunal

papers indicate that the species is nowhere common west of the Mississippi, though it is resident in small numbers on the coast of Louisiana; east of the Mississippi it is almost unknown except in extreme southern Georgia and in Florida.

Florida, in fact, is generally agreed to be the Sandhill Crane's last stronghold. But alas! it is far from strong. Heretofore, inaccessibility of the country inhabited by the cranes has limited their human enemies to the natives who shoot them for food only, or to the occasional collector who takes a few specimens of the birds or robs them of a few sets of eggs. Now, the situation is different. Even as I write, a project is well under way to pave the road of deep sand between Sebring and Okeechobee, and probably before this article leaves the press a continuous stream of automobiles will be flowing through the very heart of the crane country.

The ultimate result of much "improvement" is as obvious as it is inevitable. Notwithstanding its extreme wariness and great sagacity, the Sandhill Crane must surely give way, like the Seminole Indian and the Ivory-billed Woodpecker, before this ruthless encroachment upon its retreats. Its wild note can not compete with the honk of the automobile.

Must the last of the Sandhill Crane's prairies be converted into worthless farms while countless acres of good arable land lie idle in near-by states? Must the tourist's automobile be given right of way through the last remaining wild spots? No! The Sandhill Crane is too splendid a creature to be thus swept out of existence. Its preservation must be considered in any scheme designed to open up interior Florida, but only the powers of State or Union are strong enough to confound the real estate promoter and hold some of the "waste places" inviolate. And there is no time to lose.

#### ACKNOWLEDGMENTS

The frontispiece is from the brush of Mr. George Miksch Sutton, to whose kindly interest a valuable feature of this paper is due. So far as I am aware, the Sandhill Crane has not before been depicted in crouching posture.

For assistance and unfailing courtesy in the field, our grateful thanks are extended to Messrs. W. Sid Pearce and Marvin H. Chandler, of Bassenger. True sons of Florida, simple and unspoiled, these men are as devoted to their native haunts as are the Sandhill Cranes them-



selves. Even now I can see, beneath a broad Stetson, the contented smile stealing over Pearce's weather-beaten features while he surveys his far-flung prairies, and the kindly twinkle in his eye as he turns in his saddle to ask, "Have you ever seen a purtier country than this?" And I can still answer with conviction, "I never have."

MONTGOMERY, ALABAMA.

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## THE DECLINE OF THE JACKSNIPE IN SOUTHERN WISCONSIN

BY ALDO LEOPOLD

The purpose of this paper is to present evidence of a recent decrease in jacksnipe or Wilson's Snipe (*Gallinago delicata*), to the end of stimulating action for the conservation of this bird and its habitat.

Its original abundance in the Mississippi Valley was probably beyond our present imaginative powers. Bogardus<sup>1</sup> (1874) killed 340 in a single day on the Salt Creek bottoms of the Sangamon River, and wagered to kill 100 straight in a day on this area. There were no takers. He says: "Our bag was seldom as small as seventy-five couple at the right time. . . . Snipe are vastly more abundant in the West . . . than in the East."

Kumlien and Hollister<sup>2</sup> (1903) say of the jacksnipe: "still common . . . [but] . . . we should be at a loss to express its numbers in former years." This refers especially to Walworth County, Wisconsin, where Kumlien began his observations about 1868.

Schorger<sup>3</sup> (1929) gives the jacksnipe as an abundant migrant in Dane County, but states that "a gradual decrease in numbers has taken place during the last fifteen years."

The extent of this recent decline may be roughly measured by means of the following table and chart, compiled from Schorger's ornithological notes for 1919-1929, and my shooting journal for 1924-1929.

The table reduces the number of jacksnipe seen and killed by each of us to yearly averages of the number "seen per trip" (Graph A) and the number "killed per hunt" (Graph B). The reason for distinguishing "trips" and "hunts" is that Schorger made many trips during

<sup>1</sup>Field, Cover and Trap Shooting, A. H. Bogardus, J. B. Ford & Co., N. Y., 1874, p. 136.

<sup>2</sup>Birds of Wisconsin, L. Kumlien and N. Hollister, Bull. Wis. Natural Hist. Society, Nos. 1-3, April-July, Milwaukee, 1903.

<sup>3</sup>Birds of Dane County, Wis., A. W. Schorger, Trans. Wis. Acad. Science, Vol. XXIV, Nov., 1929.

which no hunting was done. In both cases trips and hunts varied from a quarter day to a full day in length, and all were made in or near Dane County.

My journal records the length of each hunt, so that I was able to reduce my figures to terms of jacksnipe seen and killed per full day (Graphs C and D). The table, for simplicity, omits these calculations, but the greater smoothness of graphs C and D, as compared with A and B, reflects the removal of the disturbance due to varying lengths of time in the field.

The downward trend of all four graphs is apparent at a glance. A median line, drawn by averaging coordinates in groups of three, has been added to Graph A in order to show its general trend, as distinguished from its temporary fluctuations. A downward trend is apparent in all the graphs except B, and is clear in this case when figures have been reduced to kill per full day on Graph D. The chart, therefore, indicates a progressive decrease in the abundance of jacksnipe in Dane County. Can this apparent local decrease be accepted as actual? If so, does it reflect a general decrease?

A downward trend in birds killed might reflect poorer shooting rather than fewer birds. That there was no significant deterioration in my own shooting is indicated by data in my journal on shells per bird in bag up to 1926. As for Schorger's shooting, my impression is that it has improved rather than deteriorated. Both of us have used the same guns and I used the same dog throughout the period covered. Even if there were no data on marksmanship, however, the downward trend of birds seen would still indicate a decrease. Moreover, the graphs make no allowance for increasing skill in where and how to seek birds. At the time our records begin I was new to the region, and Schorger had never hunted snipe systematically. That we have both learned something about their local habits is shown later on. In my judgment, even a horizontal trend in the various graphs would be reason for suspecting a decrease.

Another explanation of the downward trend of all graphs might be that local shortages in food and water caused the migrating birds to pass over or around this locality. In so far as known, jacksnipe food is a function of water. The water in the remaining snipe marshes of Dane County is comparatively stable, because the marshes either lie at the level of artificially stabilized lakes, or are spring-fed, or both. Late summer and fall rainfall makes some difference, even in spring-fed or lake-level marshes, but not nearly so much as in marshes fed entirely by river overflow or by rain. Rainfall figures for August

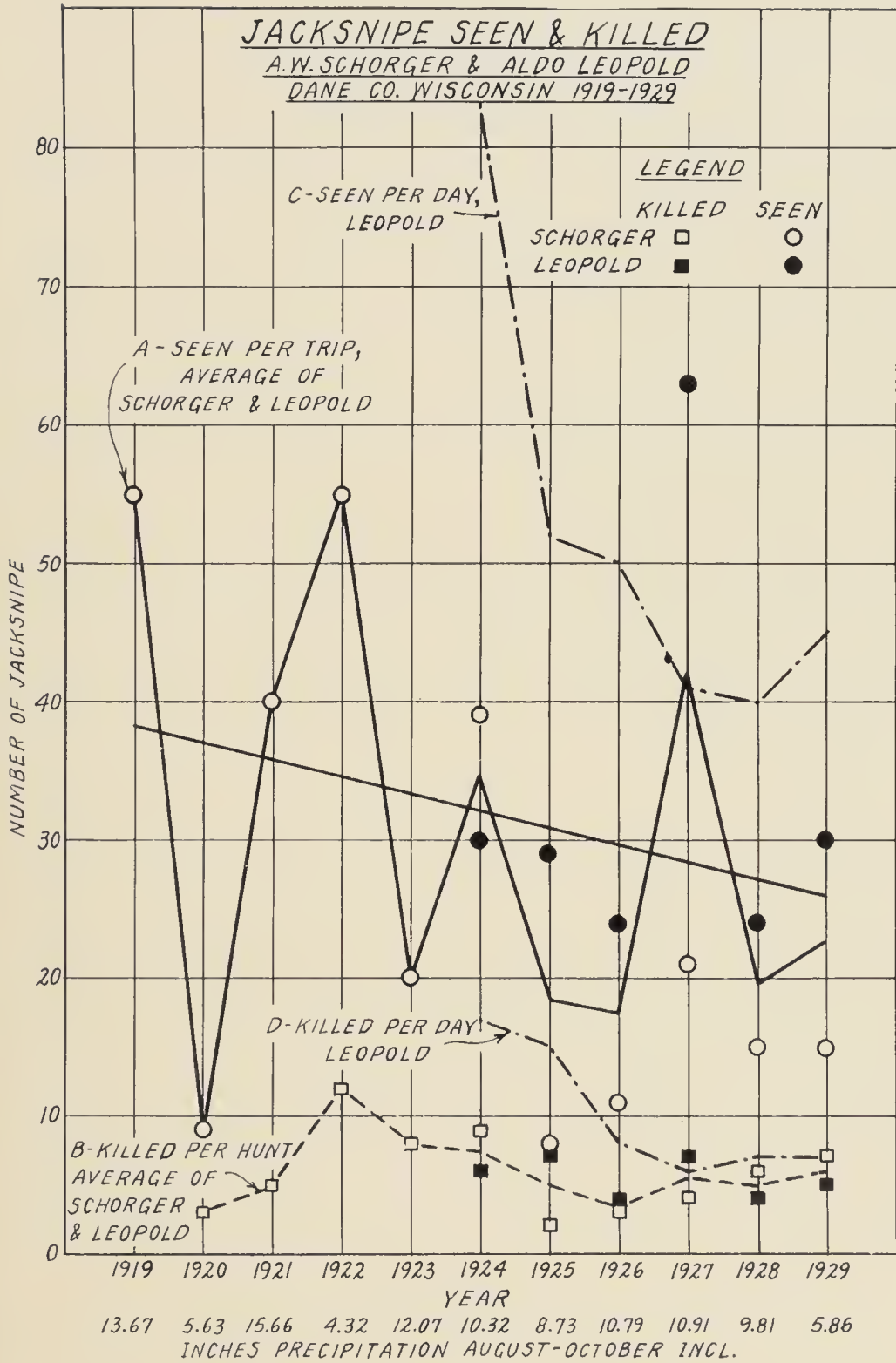


FIGURE 16. Graph showing diminution in number of Jacksnipes seen or killed from year to year during these studies.

to October of each year are entered at the bottom of the chart. I do not recall any year in which there was either a great shortage or a great surplus of snipe-water throughout an entire shooting season.

Insufficient grazing might have reduced the attractiveness of our local snipe grounds, and thus account for an apparent decrease in birds seen and killed. It is not likely to have affected these figures, however, because Dane County is in the heart of the Wisconsin dairy belt, in which both the number of cattle and the allocation of areas used as pasture are quite constant from year to year. Snipe ground must ordinarily be grazed in order to be good, apparently because ungrazed ground does not offer enough exposed mud. The muddy or boggy shorelines of receding ponds are used when available, especially early in the season, regardless of whether grazed or no, but this exception merely proves the rule.. Late November birds often resort to floating bogs covered with heavy ungrazed vegetation, but this is during cold weather. Apparently under such conditions the shelter-value of the vegetation offsets its obstruction of free access to the mud. Moreover, these floating bogs are then often the only ground left unfrozen. (These are all things Schorger and I have learned during the period covered by the graphs.. If the supply of birds had remained constant, this added knowledge should have produced a rising trend both in snipe seen and snipe killed).

Drainage might be another source of error. It is estimated that the available ground in Dane County has been shrinking at the rate of perhaps ten per cent per year by reason of new ditches. At this writing there are practically no large snipe grounds left except at lake-levels, where drainage can be effected only by pumping, and hence is seldom attempted. Numerous small upland potholes and spring-heads, however, still remain undrained. Ditched ground is usually worthless, even when wet by rains, and is avoided in hunting. Hence the only way for drainage to have invalidated these figures is by switching the migration route. I cannot appraise the probability of such a change, except to say that since there is still enough ground to hunt on, there would appear to be still enough to detain a normal density of migrating birds.

The actuality of the seeming decline in snipe is corroborated by the reports of local ornithologists on the spring migration, at which season the birds are not dependent on undrained marshes. For several years past the local bird-men, who each spring scour much country in search of other birds while the hunters are not afield, have been reporting a scarcity of snipe.



1925					1927				
Date	Schorger		Leopold		Date	Schorger		Leopold	
	Seen	Killed	Seen	Killed		Seen	Killed	Seen	Killed
9-13	1	x			8-13	24	x		
9-26	4	x	30	11	8-27	15	x		
9-27			20	4	9-10	17	x		
10-10	1	1	40	10	9-16			?	6
10-11	9	0	50	14	9-23	16	x	15	6
10-17			50	11	9-24	30	5		
10-18			25	2	10-1	9	1		
10-22			50	12	10-8	40	5		
10-24	20	2	25	8	10-15	15	4	100	10
10-25	2	0	10	1	10-22			75	5
10-31	8	1	50	9		166	15	190	27
11-1	20	5	25	10	Seen per Trip..	21		63	
11-7	12	7			Killed per Hunt		4		7
	77	16	315	92	1928				
Seen per Trip..	8		29		9-22	2	x	1	1
Killed per Hunt		2		8	9-23	12	x		
					9-29	9	x	30	4
					10-2			50	9
					10-6	25	11		
					10-13	30	5		
					10-14			40	6
					10-20	12	5		
					10-27	12	2		
					11-11			1	1
						102	23	122	21
					Seen per Trip..	15		24	
					Killed per Hunt		6		4
					1929				
					9-14	3	x		
					9-19	30	7		
					9-21	20	6		
					10-4	30	15		
					10-8			20	7
					10-12	7	x		
					10-13			40	4
					10-15	20	6		
					10-19	30	11		
					10-20	11	x		
					11-3	30	5		
					11-9	6	x		
					11-16	2	0		
						162	50	60	11
Seen per Trip..	11		24		Seen per Trip..	15		30	
Killed per Hunt		3		4	Killed per Hunt		7		5

All of the foregoing evidence pertains to Dane County and its immediate environs. In order to get a rough check on conditions elsewhere in the state, twelve selected jacksnipe hunters, all from different counties, were asked for their opinion on recent trends. Of these, five reported no perceptible change in recent years, six reported a decline, and one reported that recent flights have been more sporadic than formerly.

Taking everything together it is my conclusion: (1) that the jacksnipe in the region of Dane County, Wisconsin, has decreased perhaps fifty per cent since 1924; (2) that this may be due to their passing over or around us, or to a temporary abundance cycle, or to an actual decrease in the available supply; (3) that the only reason for doubting an actual decrease in the available supply would be positive evidence that they have increased or held their own in the rest of the Mississippi Valley.

If there is any such evidence of increase, I have not seen or heard of it. Such slight evidence as I have for the remainder of Wisconsin indicates that the decrease here indicated for Dane County has been statewide.

The possible causes of the decrease are a matter of conjecture. One likely cause is the shrinkage in southern breeding ranges, which were possibly the most productive. Bogardus<sup>1</sup> says that jacksnipe formerly bred as far south as the Calumet River and the great Winnebago swamp in Illinois, whereas Schorger<sup>3</sup> is in doubt whether they still breed in Dane County. The twelve snipe hunters whom I questioned concerning the status of jacksnipe elsewhere in Wisconsin reported their breeding in Sheboygan, Winnebago, Rusk, and Sawyer Counties. The most southerly of these is Sheboygan. From this, their present known southerly limit, to the Calumet River in Illinois, their probable southerly limit in 1874, is 120 miles.

The only really comprehensive check against the further shrinkage of marshes would be to accord undrained marshes a special tax status in view of their public service to migratory birds, just as ungrazed farm woodlots and managed forests are beginning to be accorded a special tax status in view of their public value to watersheds and timber supply.

Overshooting of jacksnipe doubtless occurs, but not so far in southern Wisconsin. The majority of hunters pay no attention to them as yet, but the number who do so is rapidly increasing.

As nearly as I am aware, the diseases, parasites, and predatory enemies of the jacksnipe are unknown, and their food nearly so. An

adequate life-history study would seem to be one of the obvious first moves toward a conservation program.

NOTE: Since preparing this manuscript I obtained from Mr. D. H. Haines of Ann Arbor, Michigan, through the kind offices of his shooting companion, Prof. Kenneth McMurray of the University of Michigan, a digest of the former's Shooting Journal by days. This is summarized by years as follows:

JACKSNIFE KILLED IN MICHIGAN  
BY DONALD H. HAINES

Year	Place	No. Killed	No. Hunts
1918	Kalamazoo .....	68	21
1919	Kalamazoo .....	47	26
1920	(Absent from State)		
1921	Ann Arbor .....	14	11
1922	Ann Arbor .....	7	13
1923	Ann Arbor .....	15	14
1924	Ann Arbor .....	31	23
1925	Ann Arbor .....	0	15
1926	Ann Arbor .....	1	10
1927	Ann Arbor .....	9	11
1928	Ann Arbor .....	18	18
1929	Ann Arbor .....	90	18
Total .....		300	180
Average .....		27	16

Mr. Haines' bag of snipe was obtained in conjunction with and sometimes incidental to a good deal of marsh duck hunting, hence his figures are not so direct an index to abundance as Schorger's or my own. For this reason they were not added to the graph. Nevertheless he assures me that whenever snipe were present in any numbers he usually hunted them. With respect to frequency, length, and regularity of hunts, his practice resembles Schorger's and mine.

Mr. Haines' Ann Arbor bag was above average in 1924 and 1929. (The exceptionally high 1929 figure was coincident with leasing some favorable marsh and hunting it oftener than usual). Our graphs show high in 1922 and 1924, and indicate an improvement in 1929.

Mr. Haines' bag was low in 1922, 1925, 1926, and 1927. Our graphs show low in 1920, 1923, 1925, 1926, possible 1927, and 1928.

The comparison is contradictory in only one year, 1922, and shows enough correspondence to suggest that Michigan and Wisconsin may both feel the same fluctuations in abundance.

GAME SURVEY.

MADISON. WIS.



## FLUCTUATION OF BIRD LIFE WITH CHANGE IN WATER LEVEL

BY E. L. MOSELEY

In the late spring of 1929, the water in Lake Erie became higher than it had been previously for nearly half a century. It was three feet higher than in May, 1926. In the Sandusky region and farther west, the water was probably never so high before. The western part of the lake gradually deepens because of slow subsidence of the land, as shown in my "Formation of Sandusky Bay and Cedar Point." There are no long-time continuous gage readings showing the water level anywhere west of Cleveland, where the lake was as high in July, 1876, as in May, 1929. The recent high water in the upper lakes and in Lake Erie was due in part to more than the normal precipitation in this region in the fall of 1928 and much more than normal in the first half of 1929. At Sandusky, the excess from January 1 to May 31, 1929, amounted to 6.17 inches. In other words, nearly fifty per cent more rain than usual fell in the first five months of the year. At the end of October the excess amounted to 8.06 inches. The high water in Lakes Michigan, Huron, St. Clair, and Erie was due also to the opening of sixteen locks in St. Mary's River at Sault Ste. Marie from August to December of 1928, dumping millions of cubic feet of water into Lake Michigan every minute, to lower Lake Superior, where high water was threatening the operations of the power plants.

The high water favored the marsh birds in two ways: it afforded more food, it made it harder for four-footed enemies to get to them and their nests. In 1929, some important items of food for these birds were many times as abundant as they had been for several years before. Wild rice, which in periods of moderately high water had been common in the Sandusky marshes, had become scarce during the low water period of 1923 to 1927, but the roots were not dead, so that when sufficient water covered them the plants grew up and fruited again. The bladderwort (*Utricularia vulgaris*) forms hibernacula (winter buds) which sink to the bottom and avoid the ice but are floated to the top in the spring by gas bubbles that form in them. These hibernacula, when abundant, form an important part of the food of coots, and perhaps of other birds.. For several years previous to 1928, extensive areas of marshland had too little water for the proper development of these plants but the high water of 1929 enabled them to make a luxuriant growth. In their bladders are caught crustacea and other animals. Whether birds get any animal food from these plants, I do not know. In 1929, duckweed covered

large expanses of quiet water, where for several years previously there had been only mud.

The three kinds of plants just mentioned afforded many times as much food in 1929 as in any one year from 1923 to 1927. The same is probably true of *Vallisneria*, or tapegrass, *Potamogeton*, or pondweed, and other aquatic plants. The lotus (*Nelumbo lutea*) was formerly found in such abundance in marshes east of Sandusky as to enable some enterprising boys to pay a large part of their school expenses by going in a power-boat to gather the buds and opening blossoms, which they sent to Cleveland. These beautiful plants had almost died out because of low water, but in 1929 showed signs of reviving.

During the years when the water was low, minks, weasels, raccoons, skunks, and other predatory mammals could easily make their way to most parts of the marsh without much swimming. Nesting birds were in danger. High water has changed this. Moreover, raptorial birds have become scarce, the little Screech Owl and the Marsh Hawk being now the only ones that are frequently seen.

For several years past birds of many kinds have increased over the country generally, because of a growing sentiment in their favor, more bird sanctuaries, altered game laws, sustained activities of game wardens, of Audubon Societies, and of Isaac Walton Leagues. This protection has affected directly the bird population of the marshes about Lake Erie. It has also increased the number of birds coming to these marshes from the south and other directions. However, there would not have been such a large increase in the number that made their home and reared their young here if they had not found more abundant food than in previous years.

For most of the facts regarding the number of birds in the Sandusky marshes in 1929, and the increase of certain aquatic plants which afford them food, I am indebted to my former pupil, Henry Graefe, who was a surgeon in the World War. For several summers past he and his family, all of them nature lovers, have spent much time upon or close to the marsh of the Wyandotte Shooting Club about six miles east of Sandusky. This marsh is well guarded from poachers. He thinks that fifty times as many King Rails, gallinules, and Coots were hatched there in 1929 as in any one of several previous years. In marshes west of Sandusky gallinules and Coots were even more abundant. Soras and Virginia Rails showed a noticeable increase but less than the preceding species.

American Bitterns were heard more frequently than usual and Great Blue Herons were very numerous. About a hundred were in sight at one time, perched on spiles in the lake. These herons have increased over a wide territory, due, no doubt, to better protection. For the same reason, two American Egrets were seen by Dr. Graefe east of Sandusky and by observers in other places in northern Ohio in July or early in August.

Of ducks, the most notable increase was in Wood Ducks, many of them reared in the marsh. Several times in September, he observed a hundred or more at a time. Men employed to guard the marsh said they had seen as many as 500 Wood Ducks. Gadwalls, although they do not stay in the marsh continuously, were more numerous than for five or six years before.

Mallards, Black Ducks, and red-legged Black Ducks, were about as common as in previous years; teals of both kinds were rather more numerous than usual, Pintails less numerous. More Pied-billed Grebes were seen than usual.

STATE NORMAL COLLEGE.  
BOWLING GREEN, OHIO.

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## THE ECONOMIC IMPORTANCE OF BIRDS AS INSECT PREDATORS

BY C. N. AINSLIE

On the surface this may seem a simple subject to discuss. We all know that many birds live on the insects they capture and we also know that insects are always on hand to be eaten, so what is there to talk about? The bugs eat the gardens and the birds dispose of the bugs and save vegetation, consequently the birds are the salvation of the gardeners and the farmers.

I suspect this is the general and popular view of this subject, particularly among ornithologists, many of whom imagine that farming would be a failure if it were not for the birds that control and destroy insect pests. Like most questions, economic ones especially, there are two sides to this one and I want for a few minutes to turn it around so both sides may be seen.

We are aware that animate nature is a tremendously complicated affair, with all its forms of life, animal and vegetable, so intimately combined and correlated that it is simply impossible to deal with or even discuss any one section of this vast complex and ignore any other part. No one realizes this more than an entomologist, who is,

in economic work particularly, continually endeavoring to solve the problems of life histories in order that the relations of insects with one another and with the entire structure of the world around them may be clearly understood. It is a well known fact that there are very few organisms, plant or animal, simple or complicated, that do not have, somewhere in their life cycle, some critical period when they are vulnerable, when they offer the least resistance to outside attack. This fact is really the basis of our work as members of the Federal Bureau of Entomology and it is only because of this fact that insects do not multiply to such an extent as to drive us from the earth.

The enormous possibilities of insect multiplication are not generally appreciated by those who are not entomologists, and it may be worth while to mention this angle of the subject in passing in order to get some conception of the great menace of the insect world. Of course it must be understood that, fortunately, the theoretical and actual figures do not coincide; nevertheless the theoretical figures are given below.

Many of our crops are attacked and destroyed by the larvae of certain moths and beetles. The adult females of many of these moths and beetles deposit something like 300 eggs each. The first female moth or beetle will place, the first year, say, 300 eggs. These will hatch and the following year there will be 150 pairs.  $150 \times 300 = 45,000$ . The second year there will be 22,500 pairs.  $22,500 \times 300 = 6,750,000$ . All this in three years from a single female. Now supposing, as is often the case, that there are 1,000 females in one field, you can estimate the enormous increase that might result. Figures similar to these may be theoretically true of a great many of our farm and garden pests and some of these pests can make an even better showing.

You may not be acquainted with the classic illustration used by Thomas H. Huxley in demonstrating the tremendous possibility of multiplication of plant lice. These plant lice, or aphids, are about the size of a large pinhead, their bodies are mostly liquid and they can be crushed by a mere touch. Assuming that an aphid weighs but  $1/1000$  of a grain and that it requires a very stout man to weigh more than 2,000,000 grains, Huxley shows that from a single aphid the 10th brood alone would contain more weight than 500,000,000 men, or more than the entire population of China. Buekton, an eminent English scientist and student of aphids, criticises these figures as being much too small. He says that if a single aphid, such as one seen on rose bushes, should begin to reproduce and each individual should live but twenty days, at the end of 300 days the living indi-

viduals would number almost 33 quintillions, equal to the weight of 1,638,400,000 men. Another mathematician figures the problem another way and proves that the total number of living aphids that could be produced from a single female in one season would be represented by 210 raised to the 15th power, a number almost impossible to express in figures. If these computations are new to you they may impress you with some idea of what the human race is up against in its fight with the insect world for existence or even for standing room.

I have said that these figures are theoretical and not actual. I suppose the only thing that prevents them from becoming actual is the presence of various destructive agencies with ability to keep down these staggering totals. There are many of these agencies busy every minute, some of them strikingly apparent, others effective but not visible, always engaged in unceasing warfare against the enormous increase of insect life. The great army of insect-eating birds is aggressive in this fight and these birds are entitled to full credit for their efforts in our behalf. Under normal conditions these birds seem able to secure enough insects for their daily needs, for themselves and their offspring. The numbers of these birds remain about the same year after year in the same locality. The constant fatality to bird life probably accounts for the lack of increase in any given neighborhood although countless broods are launched on the air each year.

As I have said, under normal conditions these birds appear to find enough insects for their needs. Now suppose some insect pest eludes its parasites or other enemies and its numbers are, for the time being, increased a thousand fold. The birds that feed on it cannot by any trick of reproduction multiply in time to diminish the pest to an appreciable degree, especially if the outbreak covers a large area, as is often the case. The percentage of any insect that will be destroyed by birds naturally drops far below normal in case of an outbreak. A few sporadic cases are on record, exceptions to the general rule, where birds have moved in, concentrated and effectively reduced the numbers of the marauders. But even in such cases nature depends very largely on parasitic control and is justified in doing so. If cutworms increase birds will manage to find a few of them. But the cutworm has at least a dozen species of parasitic enemies, and if one of these species should happen to be at a low ebb as to numbers there are usually plenty of others that will come to the rescue and subdue the common enemy. If man is to exist on the earth the equilibrium must be maintained by some means.

In this connection it may be in order to explain, before going farther, that a parasite is an insect that lives on or in some other insect and is dependent on that insect for its food supply. Parasites are of an almost infinite variety of size, shape, and habit. They become adapted to their environment and their presence adds greatly to the complexity of the study of insects. They form one of the chief factors in insect control even though often microscopic in size. In New Mexico, years ago, I watched a tiny parasite drilling into the eggs of a moth in the heads of kaffir corn, placing its own egg within the other egg, the moth's egg being about the size of a grain of mustard seed. From one of these I reared three parasites that had found sufficient nourishment within that small egg to bring all three to maturity. Other parasites are even much smaller than these. One species, barely large enough to discern without a lens, is very important in the control of the Hessian fly which is a serious enemy of the wheat crop. Some years ago I dissected one of these very small Hessian fly parasites and counted approximately 3500 eggs in her ovaries.

The point I am making is that, useful as birds are in their way, they can seldom be depended on, unaided, to rid us of our insect enemies. Especially is this true in an emergency when quick relief is demanded. The fact that parasites are able to multiply in prodigious numbers at times, whereas birds are very limited in their ability to increase, marks one difference between these friends of men.

The much advertised corn-borer affords an interesting note on the situation I am trying to describe. The corn-borer comes from Italy or at least is present in that country. And it is said to do very little damage there. Italy is one part of Europe where birds are few in number owing to the fact that even the song birds are used for food at times. When the borer reached the United States, where birds are protected as in no other country on the face of the earth, the borer at once became a menace and remains so to this day. Our birds seem to be useless as far as this problem is concerned. When the parasites now being imported from Italy are distributed and acclimated it is hoped that the corn-borer will become less harmful, but the birds will get little credit unless they get busy.

One fact of importance should be borne in mind in this discussion, namely, that control of insects by birds depends wholly upon the numbers and the appetite of the birds concerned. No matter how many birds are busy, as soon as they are sated with food they are at

the end of their usefulness for the time being. On the other hand, in the case of parasites, appetite has nothing to do with the limitation of their work. With them it is merely a problem of hunting their victims on or in which to place their eggs. The more victims they can find in a given length of time, the more eggs are placed, since, as a usual thing, their supply of eggs is practically unlimited. It seems to me that these facts will explain why parasites have checked so many outbreaks and why birds are so often powerless in the matter of control. Do not understand me to be minimizing the value of birds in their every day labors against injurious insects, but my observations would lead me to believe that they are often overrated. During my twenty-three years of official work I have been in immediate contact with a number of serious insect outbreaks and in no case have birds accomplished any noticeable reduction in the numbers of the pest. One grasshopper invasion below Flagstaff in Arizona was attended by great numbers of blackbirds that captured a small percentage of the hoppers but really interfered but little with their activities.

The Pale Western Cutworm in North Dakota has been attacked in a limited way by the Horned Lark, but the labors of this beautiful bird make only a feeble impression on the numbers of the cutworms in the wheat fields. Other pests such as the Hessian fly, the wheat stem sawfly, and the chinch bug are none of them such as birds can in any way control even to a limited extent. They can be suppressed only by parasites or by cultural methods.

It has always seemed to me that the habit of placing emphasis on the money value of birds is unfortunate for it commercializes them in the same way that many of our blessings have been cheapened. To protect birds because they are an asset to a growing bank account may be good business but it detracts from the esteem in which birds are held or should be held because of their grace and beauty and companionship and song. Our country, even if birdless, would not become a desert, but it would lack the presence of one of the most attractive features of our wild life. And it goes without saying, that, apart from their economic value, they should be protected in every possible manner, both by law and by community support.

U. S. BUREAU OF ENTOMOLOGY,  
SIOUX CITY, IOWA.

BIRDS OF THE YELLOWSTONE NATIONAL PARK, WITH SOME  
RECENT ADDITIONS

BY EMERSON KEMSIES

This past summer (1929) I had the privilege of working in Yellowstone Park as Ranger Naturalist. During that time I prepared a revised check-list of the birds of the Park. The following paper includes notes on species not previously recorded, and a revised check-list of the birds known to occur in the Yellowstone Park.

The Park has an area of 3427 square miles, being approximately fifty-five miles east to west, and sixty miles north to south. Elevations range from about 4,000 feet at the North or Gardiner Entrance to about 11,000 feet on some of the surrounding mountains. The largest part lies at an elevation of from 7,000 to 8,500 feet. Yellowstone Lake with an area of 139 square miles and a shore line of 100 miles lies at an elevation of 7,740 feet.

The Park presents in a comparatively small area a wide variety of habitats, making conditions favorable for a large and varied bird life. I have listed 209 species of which six or seven may be regarded as accidental or casual. In addition there are five or six species which one is justified in listing as hypothetical.

The whole Park has never been thoroughly worked over by an ornithologist. Mr. M. P. Skinner, the first Park Naturalist (1921-1922), has written a bulletin listing 202 species, which was published in 1925 by the Roosevelt Wild Life Experiment Station of Syracuse University.

It is certain that a year spent in the Park in a study of the bird life would bring very worth-while results. Large sections of the Park which are probably richest in bird life are away from the main trails and rather difficult of access unless one has a great deal of time. One section in particular, the southwest corner of the Park, or Bechlar River region, should be carefully worked. It is from this region that regular reports are received of the breeding of the Whooping Crane.

Dr. T. Gilbert Pearson, president of the National Association of Audubon Societies, while on the Boundary Commission Survey this past summer reported seeing two young Whooping Cranes. The permanent ranger at the Bechlar River station later wrote saying he had located the adults. The permanent rangers' duties are so heavy that they have little time or inclination to devote to the intensive study of any field of natural history.

The Ranger Naturalists, all but two of whom serve only for the three summer months, have very little time for research under the



present system. Naturalists are stationed only at those parts of the Park where they can come in contact with the largest number of tourists.

The following are birds that were seen for the first time this summer.

RED-THROATED LOON. *Gavia stellata*. First seen June 28, 1929, at West Thumb, the western side of the Lake near its southern end, by Mr. Dorr Yeager, Permanent Park Naturalist, and myself. It being evening we unfortunately did not have time to look for a nest. I returned to the section on July 15 and at that time found two young together with the adults. Bent (1919), in his *Life Histories of North American Birds*, says, "Stray birds occasionally summer in the United States and southern Canada. Said to have bred once at Pittston, Pennsylvania." Otherwise I can find no mention of this species as a summer resident in the United States.

MARbled GODWIT. *Limosa fedoa*. Identified June 29, 1929, on the Molly Islands in Yellowstone Lake for the first time. These islands are in the southeast area of the Lake and are rarely visited except a few times a year by the men connected with the Bureau of Fisheries. Two of the godwits were seen and identified by Mr. H. C. Jones, instructor with the Oberlin Ecology Party, and myself.

It is on these islands that one of the few remaining breeding colonies of the American White Pelican remains. There were about 150 nests of this species each with one or two young in it. Most interesting was the cannibalistic habit of this bird. In all cases where two birds occurred in a nest one was much larger than the other. I doubt whether any nest in this colony would successfully raise more than one young. Although the young ones were still entirely naked the oldest one had already succeeded in killing the younger one in a good many nests.

Eggs of the Caspian Tern and downy young and eggs of the California Gull were found on the islands also.

WESTERN GRASSHOPPER SPARROW. *Ammodramus savannarum bimaculatus*. I found several pairs breeding in the meadows around the Upper Geyser Basin. I did not find any nests but males were heard singing daily throughout the breeding season. Apparently the first record for the Park. Probably overlooked or not distinguished from the Western Savanna which has been recorded from most meadowland sections of the Park.

SPRAGUE'S PIPIT. *Anthus spraguei*. Several were seen July 10 at the Lower Geyser Basin. Apparently the first record.

AUDUBON'S HERMIT THRUSH. *Hyalocichla guttata auduboni*. Listed by Mr. Skinner as an uncommon breeder. I found at least ten pairs this past summer, three or four in a rather small area around Mammoth and the rest at the Upper Basin.

Park Ranger Albert Bicknell of the Bechar River district, sent me a perfect description of the Scott's Oriole (*Icterus parisorum*) saying he had never seen the bird before, and that a pair had bred near the Ranger Station this summer. There are no other records of the occurrence of this species. I have entered it on the list as hypothetical.

Shufeldt's Junco (*Junco hyemalis connectens*) is listed by Skinner as a rare migrant. I saw three near the Upper Basin July 14. I have no idea whether they were breeding or not, but they could hardly have been fall migrants. The first evidence of fall migration occurred with the flocking of the Brewer's Blackbirds on August 14.

Although there are well authenticated records for the Trumpeter Swan in the Park yet the reports of the common occurrence of this species in late fall have never been verified.

The following check-list is an attempt to present a complete list of the birds of Yellowstone Park as at present known. The latest revised A. O. U. check-lists have been used as standards for nomenclature. Most of the list is, of course, based on M. P. Skinner's "Birds of the Yellowstone", published by the Roosevelt Wild Life Experiment Station of Syracuse University. Mr. Skinner was connected with the Park for ten years previous to his appointment as Park Naturalist in 1920, which office he held until his resignation in 1922.

Several new records are included and a hypothetical list has been added. An attempt has been made to indicate the status of each species in the Park. "Possible" or "Probable" breeders indicates that as yet no breeding record has been established, but that all conditions are favorable for the breeding of that species in the Park. Breeding or nesting dates in the Park are my own observations in most cases.

Thanks are due to Dr. H. M. Kelly, Ranger Naturalist at Yellowstone Lake, and to Park Naturalist D. G. Yeager, and to head Ranger Naturalist Dr. E. N. Jones, for the privilege of visiting the Molly Islands with the Ecology Party under Dr. Lynds Jones; and especially to Mr. Newell Joyner, Assistant Park Naturalist, for much help and many valuable suggestions in the preparation of the list. Where initials are given, Sk. is for Skinner, and E. K. for my own personal observations or comments.

Additions to the check-list for the Yellowstone Park as given by Skinner in 1925 (Birds of Yellowstone National Park, Roosevelt Wild Life Bulletin, Vol. 3, No. 1, pp. 170-176) are marked with an asterisk (\*).

## THE LIST

WESTERN GREBE. *Aechmophorus occidentalis*. Occasional breeder.

HORNED GREBE. *Colymbus auritus*. Frequent migrant.

EARED GREBE. *Colymbus nigricollis californicus*. Common breeder. Downy young, Yellowstone Lake, July 15, 1929 (E.K.).

PIED-BILLED GREBE. *Podilymbus podiceps*. Frequent migrant, probable breeder.

LOON. *Gavia immer*. Migrant, May and November (Sk.).

\*RED-THROATED LOON. *Gavia stellata*. Apparently the first record. June 28, 1929, at West Thumb. Seen first by Dorr Yeager and myself. Two young well grown on Yellowstone Lake, July 15. (E.K.)

CALIFORNIA GULL. *Larus californicus*. Common breeder. Young and eggs, Yellowstone Lake, June 29. (E.K.).

RING-BILLED GULL. *Larus delawarensis*. Frequent breeder.

BONAPARTE'S GULL. *Larus philadelphia*. Migrant.

CASPIAN TERN. *Sterna caspia imperator*. Frequent breeder. Eggs and young, June 29, Yellowstone Lake. (E.K.).

BLACK TERN. *Chlidonias nigra surinamensis*. Frequent migrant, probable summer resident.

WHITE PELICAN. *Pelecanus erythrorhynchos*. Local breeder. Young and eggs, June 29, Molly Islands, Yellowstone Lake. (E.K.).

MERGANSER. *Mergus americanus*. Common breeder, permanent resident.

\*RED-BREASTED MERGANSER. *Mergus serrator*. Common migrant, probable summer resident. Several flocks seen on Yellowstone Lake, June 29. (E.K.).

HOODED MERGANSER. *Lophodytes cucullatus*. Permanent resident.

MALLARD. *Anas platyrhynchos*. Permanent resident.

GADWALL. *Chaulelasmus streperus*. Breeder.

BALDPATE. *Mareca americana*. Common breeder.

GREEN-WINGED TEAL. *Nettion carolinense*. Permanent resident.

BLUE-WINGED TEAL. *Querquedula discors*. Common breeder.

CINNAMON TEAL. *Querquedula cyanoptera*. Common breeder.

SHOVELLER. *Spatula clypeata*. Occasional breeder, frequent migrant.

PINTAIL. *Dafla acuta tzitzihoa*. Common breeder.

WOOD DUCK. *Aix sponsa*. Rare breeder.

REDHEAD. *Marila americana*. Migrant.

CANVAS-BACK. *Marila valisineria*. Migrant.

SCAUP DUCK. *Marila marila*. Common breeder. The common form in migration. Seen on Yellowstone Lake at various times during summer of 1929. (E.K.).

LESSER SCAUP. *Marila affinis*. Frequent breeder and migrant.

AMERICAN GOLDEN-EYE. *Glaucionetta clangula americana*. Winter visitor. (Sk.).

BARROW'S GOLDEN-EYE. *Glaucionetta islandica*. Common permanent resident.

BUFFLE-HEAD. *Charitonetta albeola*. Migrant.

PACIFIC HARLEQUIN DUCK. *Histrionicus histrionicus pacificus*. Rare breeder. Yellowstone Park June 16 and 29. (E.K.).

AMERICAN SCOTER. *Oidemia americana*. Migrant.

PACIFIC WHITE-WINGED SCOTER. *Oidemia deglandi dixonii*. Rare visitor.

RUDDY DUCK. *Eristmatura jamaicensis*. Occasional breeder and common migrant.

LESSER SNOW GOOSE. *Chen hyperboreus hyperboreus*. Rare migrant.

CANADA GOOSE. *Branta canadensis*. Permanent resident and common migrant. Eggs, Yellowstone Lake, Molly Islands, June 29. (E.K.).

HUTCHINS'S GOOSE. *Branta canadensis hutchinsi*. Rare migrant.

WHISTLING SWAN. *Olor columbianus*. Winter visitor and possible summer resident. Common fall migrant.

TRUMPETER SWAN. *Olor buccinator*. Rare breeder.

WHITE-FACED GLOSSY IBIS. *Plegadis guarauna*. Casual visitor. (Sk.).

\*WOOD IBIS. *Mycteria americana*. A casual record of this species at the Grand Canyon on July 16, 1925, is reported by A. C. Bent ("Life Histories of North American Marsh Birds", 1926, page 65).

GREAT BLUE HERON. *Ardea herodias traganzai*. Frequent breeder. Young, Upper Basin, July 1. Seen frequently at Upper Geyser Basin, summer of 1929. (E.K.).

\*BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius*. One record. (Sk.).

WHOOPIING CRANE. *Grus americana*. Few pairs breeding in Bechlar River Region, Yellowstone Park. (Pearson). Adults seen by Bicknell.

LITTLE BROWN CRANE. *Grus canadensis*. Rare migrant.

SANDHILL CRANE. *Grus mexicana*. Breeder. Seen near Fountain Station frequently, summer of 1929. (E.K.).

SORA. CAROLINA RAIL. *Porzana carolina*. Occasional breeder.

AMERICAN COOT. *Fulica americana*. Occasional breeder and common migrant.

NORTHERN PHALAROPE. *Lobipes lobatus*. Rare migrant.

WILSON'S PHALAROPE. *Steganopus tricolor*. Occasional breeder.

AMERICAN AVOCET. *Recurvirostra americana*. Rare migrant.

WILSON'S SNIPE. *Gallinago delicata*. A few wintering near Mammoth. Occasional breeder.

PECTORAL SANDPIPER. *Pisobia maculata*. Rare migrant.

BAIRD'S SANDPIPER. *Pisobia bairdi*. Rare migrant.

LEAST SANDPIPER. *Pisobia minutilla*. Occasional migrant.

\*MARBLED GODWIT. *Limosa fedoa*. First Yellowstone record, June 29, 1929, on Molly Islands, Yellowstone Lake. Also observed by H. C. Jones.

GREATER YELLOW-LEGS. *Totanus melanoleucus*. Occasional migrant.

LESSER YELLOW-LEGS. *Totanus flavipes*. Occasional migrant.

WESTERN SOLITARY SANDPIPER. *Tringa solitaria cinnamomea*. Occasional fall migrant.

WESTERN WILLET. *Catoptrophorus semipalmatus inornatus*. Occasional fall migrant.

SPOTTED SANDPIPER. *Actitis macularia*. Abundant summer resident. Eggs, June 20, Upper Basin. (E.K.).

LONG-BILLED CURLEW. *Numenius americanus*. Occasional migrant.

KILLDEER. *Oxyechus vociferus*. Abundant summer resident. One of earliest spring arrivals. Downy young, Upper Basin, June 26. (E. K.).

RUDDY TURNSTONE. *Arenaria interpres morinella*. Rare migrant.

RICHARDSON'S GROUSE. *Dendragapus obscurus richardsoni*. Common permanent resident.

FRANKLIN'S GROUSE. *Canachites franklini*. Very rare permanent resident.

GRAY RUFFED GROUSE. *Bonasa umbellus umbelloides*. Common permanent resident.

COLUMBIAN SHARP-TAILED GROUSE. *Pedioecetes phasianellus columbianus*. Rare permanent resident

SAGE HEN. *Centrocercus urophasianus*. Rare permanent resident.

WESTERN MOURNING DOVE. *Zenaidura macroura marginella*. Occasional breeder. Incubating first week in July at Yellowstone Lake. (E.K.). Seen by Joyner at Upper Basin, September 7, 1929.

MARSH HAWK. *Circus hudsonius*. Common breeder.

SHARP-SHINNED HAWK. *Accipiter velox*. Breeder.

COOPER'S HAWK. *Accipiter cooperi*. Breeder.

WESTERN GOSHAWK. *Astur atricapillus striatulus*. Rare permanent resident. More common in winter.

WESTERN RED-TAIL. *Buteo borealis calurus*. Common breeder.

SWAINSON'S HAWK. *Buteo swainsoni*. Common breeder.

ROUGH-LEGGED HAWK. *Archibuteo lagopus sancti-johannis*. Occasional winter resident, very rare in Park season.

FERRUGINOUS ROUGH-LEG. *Archibuteo ferrugineus*. Possible permanent resident. Occasionally seen as summer visitor.

GOLDEN EAGLE. *Aquila chrysaetos*. Occasional permanent resident.

BALD EAGLE. *Haliaeetus leucocephalus*. Occasional permanent resident.

PRAIRIE FALCON. *Falco mexicanus*. Rare breeder.

DUCK HAWK. *Falco peregrinus anatum*. Rare breeder.

PIGEON HAWK. *Falco columbarius columbarius*. Occasional breeder. Accidental winter visitor at Mammoth, November 15, 1928. Identified by Yeager and Joyner.

DESERT SPARROW HAWK. *Cerchneis sparveria phalaena*. Common breeder. Young at Upper Basin. Fledged the first week of July. (E.K.).

OSPREY. FISH HAWK. *Pandion haliaetus carolinensis*. Common breeder. Young in nest, June 16, 1929. Yellowstone Canyon.

LONG-EARED OWL. *Asio otus wilsonianus*. Rare permanent resident.

SHORT-EARED OWL. *Asio flammeus*. Occasional breeder and rare permanent resident.

ROCKY MOUNTAIN SCREECH OWL. *Otus asio maxwelliae*. Rare visitor.

WESTERN HORNED OWL. *Bubo virginianus occidentalis*. Common breeder; possible permanent resident.

AMERICAN HAWK OWL. *Surnia ulula caparoch*. Possible breeder. Occasional winter resident.

ROCKY MOUNTAIN PYGMY OWL. *Glaucidium gnoma pinicola*. Occasional winter resident and probable breeder.

BELTED KINGFISHER. *Ceryle alcyon*. Common breeder; occasional permanent resident.

ROCKY MOUNTAIN HAIRY WOODPECKER. *Dryobates villosus monticola*. Permanent resident.

BATCHELDER'S WOODPECKER. *Dryobates pubescens homorus*. Permanent resident.

ARCTIC THREE-TOED WOODPECKER. *Picoides arcticus*. Rare breeder. One seen July 10, 1929, at Upper Basin carrying food. (E.K.).

ALPINE THREE-TOED WOODPECKER. *Picoides americanus dorsalis*. Rare breeder.

RED-NAPED SAPSUCKER. *Sphyrapicus varius nuchalis*. Occasional breeder.

WILLIAMSON'S SAPSUCKER. *Sphyrapicus thyroideus*. Common breeder.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus*. Rare breeder.

LEWIS'S WOODPECKER. *Asyndesmus lewisi*. Rare breeder.

RED-SHAFTED FLICKER. *Colaptes cafer collaris*. Abundant summer resident; occasional permanent resident. Mating at Upper Basin, July 1. (E.K.).

PACIFIC NIGHTHAWK. *Chordeiles virginianus hesperis*. Common breeder. Fresh eggs, Upper Basin, July 1, 1929. (E.K.).

WHITE-THROATED SWIFT. *Aeronautes melanoleucus*. Rare breeder.

BROAD-TAILED HUMMINGBIRD. *Selasphorus platycercus*. Rare breeder.

RUFOUS HUMMINGBIRD. *Selasphorus rufus*. Rare breeder. One record for Upper Basin. (Sk.).

CALLIOPE HUMMINGBIRD. *Stellula calliope*. Occasional breeder.

KINGBIRD. *Tyrannus tyrannus*. Occasional breeder, most common at the lower altitudes.

\*ARKANSAS KINGBIRD. *Tyrannus verticalis*. Breeder.

SAY'S PHOEBE. *Sayornis sayus*. Common breeder. Nest with young, Upper Basin, July 2. (E.K.).

OLIVE-SIDED FLYCATCHER. *Nuttalornis borealis*. Rare breeder.

WESTERN WOOD PEWEE. *Myiochanes richardsoni*. Occasional breeder.

WESTERN FLYCATCHER. *Empidonax difficilis*. Occasional breeder.

TRAILL'S FLYCATCHER. *Empidonax trailli*. Common breeder.

HAMMOND'S FLYCATCHER. *Empidonax hammondi*. Rare breeder.

WRIGHT'S FLYCATCHER. *Empidonax wrighti*. Common breeder.

DESERT HORNED LARK. *Otocoris alpestris leucolaema*. Common breeder. (Sk.).

HOYT'S HORNED LARK. *Otocoris alpestris hoyti*. Rare winter visitor. (Sk.).

BLACK-BILLED MAGPIE. *Pica pica hudsonia*. Occasional permanent resident. Common winter resident.

BLACK-HEADED JAY. *Cyanocitta stelleri annec'ens*. Rare permanent resident.

ROCKY MOUNTAIN JAY. *Perisoreus canadensis capitalis*. Occasional permanent resident.

AMERICAN RAVEN. *Corvus corax sinuatus*. Common permanent resident.

WESTERN CROW. *Corvus brachyrhynchos hesperis*. Common summer resident at lower altitudes. Rare permanent resident.

CLARKE'S NUTCRACKER. *Nucifraga columbiana*. Abundant permanent resident.

PINION JAY. *Cyanocephalus cyanocephalus*. Rare visitor, possible breeder.

BOBOLINK. *Dolichronyx oryzivorus*. Occasional breeder.

COWBIRD. *Molothrus ater*. Rare breeder; infrequent migrant.

YELLOW-HEADED BLACKBIRD. *Xanthocephalus xanthocephalus*. Occasional breeder; common migrant.

THICK-BILLED RED-WING. *Agelaius phoeniceus fortis*. Common migrant; occasional breeder.

WESTERN MEADOWLARK. *Sturnella neglecta*. Abundant breeder.

BULLOCK'S ORIOLE. *Icterus bullocki*. Rare breeder.

BREWER'S BLACKBIRD. *Euphagus cyanocephalus*. Abundant migrant; common breeder.



WESTERN EVENING GROSBEAK. *Hesperiphona vespertina montana*. Erratic wanderer, probably breeding in the higher altitudes of the Park.

ROCKY MOUNTAIN PINE GROSBEAK. *Pinicola enucleator montana*. Common migrant; occasional breeder; possible permanent resident.

CASSIN'S PURPLE FINCH. *Carpodacus cassini*. Common breeder.

AMERICAN CROSSBILL. *Loxia curvirostra minor*. Erratic visitor, probable breeder at higher altitudes.

WHITE-WINGED CROSSBILL. *Loxia leucoptera*. Rare migrant. (Sk.).

GRAY-CROWNED ROSY FINCH. *Leucosticte tephrocotis*. Common winter resident.

HEPBURN'S ROSY FINCH. *Leucosticte tephrocotis littoralis*. Common winter resident

BLACK ROSY FINCH. *Leucosticte atrata*. Occasional winter resident.

REDPOLL. *Acanthis linaria*. Occasional winter resident.

PALE GOLDFINCH. *Astragalinus tristis pallidus*. Occasional breeder. Seen several times in Upper Geyser Basin, 1929. (E.K.).

PINE SISKIN. *Spinus pinus*. Frequent breeder, possible permanent resident.

ENGLISH SPARROW. *Passer domesticus domesticus*. Rare permanent resident at Mammoth. (Sk.).

SNOW BUNTING. *Plectrophenax nivalis*. Rare winter visitor.

ALASKA LONGSPUR. *Calcarius lapponicus alascensis*. Occasional winter visitor.

WESTERN VESPER SPARROW. *Poocetes gramineus confinis*. Abundant summer resident below 7,000 feet. (Sk.). Bred at Upper Basin, summer of 1929. (E.K.).

WESTERN SAVANNAH SPARROW. *Passerculus sandwichensis alaudinus*. Common breeder.

\*WESTERN GRASSHOPPER SPARROW. *Ammodramus savannarum bimaculatus*. Several pairs breeding around Upper Geyser Basin in meadows in summer of 1929. Apparently the first record for the Park. (E.K.).

WESTERN LARK SPARROW. *Chondestes grammacus strigatus*. Rare breeder.

WHITE-CROWNED SPARROW. *Zonotrichia leucophrys*. "Abundant summer resident." (Sk.).

GAMBEL'S SPARROW. *Zonotrichia leucophrys gambelli*. Occasional migrant.

WHITE-THROATED SPARROW. *Zonotrichia albicollis*. Accidental visitor.

WESTERN TREE SPARROW. *Spizella monticola ochracea*. Frequent migrant in February, March, September, and October. (Sk.). Possible winter resident.

WESTERN CHIPPING SPARROW. *Spizella passerina arizonae*. Common breeder.

BREWER'S SPARROW. *Spizella breweri*. Rare breeder.

SHUFELDT'S JUNCO. *Junco hyemalis connectens*. Rare migrant. (Sk.). Seen Upper Basin. July 14, 1929. (E.K.).

MONTANA JUNCO. *Junco hyemalis montanus*. Occasional migrant.

PINK-SIDED JUNCO. *Junco hyemalis mearnsi*. Abundant migrant. common breeder, frequent permanent resident.

MOUNTAIN SONG SPARROW. *Melospiza medodia montana*. Common breeder, occasional permanent resident.

LINCOLN'S SPARROW. *Melospiza lincolni*. Frequent breeder. (Sk.). Rarely seen because shy.

SLATE-COLORED FOX SPARROW. *Passerella iliaca schistacea*. Rare breeder.

SPURRED TOWHEE. *Pipilo maculatus montanus*. Reecorded by Skinner.

GREEN-TAILED TOWHEE. *Oberholseria chlorura*. Common breeder below 6500 feet. (Sk.).

BLACK-HEADED GROSBEAK. *Hedymeles melanocephalus*. Rare spring migrant. (Sk.).

LAZULI BUNTING. *Passerina amoena*. Occasional breeder.

LARK BUNTING. *Calamospiza melanocorys*. Occasional migrant.

WESTERN TANAGER. *Piranga ludoviciana*. Abundant breeder. Young. July 15, Upper Basin. (E.K.).

CANADIAN CLIFF SWALLOW. *Petrochelidon lunifrons* (*Petrochelidon lunifrons hypopolea* proposed). Common breeder.

BARN SWALLOW. *Hirundo erythrogastra*. Rare breeder.

TREE SWALLOW. *Iridoprocne bicolor*. Common breeder. Downy young, July 10, Biscuit Basin. (Joyner).

NORTHERN VIOLET-GREEN SWALLOW. *Tachycineta thalassina lepida*. Common breeder, locally.

- BANK SWALLOW. *Riparia riparia*. Common breeder locally.
- ROUGH-WINGED SWALLOW. *Stelgidopteryx serripennis*. Rare breeder.
- BOHEMIAN WAXWING. *Bombycilla garrula*. Erratic visitor.
- \*CEDAR WAXWING. *Bombycilla cedrorum*. Rare migrant.
- NORTHERN SHRIKE. *Lanius borealis*. Occasional migrant. Observed Upper Basin. September 3, 1929. (E. K.).
- WHITE-RUMPED SHRIKE. *Lanius ludovicianus excubitorides*. Rare summer resident. (Sk.).
- WESTERN WARBLING VIREO. *Vireosylva gilva swainsoni*. Common breeder.
- CALAVERAS WARBLER. *Vermivora ruficapilla gutturalis*. One record. Stygian Caves (near Mammoth), Dr. Palmer, 1907.
- ORANGE-CROWNED WARBLER. *Vermivora celata*. Rare breeder, lower Gardiner River.
- WESTERN YELLOW WARBLER. *Dendroica aestiva* (*Dendroica aestiva marconi*, proposed subspecies). Occasional summer resident.
- HOOVER'S WARBLER. *Dendroica coronata hooveri*. Rare migrant.
- AUDUBON'S WARBLER. *Dendroica auduboni*. Abundant breeder.
- TOWNSEND'S WARBLER. *Dendroica townsendi*. Occasional breeder near Mammoth. (S.K.).
- MACGILLIVRAY'S WARBLER. *Oporonis tolmiei*. Rare breeder.
- WESTERN YELLOW-THROAT. *Geothlypis trichas occidentalis*. Common breeder at low altitudes.
- PILEOLATED WARBLER. *Wilsonia pusilla pileolata*. Common breeder.
- PIPIT. *Anthus rubescens*. Common breeder on high bare ridges. (Sk.).
- \*SPRAGUE'S PIPIT. *Anthus spraguei*. Lower Geyser Basin, July 10, 1929. (E.K.). Apparent first record.
- DIPPER. *Cinclus mexicanus unicolor*. Common permanent resident.
- SAGE THRASHER. *Oreoscoptes montanus*. Rare breeder.
- CATBIRD. *Dumetella carolineusis*. Rare breeder, below 6000 feet. (Sk.).
- ROCK WREN. *Salpinctes obsoletus*. Common breeder in Northern sections of the Park. (Sk.). Several pairs near Fountain Station, summer of 1929. (E.K.).

WESTERN HOUSE WREN. *Troglodytes aedon parkmani*. Occasional breeder at Mammoth. (Sk.).

WESTERN MARSH WREN. *Telmatodytes palustris plesius*. Rare breeder near Tower Falls. (Sk.).

ROCKY MOUNTAIN CREEPER. *Certhia familiaris montana*. Occasional permanent resident.

ROCKY MOUNTAIN NUTHATCH. *Sitta carolinensis nelsoni*. Occasional permanent resident.

RED-BREADED NUTHATCH. *Sitta canadensis*. Common permanent resident.

PYGMY NUTHATCH. *Sitta pygmaea*. Rare visitor.

LONG-TAILED CHICKADEE. *Penthestes atricapillus septentrionalis*. Occasional permanent resident.

MOUNTAIN CHICKADEE. *Penthestes gambeli*. Abundant permanent resident.

WESTERN GOLDEN-CROWNED KINGLET. *Regulus satrapa olivaceus*. Rare breeder.

RUBY-CROWNED KINGLET. *Regulus calendula*. Common breeder.

TOWNSEND'S SOLITAIRE. *Myadestes townsendi*. Common breeder, occasional permanent resident. (Sk.).

WILLOW THRUSH. *Hylocichla fuscescens salicicola*. Rare breeder, lowest altitudes. (Sk.).

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. Occasional breeder in northern part. (Sk.).

AUDUBON'S HERMIT THRUSH. *Hylocichla guttata auduboni*. "Uncommon" breeder. (Sk.). Common breeder, Upper Basin and Mammoth. (E.K.). (At least ten breeding pairs found summer of 1929).

WESTERN ROBIN. *Planesticus migratorius propinquus*. Common breeder, possible occasional permanent resident near Mammoth. Eggs, June 20, 1929. Upper Basin. (E.K.).

WESTERN BLUEBIRD. *Sialia mexicana occidentalis*. Occasional breeder.

MOUNTAIN BLUEBIRD. *Sialia currucoides*. Abundant breeder. Nest and eggs. Upper Basin. July 2, 1929. (E.K.).

OBERLIN, OHIO.

# THE WILSON BULLETIN

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The present editorial organization is as follows: T. C. Stephens, Editor-in-Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

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## EDITORIAL

Mr. Joseph Parker Norris, Jr., 816 City Center Building, Philadelphia, Pa., desires to obtain the following back numbers of the WILSON BULLETIN: Volume XI, No. 6, Whole Number 29; XIII, No. 3, W. N. 36; XVI, No. 1, W. N. 46; XX, No. 4, W. N. 63; and the following numbers in the original (not reprints): volume VI, Nos. 1, 2, 3, 4, 5; VII, Nos. 6, 7, 8; XI, No. 1, W. N. 24; XI, No. 5, W. N. 28.

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FROM THE DIFFERENT OFFICERS we learn that at the present time we have 783 paid-up members. There are about 87 members delinquent in dues for the current year; and while we have been compelled to discontinue the BULLETIN to these delinquent members, we are hoping that many of them will be reinstated. There are 72 paying subscribers. During the current year we have received approximately 190 new members, and these have come chiefly through the systematic efforts of Secretary Shaver and his committee. We are all anxious to exceed the 200 mark for the year, and the 800 mark in total membership—and there is little doubt of this success. Those who are interested in helping may do so by sending to Secretary Shaver the names of prospective members.

Post script. Before going to press we learn that our total paid-up membership is now 802, with 74 paying subscribers.

## THE ANNUAL MEETING AT CLEVELAND

As is its custom when the American Association for the Advancement of Science meets in its territory, the Wilson Ornithological Club will meet at the same time as the larger organization—this year at Cleveland, Ohio. Although the American Association and affiliated societies will meet during the entire week from December 29 through January 3, the Wilson Ornithological Club will hold its meetings on the first two days of this week, on Monday and Tuesday, December 29-30, 1930. It is expected that both days will be given to the formal programs, with one evening doubtless for the annual dinner.

The Secretary is already at work on the program for this meeting. He is very anxious that all members who have new and interesting material should present it at this meeting. Send to him early the title of your paper or talk, with a careful estimate of the time needed to deliver it, and make clear whether you will wish to use a projection lantern for lantern slides, standard size, or small size movie film. The usual announcements concerning headquarters, etc., will be made later.

## SPECIAL RAILROAD RATES

Special railroad rates should make it possible for many members, especially in adjoining states, to attend this meeting. These rates will be on the certificate plan, and apply to all societies affiliated or associated with the A. A. A. S. Since the Wilson Ornithological Club is an associated organization, these rates are available to our members. To secure these rates, purchase a one-way ticket to Cleveland and at the same time secure from the ticket agent a convention certificate to the American Association for the Advancement of Science meeting. Do not purchase the ticket without also getting this certificate, and apply for it long enough in advance of train time to allow the agent sufficient time. The certificate must be validated by the proper convention officials at Cleveland, and will then entitle the member to purchase his return ticket at half fare.

## GENERAL NOTES

Conducted by M. H. Swenk

**The Pine Grosbeak in South Dakota.**—During November of 1929, I saw a Pine Grosbeak (*Pinicola enucleator*) in company with three Robins in the vicinity of Lake Poinsett, Brookings County, South Dakota. This is a rare bird in this state in my experience.—ADRIAN LARSON, *Arlington, S. D.*

**A Burrowing Owl Record for Hancock County, Illinois.**—On April 9, 1930, Mr. Marvin Fenton of Hamilton, Illinois, brought to the writer a specimen of Burrowing Owl (*Speotyto cunicularia hypogaea*) to be mounted for the museum of Carthage College. Mr. Fenton secured this bird, a male, in the lowlands between Hamilton and Warsaw, Illinois. He did not succeed in locating the female, if one were present.—EARL L. LAMBERT, *Carthage, Ill.*

**Lesser Snow Geese at Fox Lake, Wisconsin.**—A flock of Lesser Snow Geese (*Chen hyperboreus hyperboreus*), conservatively estimated to number 500, spent about two weeks at Fox Lake (Dodge County) in November, 1929. They rested on the lake and fed on the Prison Farm about three miles distant. On November 14, Mr. G. L. Wedge, of Fox Lake, shot at the geese while they were feeding at the farm. Though none fell, he knew that some had been hit. The birds returned to the lake, where two that were afflicted with body wounds were taken by him. Another bird was killed on November 15, 1929.—A. W. SCHORGER, *Madison, Wis.*

**The Starling in Northern Louisiana.**—A flock of about 100 Starlings (*Sturnus vulgaris*) appeared near Monroe, Louisiana, on January 23, 1930. A specimen was collected to verify the identification. This is the first occurrence in the state, as far as I can learn. The same flock was seen regularly for about two weeks. Smaller flocks were observed at widely distributed points throughout March, these dwindling in number until the last individual was seen, on April 6.—GEORGE LOWERY, JR., *West Monroe, La.*

**Nesting of the Starling in Hancock County, Illinois.**—What appear to be the first records of the nesting of the Starling (*Sturnus vulgaris*) in this region, as far as the writer can ascertain, have recently been reported. The children of Rev. Paul Buelow, who lives one-fourth of a mile north of the city limits of Carthage, on Scofield Street, found a nest of Starlings in a hollow cross-beam in their barn, on May 7, 1930. At that time definitive feathers were appearing. I went to see the nest, which contained, as nearly as I could ascertain, four young Starlings. The adult birds were carrying food from an adjacent orchard. They were very shy and difficult to approach.

Mr. Charles Rice, whose home is located midway between Dallas City and LaHarpe, in the northern part of the County, reports a nest of Starlings in an old water storage tank on a windmill on their farm.—EARL L. LAMBERT, *Carthage, Ill.*

**A Flicker Migration in Iowa.**—On October 2, 1927, the writer witnessed a migration flight of the common Northern Flicker (*Colaptes auratus luteus*). The birds were first noticed about 4 p. m. and were flying in a general southeast direction. They flew well above the tree tops and at a very steady pace. One bird would not be out of sight before another one would come flying over. Once in a while a bird would seem to lose sight of his companions and circle

around once or twice before starting out in the right direction. On only one occasion did I notice two birds flying at all close together. This flight lasted for some time, and over one hundred Flickers passed overhead during the period of observation.—WILLIAM YOUNG WORTH, *Sioux City, Iowa*.

**Brewer's Blackbird Nesting in Illinois.**—On June 17, 1929, the nest of a Brewer's Blackbird (*Euphagus cyanocephalus*) was found by a nurseryman, who pointed it out to C. E. Holcombe of Zion, Illinois. Mr. Holcombe watched the nest, and on June 26 called me to assist in the identification of the bird. On arriving at Winthrop Harbor, about half way from the railroad to Lake Michigan on the main road to the beach, and about 300 feet south of the road, we first observed there were four adult birds, so we waited until we found where the females were feeding, and in this way located the second nest. The original nest had five fully grown young in it, and the second one, which I discovered, had three slightly smaller birds and one dead bird in the nest. All eight were banded. This I believe is the first record of the Brewer's Blackbird nesting and being banded in the state of Illinois. C. E. Holcombe and Wm. Farrar of Zion, banded a nest of five and a nest of three young birds on June 28, 1930, on the "Flats" near Twenty-second Street, Zion, Illinois.—W. I. LYON, *Waukegan, Ill.*

[EDITOR'S NOTE. We find in a recent *Oologist* (XLVII, June, 1930, page 72) a note concerning the breeding of Brewer's Blackbird near Delavan, Wisconsin, in 1928. Mr. A. J. Franzen, of the Field Museum, also made a trip to the same locality on May 19, 1929, finding a colony of eleven Brewer's Blackbirds. He collected three specimens, and remarks, "I am convinced that the new invaders are Brewers".]

**An Unusual Number of Wintering Birds at Hillsboro, Ohio.**—The open winter of 1928-29 accounts for the increased number of birds here mentioned:

Mourning Dove (*Zenaidura macroura carolinensis*). Very abundant where grain is fed.

Red-headed Woodpecker (*Melanerpes erythrocephalus*). More than the usual number have remained as residents.

Rusty Blackbird (*Euphagus carolinus*). Three arrived November 15 and in a few days the number was increased to seven, and on December 31 to thirty. They feed on frozen apples.

Blue Jay (*Cyanocitta cristata cristata*). Very abundant this fall and winter. Usually about the same throughout the year.

Golden-crowned Kinglet (*Regulus satrapa satrapa*). A rather common and general winter resident.

Robin (*Plauesticus migratorius migratorius*) and Bluebird (*Sialia sialis sialis*). Unusually common. (Males).—KATIE M. ROADS, *Hillsboro, Ohio*.

**Additions to the Easter Birds of Little Egypt.**—In the WILSON BULLETIN for March, 1929, Mr. A. Sidney Hyde and I published a list of 112 species of birds found during the Easter period in southern Illinois. Since this survey was made, in 1927, I have made two more trips through the region under consideration during the same period of the year, and it is considered advisable to add to the published list the twenty-one additional records made during 1928 and 1930. In order to correlate these with the records of the previous paper, the species are listed here in reference to the associations in which they were found.



1, upland oak-hickory; 1a, bushy clearings in oak-hickory. 2, cypress swamp; 3, open fields; 4, aquatic; 5, general or local situations.

Water-turkey ( <i>Anhinga anhinga</i> ).....	2
Double-crested Cormorant ( <i>Phalacrocorax auritus auritus</i> ).....	4
Red-breasted Merganser ( <i>Mergus serrator</i> ).....	4
Mallard ( <i>Anas platyrhynchos platyrhynchos</i> ).....	4
Blue-winged Teal ( <i>Querquedula discors</i> ).....	4
Shoveller ( <i>Spatula clypeata</i> ).....	4
Canada Goose ( <i>Branta canadensis canadensis</i> ).....	4
Bittern ( <i>Botaurus lentiginosus</i> ).....	3
Black-crowned Night Heron ( <i>Nycticorax nycticorax naevius</i> ).....	3
King Rail ( <i>Rallus elegans</i> ).....	2, 4
Coot ( <i>Fulica americana americana</i> ).....	4
Wilson's Snipe ( <i>Capella gallinago delicata</i> ).....	2, 4
Sharp-shinned Hawk ( <i>Accipiter velox</i> ).....	1
Rough-legged Hawk ( <i>Archibuteo lagopus sancti-johannis</i> ).....	1
Henslow's Sparrow ( <i>Passerherbulus henslowi henslowi</i> ).....	3
Lincoln's Sparrow ( <i>Melospiza lincolni lincolni</i> ).....	3
Tennessee Warbler ( <i>Vermivora peregrina</i> ).....	1
Sycamore Warbler ( <i>Dendroica dominica albilora</i> ).....	2
Ovenbird ( <i>Seiurus aurocapillus</i> ).....	1a, 1
Canada Warbler ( <i>Wilsonia canadensis</i> ).....	1, 3
Chickadee ( <i>Penthestes atricapillus atricapillus</i> ).....	1, 3

--ALVIN R. CAHN, *University of Illinois, Urbana, Ill.*

**Migration Records from North Dakota.**--I have recently compiled my notes on migration at Fargo. These cover a period of twenty years, but are not very extensive, especially for the first ten years. For the last ten years they have been more systematic, and since 1925 more thorough within a certain range, on account of trapping operations (see *Bird Banding*, I, pp. 67-69). Spring arrival dates are at hand for some sixty species for five or more years. It is interesting to note that the addition of the last six years has not changed the average date materially in most cases.

Compared with the records of Norman Criddle at Aweme, Manitoba (*Auk*, XXXIX, pp. 41-49), the dates at Fargo are quite uniformly four or five days earlier until about April 20. After that date the difference is small and more often is earlier at Aweme. Small differences would no doubt be expected at that time of the year, and careful study would be needed to show whether they are significant or are the result of the relative closeness of observation or of abundance of birds. Some outstanding differences in the first group are the Robin, Bronzed Grackle, Ruby-crowned Kinglet, and Chipping Sparrow which are 10, 10, 11, and 13 days earlier, respectively, at Fargo.

The common Kingbird (*Tyrannus tyrannus*) is such a familiar bird that observational errors can hardly enter into the case. The records for this species show such a marked peculiarity that I thought it worth while to question whether others have made similar observations. The average date of arrival to 1923, inclusive, was May 17 (ten years' record), the latest being May 21, in 1910. In 1924 the date was May 30, since when it has been May 22, 23, 22, 24, 21 (new average, May 19). It seems only natural to suggest that the birds suffered a marked reduction in 1924 and have been less abundant since. I believe such to be the case, but have no data.—O. A. STEVENS, *Fargo, N. Dak.*

**Notes on the Nesting Habits of Bluebirds.**--During the summer of 1927 I had a pair of Bluebirds nest in a bird house I had put up on a grape-vine

post. On July 4, I banded this pair of Bluebirds and two of their young, which had been out of the nest a few days—519405 female, 519402 male, 519403 juvenile, 519404 juvenile.

In the spring of 1928 the female came back with a different male and nested in the same bird house. I banded this male April 11, 608791 male; and on June 6 I banded their four young after they left the nest, 665171, 665172, 665173, 665174. This pair nested again in the same house, but I did not get any of the second hatching of 1928.

Then, in the spring of 1929 the female returned here, bringing the third male I have recorded with her. They took a different house this year, a section of hollow apple tree I had put up during the winter. They were feeding their young the middle of May. On May 20 I trapped the adult birds by putting several "June-bugs" or brown beetles in a trap. Both birds immediately entered the trap and I banded the male which I called "Reno the Third", A134069 male. I banded this male at the photographer's where I had some pictures taken of the pair. They were not frightened nor very nervous. They took their young away unobserved about May 24, and I did not see them again until the morning of June 5, when they were back here feeding four young. I could not get the young that day, but the next day, the 6th, I banded two of the young, and the other two the 7th, the parent birds still feeding the young these two days, and the female starting to rebuild the nest. I noticed afterward it was also on June 6 when I banded her young in 1928.

The morning of June 8 the young were mostly feeding themselves, the mother bird being busy building the nest. About the end of May, when the birds were away, I had taken the top off the house and hinged it on and fastened it with a hook and eye so that I could keep the nest under observation. I was surprised and greatly pleased on the evening of the 6th, when I went to see a friend three-quarters of a mile southeast of here, for there was my whole family of Bluebirds ahead of me, some of the young with bands, some without. I do not know where they roosted, but they were all back here early in the morning.

- June 10. The Bluebirds continue to feed here during the forenoons. One egg in the new nest this day.
- June 11. Two eggs in the nest.
- June 12. I did not get to look in the nest.
- June 13. A. M. I carefully opened the top of the house and looked in. The female was on the nest within ten inches of my face.
- June 15. I saw the female Bluebird feeding away from the nest, so I looked in and there were five eggs, the last one probably laid on the 14th.
- June 26. I looked in at the Bluebird sitting on the nest.
- June 27. 6 P. M. I saw the female in the apple tree, so I got the ladder and carefully looked in the nest and saw four newly hatched birds, tiny little brown things with a little dark fuzz on them, one egg still in the nest.
- June 29. In the evening I looked in the nest and the egg was still there so I carefully removed it. It had no sign of a bird in it.
- July 2. P. M. Saw the adult birds on the telephone wires in the alley, and looked in at the four little ones which were growing nicely.

- July 10. P. M. I banded the four young birds at the nest at about fifteen days old. The old birds did not make much fuss when I handled the little ones.
- July 12. I looked in at the young and they were all right. The parent birds both flew at me for intruding.
- July 14. A. M. I looked in the bird house and found it empty. They must have taken the young away on the 13th at about seventeen days old and close to thirty-three days after the first egg was laid.—

C. E. HOLCOMBE, *Zion, Ill.*

**The Evening Grosbeak Nesting in Northern Michigan.**—On June 19, 1930, in the northern peninsula of Michigan, in eastern Baraga County, immediately upon the Marquette County line, I found a pair of Evening Grosbeaks (*Hesperiphona vespertina vespertina*) engaged in nest-building. The location is upon a wide sandy plain, a glacial moraine, elevated some 800 or 900 feet above the level of Lake Superior, and ten miles inland from the lake shore. The plain is covered with an open forest of jack pine; the ground is carpeted with grass, with interrupting wide patches of reindeer lichen; the trees are mature, widely spreading, shaggy, and gray with *Usnea* lichen. The aspect of the place is singularly park-like.

In the course of a morning's excursion, and within range of half a mile, I had come upon two or three pairs of Evening Grosbeaks, which by their loud and somewhat shrill call-notes had manifested anxiety; but in each instance, as I began to look about me, the birds had taken wing and flown high and far, beyond sight and sound. Suspicion was, however, so far aroused that in the afternoon I returned; and I then found one of the pairs in the precise spot where I had found it in the morning, and the birds behaved in precisely the same manner—calling anxiously, and, presently, flying away. A long and careful search of the neighboring trees was made in vain, and I was about to give up and return to camp, when I heard again the call-notes. At once I seated myself and waited, and presently the birds reappeared, the male first. As the female followed and perched near, the male made a beautiful display. He crouched low, puffed out his plumage, extended his wings horizontally and set them quivering. The gorgeous contrast of the glossy black wings with the golden body suggested the appearance of a bird of paradise. There was no song; it was about half past five in the afternoon, and the sun was still high.

The female, with no manifest response, presently flew to another tree, and began to move about within its shadows. Through my field glasses I could see that she was engaged in grasping slender dry twigs with her beak and breaking them off. When she had gathered two or three of these she flew to yet another tree, and, after some hopping about, came to the site of her nest and there deposited and arranged the material. I remained watching her while she made repeated trips, and saw her gather material in the nesting tree, as well as in others. I was seated at a distance of fifty or sixty yards and was not concealed; nevertheless, the birds seemed now to pay no attention to me—perhaps because I was still. Having seen all that I could hope at the time to see, and being far from camp, I waited no longer but made such examination of the nest as was possible from the ground beneath, and then went happily on my way.

The nesting tree was a jack pine standing alone, about sixty feet high and with wide-spreading branches. At its base the trunk may have been eight inches

in diameter. The nest was placed on a lateral, eastward-extending, and slightly drooping bough, about six feet from the base of the bough and ten or twelve feet from its tip. It was, I judged, twenty or twenty-five feet from the ground. Twigs and gray cones and *Usnea* lichen screened the nest well from beneath, but apparently little more than a beginning of the building had been made.

A good deal of data has of late years been accumulating (*Auk*, XL, p. 337, April, 1923; XLI, p. 159, January, 1924; WILSON BULLETIN, XXXVII, p. 213, December, 1925; XXXIX, p. 40, March, 1927), to indicate that the species breeds in Michigan; but, as far as I have been able to discover, direct evidence of that fact has not hitherto appeared.

The sandy plain upon which the Evening Grosbeak's nest was found is notable for the presence of other birds of northern association, including the Canada Spruce Partridge, the Arctic Three-toed Woodpecker, the Canada Jay, the Tennessee Warbler, and the Hudsonian Chickadee (WILSON BULLETIN, XLI, p. 42, March, 1929).—BAYARD H. CHRISTY, *Sewickley, Pa.*

**Some Random Bird Notes from Florida.**—On April 21, 1927, Mr. William L. Dawson and I went to Mosquito Inlet at Ponce Park, Volusia County, Florida, to photograph shore birds. We were extremely fortunate, and found an immense flock of migrating Caspian Terns which must have numbered from 1,500 to 2,000 birds, and secured some wonderful flight pictures, enmass. There were about 150 adult Black Skimmers, hundreds of Herring Gulls, a few Laughing and Ring-billed Gulls, several Black Terns, Common and Least Terns, and about 200 Brown Pelicans. Besides these there were Turnstones, Red-backed Sandpipers, Sanderlings, Black-bellied and Semipalmated, Piping, and Wilson's Plovers. All were mingled together and we estimated that there must have been about 4,000 birds in all. A more thrilling and interesting sight we had never seen. The birds were resting, and not feeding, on the sandy tidal flats, in the mouth of the inlet. Very few notes were uttered by any of the birds. They were unusually silent for such a large number of birds.

Black Terns in immature plumage were seen in a small colony of Least Terns at Titusville, Brevard County, Florida, on June 26, 1927. Six of the birds were seen resting at the edge of water on a sand-bar in the Indian River. On July 1, 1927, at this same place, I saw one Black Tern in the adult plumage and six or seven in the immature plumage. The birds were comparatively tame, and flew from one place to another among the nesting Least Terns. Again passing by this place on July 27, I saw seven or eight adult and immature birds of this species still there. These, of course, were migrating birds.

While at Merritt's Island, on April 30, 1927, I saw five or six Bonaparte's Gulls sitting on the railing of the bridge that crosses the Indian River at Titusville and connects with Merritt's Island. They were within a few yards of the Island, and quite tame, permitting themselves to be approached to within about twenty feet, and I photographed them from the car. On May 12, two of these birds still remained, and were found at the same place and both birds were photographed together, close enough to show the conspicuous black mark on the side of the head. They were in the winter plumage.

On Merritt's Island, opposite Titusville, Brevard County, Florida, I saw a male and a female Lesser Scaup Duck swimming in a salt water pond near the Indian River, on June 27, 1926. Thinking that they might be crippled birds,

I shouted, and both rose and flew away, disproving this supposition. Lesser Scaup Ducks can be seen in abundance on the fresh and salt water until the last week in April, throughout central Florida, and a few can be seen during the month of May.

Mr. Charles E. Doe and I were camped in an oak thicket just south of Bassenger, Florida, between January 17 and January 22, 1927. Two Whip-poor-wills were calling each night while we were there. Another bird was heard calling just before day-break, on March 6, 1927, just west of Malabar, Brevard County, Florida. Mr. William L. Dawson was with me at the time. These birds are far from being a common winter resident, and few are heard.

A Sora Rail was seen feeding around the edges of a salt water pond, back several hundred yards from the Indian River, on Merritt's Island, on May 2, 1926. Its black throat was plainly visible through the binoculars. I was in company with William L. Dawson at the time. I have never found a nest of this species in Florida, nor have I ever heard its mating call, and I have been in the Florida marshes every season for years. If it breeds here it must be very local, or else I should have seen it.—DONALD J. NICHOLSON, *Orlando, Fla.*

**Experiences with Song Sparrows in 1929.**—Song Sparrow No. 1 returned March 9, 1929, to the same place in which he had nested in 1928, next to our house in Columbus, Ohio. The next day he won this territory from Song Sparrow No. 4, who, since February 25, had been appropriating twice his proper share of land. From March 12 to 15 No. 1 sang a great deal, but on the 15th a mate arrived and he stopped singing almost entirely until April 11, when incubation began. All the Song Sparrows in the region did likewise, singing with much enthusiasm to warn other males from their homesteads and to invite mates, but becoming comparatively silent upon the arrival of the mates. Females announce their sex by a high-pitched, nasal "eccc". One of the main duties of the male is to protect his land from intruders and in this his mate assists. All migrant Song Sparrows were driven off, and nearly all other species smaller than a Robin. There were also constant quarrels over the boundary between No. 1 and No. 4.

From March 21 to April 4, No. 1 and his mate indulged in a kind of "building play", each gathering nesting material and carrying it to many different spots. On April 6 the female began building in earnest and the male took no further part. Incubation starts with the second or third egg, and is performed by the female alone. The male sings a great deal during incubation, stationing himself fairly near the nest. When he considers it time for his mate to leave the nest he comes very near, perhaps within two yards, and gives an especially loud song, perhaps as a signal that all is well and that he is ready to guard the nest. She did not always come off at his suggestion, and he never guarded during the whole time of her absence. During the first incubation thirty-six periods on the nest of No. 1's mate averaged 34 minutes; forty-six periods off averaged 8 minutes. Two months later twenty-four periods on the nest averaged 29.4 minutes, and thirty periods off 8.7. The last incubation of No. 4's mate came at almost the same time as that of No. 1's mate, but twenty-four of her periods on the nest averaged only 21.4 minutes, while twenty-nine periods off averaged 7.9 minutes.

The males of both pairs did the major part of the feeding of the young, both in the nest and out of it. Singing again dropped to a low point. From

two to six days after the young left the nest, the two females began building for the next brood, meanwhile feeding the young to some extent, but soon leaving them to their fathers, who cared for them almost up to the day the next brood hatched.

It takes seven and one-half weeks for the complete cycle, from courtship to the weaning of the young, but due to this overlapping of cycles, No. 1 and his mate raised three broods to independence in three and one-half months. The number of days consumed in the various stages follows: Preliminary or courtship (except the first, which lasted three weeks) 4-5; building 3-4; laying 3-5; incubation 12; care of young in the nest 10-11; care of young out of the nest 16-18.

Each of the two pairs studied made four attempts at nesting. No. 1 and his mate raised three broods—a total of nine young; No. 4 and his mate raised two broods, amounting to five young.

On September 1 the females and young had left the region, but the four males that had nested near by were here, molting. No. 6 was heard singing October 4, No. 5 sang a little from October 10 to 15, and No. 1 a little from September 28 to October 13. He left for the south on the night of October 14. No. 4 was heard to sing once on September 8; beginning September 24, he sang more and more, reaching a maximum between October 7 and 13. After this he sang less and less until November 17, since when he has not been heard, although he is still on our grounds at the date of writing—December 20, 1929.—MARGARET M. NICE. *Columbus, Ohio.*



ALBINO HAWK AT NASHVILLE

**Albinism in the Red-tailed Hawk.**—A perfect albino Red-tailed Hawk (*Buteo borealis borealis*) was caught in a trap set for fur-bearing animals in Lewis County, Tennessee, fifteen miles from Hohenwald on the Buffalo River, on January 10, 1930, by Mr. Russell Fite. Later it was brought to Nashville, Tennessee, and presented to me. I tried to save its life, planning to band and release it. It had, however, been kept so long without food before being brought to Nashville, and ate so heavily when food was offered it, that it died soon after. It was mounted by an expert taxidermist for Dr. H. Van Coles of Nashville, who now has it in his possession. The bird is pure white on all parts of its body, with no pigment anywhere.—HERBERT C. SANBORN, *Vanderbilt University, Nashville, Tenn.*

**The Matings of the Brown Thrasher.**—I have just re-read E. A. Andrews' "Birds' Nests at Home" in the *Auk* for April, 1925, and have found it just as interesting as when I first read it. I believe his experiences might have been even more interesting had he banded pairs of birds to report on, to know what percentage of his nests from year to year were built by one or both adults of previous clutches or of previous years.

I have followed around several pairs of Brown Thrashers in Riverside Park at Indianapolis, the activities of which may be of interest. On July 13, 1925, I found the nest of a pair of Brown Thrashers with one fledgling therein, close to the bank of the lagoon in the park, in a vine-covered bush about five feet up. I banded the youngster, placed it under a drop trap near the nest, and, with several friends, sat on a slight elevation fifty feet away while one after the other the parent birds went to feed the fledgling and were trapped. The fledgling was given government band No. 357001, the parents, Nos. 357021 and 357022.

In 1926, on the 13th day of May, I found another thrasher nest one hundred feet or so south of the 1925 nest, a little closer to the water, about three feet up in a vine clump. Four fledglings were banded here (Nos. 357921-925-926-927). One of the adults when trapped was found to be No. 357022. The mate was a new bird, then given band No. 357932. This banding party took place May 19th.

While I had several other nests of thrashers in the neighborhood, it was not until July 14 that I found one of the adults of this family again. On an island in the lagoon, not more than 300 feet away from either of the previous nests, two half-grown fledglings were looking over the edge of this nest, which was placed in the center of a large bush. When the parents were trapped No. 357932 was found to have abandoned her mate of May 19, and was then mated to a new bird, that day banded No. 467866. Four days later No. 357022 was found brooding a single fledgling at a nest built in a small sapling around which a vine was climbing, 500 feet south of the May 19 nest. I was unable to trap the mate of this bird but it was an unbanded one. The fledgling was given No. 339259.

So we have here a case of a pair of birds changing mates two months after they had raised a brood together, under conditions which proved that it was not the seeking of a new mate after the death of the previous one.

We have had four other pairs of Brown Thrashers in the same area under observation, where only one of each pair was a banded bird.

The inference seems irresistible that after each brood is raised there is a complete shuffling of mates among the Brown Thrashers.—SAMUEL ELLIOTT PERKINS III, *Indianapolis, Ind.*

## BIRD PHOTOGRAPHY

Conducted by Alfred M. Bailey

Springtime, summer, fall, and winter have their attractions for the nature lover, and the bird photographer who confines his efforts to the vicinity of his home will have many opportunities for excellent pictures. It is not necessary to travel far afield, for there are interesting subjects always at hand—the migrants of early spring, the nesting birds of early summer, the young and adults of early fall, and the stragglers from the north in mid-winter. The nesting season is the best time, of course, for then the adult birds take kindly to a blind: they return to their nests to feed the young without fear of the blind or the clicking camera, and the photographer may work on a single family until the young leave the nest.

Many interesting hours may be spent in a blind, and many valuable life history notes secured. It is surprising how little is known about the family life of many of our birds, as a brief inspection of the literature on a given species will show. The food habits are well worked out for the majority of common birds, but the number of feedings a day, quantities of food consumed, aggressiveness of the young in securing food—and even the incubation period are subjects worth studying.

The best photographs will be made by the one working near home, where the "victim" may be observed and photographed at all favorable opportunities. The casual visitor on an "expedition" can not hope to compete with the one working in his own "backyard"; he can secure the high lights and make interesting photographic records, to be sure, but he will be unable to make the valuable notes and life history photographs that will be secured by the one who lives in the vicinity. I know this is true, from my own experience, for I have been a hit-and-miss camera shooter for a long time, having made pictures in many parts of the country—but not until I tried working in my own neighborhood did I appreciate the difference between studying a pair of birds and working with them from the time the eggs were laid until the young left the nest, and the hurried work I had done on various field trips. I not only found that the opportunities for photography were endless, but that I had the time to learn something about the habits of the species under observation. It is with regret that I view my work of the past fifteen years—the realization of the number of birds which I have seen through the ground glass, and photographed, and then passed by without learning anything worth while.

Last year I worked with the motion picture camera on birds which nested within six miles of my house. It was real backyard photography, for I could reach the blinds in a short time. Daily visits were made to such species as the Red-shouldered Hawk, King Rail, Least Bittern, Upland and Piping Plovers; and interesting notes and photographs were made. Even a Robin in a neighbor's grape arbor was available for study, and after the season's work, I was amazed at the number of photographs secured. I then realized the abundance of camera material available for any bird photographer, for, if I could secure material to photograph within a metropolitan district of over three million people, others more fortunately situated must have greater opportunities. And—I must hasten to add, the results I obtained leave much to be desired, and another season's work upon the species would be well spent.—ALFRED M. BAILEY, *Chicago Academy of Sciences.*





Photographs of the Robin by Alfred M. Bailey.

## PROCEEDINGS

### The 1930 Joint Meeting of the N. O. U. and I. O. U. at Omaha.

The Nebraska Ornithologists' Union and the Iowa Ornithologists' Union held a joint meeting at Omaha, Nebraska, on May 16 and 17. A similar joint meeting had been held last year on the Iowa side of the Missouri River at Sioux City. Registration of members and guests began at eight o'clock on Friday morning at the Castle Hotel, and showed a total attendance of ninety-two, nineteen being from Iowa, the remainder from Nebraska.

All sessions were held at the Castle Hotel, as has been the custom for years whenever the meeting has been in Omaha. During the three sessions of Friday the following papers were presented as the scientific program:

1. Opening remarks. By Rev. Lawrence Plank, Omaha.
2. Nebraska's "Jack Miner". By Mrs. A. H. Jones, Hastings, Nebr.
3. Bird songs in musical notation. By Mrs. Lily R. Button, Fremont, Nebr.
4. Birds seen on a summer's trip through Europe. By Mrs. Mary L. Bailey, Sioux City. (Read by Mrs. T. C. Stephens).
5. Progress and tendencies in ornithology. By Dr. W. B. Bell, United States Bureau of Biological Survey, Washington, D. C.
6. Birds in poetry. By Mrs. A. J. Palas, Des Moines.
7. Waterfowl at Carter Lake, near Omaha. By Robert Overing, Omaha.
8. Where tragedy stalks in birdland. By W. M. Rosene, Ogden, Iowa.
9. A successful failure. By W. W. Bennett, Sioux City.
10. Instinct and reason in birds. By Rev. J. M. Bates, Red Cloud, Nebr.
11. Conservation of wild flowers. By Victor Overman, Omaha.
12. Natural advantages of Nebraska as a State for birds. By Dr. R. H. Wolcott, Lincoln.
13. Nebraska's bird life as found by the early naturalists. By Mrs. Addison E. Sheldon, Lincoln.
14. The Mourning Dove situation in Nebraska. By Mrs. Florence Steunenberg, Omaha.
15. Can the Prairie Chicken be saved? By A. M. Brooking, Hastings, Nebr.
16. Proper conservation of our birds of prey. By Prof. M. H. Swenk, Lincoln.
17. Eastern Nebraska forests as bird sanctuaries. By Roy N. Towl, Omaha.

On Saturday, May 17, approximately a hundred people participated in the annual field trips. Several parties visited the different localities of ornithological interest, returning to Camp Gifford for lunch at one o'clock. A total of 106 species made up the composite list for the day.

The most interesting personal feature of the meeting was the attendance of Rev. J. M. Bates, veteran botanist and ornithologist. Mr. Bates was born on January 3, 1846, in Connecticut, and died on May 25, 1930, only a few days after his appearance on the program at Omaha, at the age of 84. His work on plant rusts and in the field of ornithology was recognized in those respective sciences.

## TO OUR CONTRIBUTORS

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

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

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

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

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

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## THE BARRO COLORADO LABORATORY AS A STATION FOR ORNITHOLOGICAL RESEARCH

BY JOSSELYN VAN TYNE

In view of the increasing interest now being shown by American ornithologists in detailed studies of the life histories of birds it seems desirable to call attention to the tremendous opportunity for such work on neotropical species and the splendid facilities for field studies now afforded by the Barro Colorado Biological Station in the Panama Canal Zone.

Perhaps few realize how little is known of tropical American birds. Their taxonomy is now fairly well understood, but, I suppose, less is known of their habits than was known of North American birds in the days of Audubon's explorations ninety years ago. This situation is due to the real and fancied dangers and difficulties usually attendant upon field work in the tropics. But with the establishment of the Barro Colorado laboratory in 1924 these were largely eliminated from work in that region.

When the great Gatun Lake was formed in the construction of the Panama Canal there were created a number of islands. Barro Colorado, the largest of these islands, fortunately escaped the devastating hand of the ubiquitous banana planter until 1923 when Governor Morrow wisely insured its permanent preservation by proclaiming it a Natural Park. Soon afterward, through the intervention of Dr. Thomas Barbour, James Zetek, and others, the island was assigned for scientific purposes to the Institute for Research in Tropical America which founded there the Barro Colorado Island Biological Station.

Barro Colorado Island is about three and a half miles long and three miles wide and rises at its highest point about 450 feet above the average level of Gatun Lake. Much of the island, especially on the side on which the Laboratory is located, is very rugged. Many rocky brooks have cut well back into the steep hillsides, forming an intricate system of deep ravines and high ridges. The central and western part of the island, however, is more level and slopes gently down to the lake shore. Except for the clearing immediately about the laboratory

buildings and the small clearing of an old plantation on the other side of the island, a tropical forest covers the whole area. A large part of the forest is characterized by very large trees and is without question a virgin growth. Over seventeen miles of carefully planned trails make every part of this forest reasonably accessible from the Laboratory, which is beautifully situated high above the lake on the east shore of the island. In the sheltered cove below the Laboratory



FIGURE 1. Sketch Map of the Canal Zone, Panama, showing Gatun Lake and Barro Colorado Island. Reproduced from the *Scientific Monthly* for May, 1930, by permission from this magazine and the author, Dr. S. W. Frost.

is the dock where visitors and their baggage are landed by the Laboratory launch which brings them from the little railroad station of Frijoles, three miles away across the Canal. Frijoles is almost the mid-point on the Panama Railroad and three trains a day in each direction make all other points in the Canal Zone very easy to reach from the Laboratory.

At the Laboratory the scientist is provided with good board, comfortable sleeping quarters, and a large, well-screened laboratory with spacious tables for any sort of work. There is also at his disposal a good supply of pure water, ice, a dark room, drying closet, and many of the more common chemical reagents and supplies.





FIGURE 2. The laboratory buildings of the Barro Colorado Island Biological Station. (Photo by Walter E. Hastings).



FIGURE 3. Gatun Lake and the Panama Canal as seen from the laboratory. (Photo by Walter E. Hastings).

It is easy to accept such conditions as a matter of course, but the student should realize that they are quite unique. I know of no other place in the American tropics where the biologist can live and work in comfort and safety in a virgin rain-forest jungle.

But I shall not attempt here to describe in detail the facilities of the Laboratory or the environmental conditions in the Panama forest but simply refer the reader to Dr. Gross' (1927) article in the Smithsonian Report and to Dr. Chapman's delightful book (1929) on Barro Colorado. I have personally spent eleven months at the Laboratory and will gladly answer to the best of my ability any inquiries addressed to me concerning Barro Colorado. Those who plan to work at the Laboratory should apply to Dr. Thomas Barbour (Museum of Comparative Zoology, Cambridge, Mass.).

My purpose here is to outline some of the problems awaiting the ornithologist in Panama and to make a few suggestions as to how they may be attacked.

The problem of seasons in Panama is an altogether different one from that which confronts the ornithologist in the North. There is no winter and summer, but instead, a wet season from June to December and a dry season during the other five or six months. But there are usually ten or fifteen inches of rain on Barro Colorado during the dry season, so that it is really a rain forest, although showing a marked tendency toward the monsoon type. The study of the correlation of the nesting time of the various birds with the wet and dry seasons is a most interesting one. We have made only a bare beginning, but apparently some species nest only in the dry season (*Ramphastos*, *Brotogeris*, and *Zarhynchus*) and others only in the wet season (*Myiobius* and *Manacus*) while still others (*Ionornis* and *Leptotila*) seem to nest throughout the year. Studies made there by Dr. Chapman (1928) have already indicated a remarkable exactness in the annual commencement of breeding operations by certain species. As to the factors which govern this we can not as yet even make an intelligent guess.

I ought, perhaps, to mention at this point that no one should hesitate to visit Barro Colorado during the rainy season. Field work in the tropics is customarily discontinued at the beginning of the wet season. But this is ordinarily due to the difficulty of transport and of drying specimens. Neither of these factors need be considered on Barro Colorado. The heavy rainfall comes mainly in short, hard showers in the afternoon and interferes very little with one's work. And the fact that the abundant ticks of the dry season disappear almost entirely with the commencement of the rains is no small argument for



FIGURE 4. The Kingbird (*Tyrannus melancholicus chloronotus*) which nests abundantly in March on Barro Colorado. (Photo by Walter E. Hastings).



FIGURE 5. The nest of a small Flycatcher (*Myiozetetes similis columbianus*) on Barro Colorado. Many birds in Panama build covered nests. (Photo March 17, 1926, by J. Van Tyne).

choosing the wet season. I have worked on the Island during two wet and two dry seasons and I feel that the advantages and disadvantages of the two seasons so exactly balance that I shall time my next visit to the Laboratory solely according to the nesting time (known or guessed) of the species I wish to study.

Other problems are those concerned with the determination of the methods and conditions of breeding peculiar to the tropics. It has long been known that birds lay fewer eggs in the tropics. We found that the Purple Gallinule on Barro Colorado lays but three to four eggs to a set, whereas in the temperate regions to the north the same species lays six to eight. Two eggs was usually the full complement in nests of small perching birds which we found in Panama. In the United States four eggs may be considered the average set for small land birds. In addition our work at Barro Colorado has already shown that in most species studied the period of incubation is surprisingly long. In the case of two Tyrant Flycatchers (*Myiobius a. atricaudus* and *Pipromorpha oleaginea parca*) we found an incubation period of twenty-one and twenty-two days, half again as long as known for any species of the family in temperate regions. The period of nestling life we found equally prolonged.

Life history studies at Barro Colorado will be of two types. Birds of genera or families also found in temperate regions will be studied with the hope that valuable facts may result from a comparison with their northern representatives. And even more interesting results may be expected from studies made of species belonging to exclusively neotropical groups. Of the first type the flycatchers are, perhaps, the best example, but there are many others, such as gallinules, herons, tanagers, and orioles. Of the second type may be mentioned the toucans, antbirds, woodhewers, manakins, and puffbirds.

Most of the supposed difficulties in the way of such work on Barro Colorado do not exist or are readily overcome, but there are certain obstacles against which the ornithologist should be forewarned if he is to avoid disappointment. Although the avifauna of tropical America is extremely rich in species (from Panama alone there are already recorded over a thousand forms) yet the individuals are not correspondingly abundant. This is a rather serious handicap to life history studies because of the difficulty of finding sufficient material on a single species. But with time, industry, and a little luck even this problem may be solved. Another obstacle we encountered was the high percentage of nests under observation which were destroyed by enemies before the eggs had hatched or the young had left. The per-



FIGURE 6. The nest of the Cassin Dove (*Leptotila cassini*) may be found both in the wet and the dry seasons. Photo, Barro Colorado, March 19, 1927, by Walter E. Hastings).



FIGURE 7. A Turkey Buzzard photographed from the porch of the laboratory. (Photo by J. Van Tyne, March, 1927).

centage was perhaps not much greater than in the north but it was high enough to present a serious problem. An additional difficulty in the way of the newcomer is that of the identification of the birds seen and studied. But this has been largely overcome at Barro Colorado. There is now an excellent illustrated handbook of the birds of this very region (Sturgis, 1928), the *only* book of its sort for the whole American tropics, and there is at the Laboratory a set of identified study skins of most of the species of birds recorded from the Island. Nevertheless, no serious student should expect to work on Barro Colorado without collecting an occasional bird as a final check upon his identifications.

I have mentioned but a few of the problems which have come to my attention in the course of my early work in Panama but they are perhaps sufficient to indicate the wealth of fascinating questions which now await solution in the forests of Barro Colorado.

#### REFERENCES

(The following books and articles will be of interest to the ornithologist contemplating a visit to Barro Colorado):

- Chapman, Frank M.—1928—The Nesting Habits of Wagler's *Oropendula* (*Zarhynchus wagleri*) on Barro Colorado Island. Bull. Amer. Mus. Nat. Hist., 58, Art. III., pp. 123-166.
- 1929—My Tropical Air Castle. Nature Studies in Panama. D. Appleton & Co., New York. Illustrated. (417 pages). (Appendix contains a nominal list of birds seen by Chapman on Barro Colorado).
- Gross, Alfred O.—1927—Barro Colorado Island Biological Station Smithsonian Report for 1926. pp. 327-342. 9 pls.
- Hallinan, Thomas—1924—Notes on Some Panama Canal Zone Birds with Special Reference to Their Food. Ank. 41, pp. 304-326.
- Stone, Witmer—1918—Birds of the Panama Canal Zone, with Special Reference to a Collection made by Mr. Lindsey L. Jewel. Proc. Acad. Nat. Sci. Phil., 1918, pp. 239-280.
- Sturgis, Bertha B.—1928—Field Book of Birds of the Panama Canal Zone. G. P. Putnam's Sons, New York. Illustrated. (466 pages).
- Van Tyne, Josselyn—1929—The Life History of the Toncan *Ramphastos brevicarinatus*. Miscel. Publ., Mus. Zool., Univ. Mich., No. 19. (13 pages, 8 pls.). (From studies made at Barro Colorado).

MUSEUM OF ZOOLOGY, UNIVERSITY OF MICHIGAN,  
ANN ARBOR, MICHIGAN.

## NOTES ON THE WILD TURKEY IN INDIANA

BY S. E. PERKINS III

Thanksgiving time is approaching. It usually brings to mind the subject of turkey, so it has occurred to me that it might be of some interest to record the observations of travelers in Indiana in earlier days on the status of the Wild Turkey. This bird was a more highly colored one than the farm yard variety, with much more of the bronze and copper reflections in its plumage. It fed largely on nuts and wild fruits and its flesh was tender and delicious.

I naturally turn to reports of travelers in the pocket of the State. Vincennes, located there, was the earliest outpost in lower Indiana, variously reported as having been founded in 1702 and 1735. During the period from 1765 until almost the middle of the next century it was the objective of many native and foreign travelers, most of whom were in search of scientific data.

Then, too, Harmony, later New Harmony, fifty miles farther down the Wabash River, established in 1815 by the Rappites, who were succeeded in 1825 by Robert Dale Owen and his Communistic band, was the terminus for journeys of many and the temporary abode of other travelers going farther west, for more than twenty years. The members of the famous Boatload of Knowledge lived there. Among the scientists known in this country and abroad, who gathered at New Harmony, were Thomas Say, naturalist and conchologist; Chas. A. Sueur, artist, an intimate friend of the noted ornithologist, Cuvier; Constantine Rafinesque, botanist; and Dr. Girard Troost. It was to be expected that the most frequent reports of observations of scientific and popular facts would pertain to that part of Indiana. There are many records thoroughly reliable and by men accustomed to writing of their observations.

Col. Geo. R. Croghen, in June, 1765, with a small party crossed from Cincinnati to Vincennes (called by him Port Vincent) on a mission to distribute gifts for the Government to the Indian tribes. He reports, "the ground near here (Port Vincent) is well watered and full of buffalo, deer, bears and all kinds of wild game."

John J. Audubon, the celebrated bird painter, lived at Henderson, Kentucky, opposite Evansville, from 1810 for the period of eight years. He left a diary of his doings. His notes are to the effect that the Wild Turkey was exceedingly abundant in that part of Southern Indiana where he collected.

Then came in 1816, David Thomas, a florist and pomologist, who had few equals along these lines in the United States at that time, on

a visit to lower Indiana, who says, "wild turkeys abound in this country".

Wm. Corbett, an English soldier, spent some time in Indiana, especially at Princeton, Evansville, and Harmony in 1818, and has left us in his diary the following sentences: "Saw on June 23, 1818, large quantities of wild turkeys and thousands of passenger pigeons." Again, "On our way to Princeton we saw large flocks of fine wild turkeys and whole herds of pigs, apparently very fat. Some of the inhabitants, who prefer sport to work, live by shooting these wild turkeys."

Three years later David B. Warden, French-Irish author and antiquarian, says "of the feathered race of game, wild turkeys and pigeons swarmed in the woods".

Wm. N. Blaney reports during 1822 that "two young hunters in two days' hunt in southern Indiana brought back a great number of turkeys, 16 deer and 2 bears".

Timothy Flint, in his "History of the Mississippi Valley", records that in 1826 he found Wild Turkeys and pigeons numerous throughout southern Indiana.

Maximillian, Prince of Wied, made extensive travels through North America and prepared several volumes of the scientific data acquired. He spent the winter of 1832-1833 at New Harmony and the vicinity where he writes as follows: "The most interesting of the birds of this part is the wild turkey which was formerly extremely numerous and is still pretty common". "A large cock was sold at Harmony for a quarter of a dollar. A young man in the neighborhood who supplied the place with this delicate game, had often 10 or 15 hanging about his horse at the same time". "In our excursions we often visited some others of the numerous islands in the Wabash, being particularly attracted there by the loud cries of the wild turkey". "Turkey Island seemed to be a favorite place of resort where we often found wild turkeys and even the Virginian deer and it is really a fine sight to see flocks of these wild turkeys flying across the river". "We generally return home with ducks and other birds but we are unsuccessful in our chase of the wild turkeys, of which we sometimes saw whole flocks flying across the Wabash". This is the first reference to the growing scarcity of this noble bird. Note that from "extremely numerous" this bird has been reduced by 1832 to "pretty common".

Dr. E. W. Nelson of the Biological Survey, from his study of the birds of this region, in 1875 found the Wild Turkey common in the bottoms.



Dr. A. W. Brayton of Indianapolis, reports the last one found within Marion County was in 1879.

Robert Ridgway, writing of the Wild Turkey near Wheaton, Knox County, in 1881, says of it in that limited area, "Common, scarcely a day but what one or more were seen and on one occasion a flock of 14 was met with. When surprised they fly into the swamp, where, alighting on the trees, they are secure from pursuit. The inhabitants pay no attention whatever to the game laws, and it is owing entirely to the safe retreat afforded by the swamp that the turkeys have not been more nearly exterminated". In the 80's then, the bird is not found except in the bottoms and swamps, the places of most difficult access for hunters.

Mr. James P. Baker of Indianapolis, recalls that as the turkeys became scarcer they roosted higher, even to the highest branches of trees.

Its status in the late 80's was such that, as a species, it could have been increased. However, there was still that feeling among farmers that everything wild belonged solely to the local owners and any attempt to legislate and enforce legislation for the benefit of the State was an infringement on purely personal rights and little progress for protection to our vanishing wild life was accomplished.

Dr. Amos W. Butler gives as the last dates of these birds reported to him, from Knox County, 1894; from Gibson County, 1897, at which dates they were to be found only in limited numbers in Posey County, their last stand, the corner County of the State. Since the 90's they have gradually become scarcer and scarcer until now they are pretty generally considered to be entirely extinct within our borders, except for the nucleus recently released on the Brown County Reservation by the State Conservation Department and the few in privately owned game farms.

Thirty-eight young birds, raised from wild North Dakota stock, in captivity, have been released during the last two seasons. What a pity that we are having to introduce to our State a species of bird which, if conservative methods for its use had been adhered to in the past quarter century, we would have obviated the necessity for steps to be taken for its re-introduction. This should be a lesson to us as we think on other species whose future existence is in the balance.

INDIANAPOLIS, INDIANA.

## LARINE SUCCESSION ON LONE TREE ISLAND

BY C. G. MANUEL

At this island in Saginaw Bay, Michigan, there occurs an interesting succession of fish-eating birds from early spring until late in summer. The birds are the Common, Black, and Caspian Terns, and also Bonaparte's Gulls.

Just a few days after the ice melts, the first migrants, the Bonaparte's Gulls, gradually appear. After a few days' feeding in deeper water (six feet approximately) they move northward. Almost immediately they are replaced by the Common Terns, which begin to arrive about the first week of May. Although the Black Terns also arrive at about the same time, the latter establish themselves and nest in the marshes just showing up along the shores. The Common Terns increase in number until the second week in June when they are most numerous, as there are usually at least 2000 pairs of birds in the colony. At this period, a few Herring Gulls and Caspian Terns may be seen at certain uninhabited points on the island. Apparently these Caspian Terns drop out of the flock as they pass the island on their northern migration. Perhaps the easy accessibility of small perch induces the birds to stay as evidenced by the number of these dead fish, about four inches, that may be seen floating nearby. Those that were recovered from the stomach of the Caspian Tern are of this size. A few Caspian Terns that were examined were all sexually immature and it may be assumed that the fact they are not ready to breed eliminates the necessity of their going north to the regular breeding areas. On very rare occasions, Black Terns can be seen in the island before the first week of August. Beginning with the second week, however, their presence becomes very conspicuous. They congregate in certain definite spots at the island and feed gregariously nearby. The lowering of the temperature which sends the minnows in deeper water probably accounts for their movement from the shore to the island. Almost simultaneously, a few young Bonaparte's Gulls arrive, presumably the immature ones that stay all summer in certain parts of Saginaw Bay.

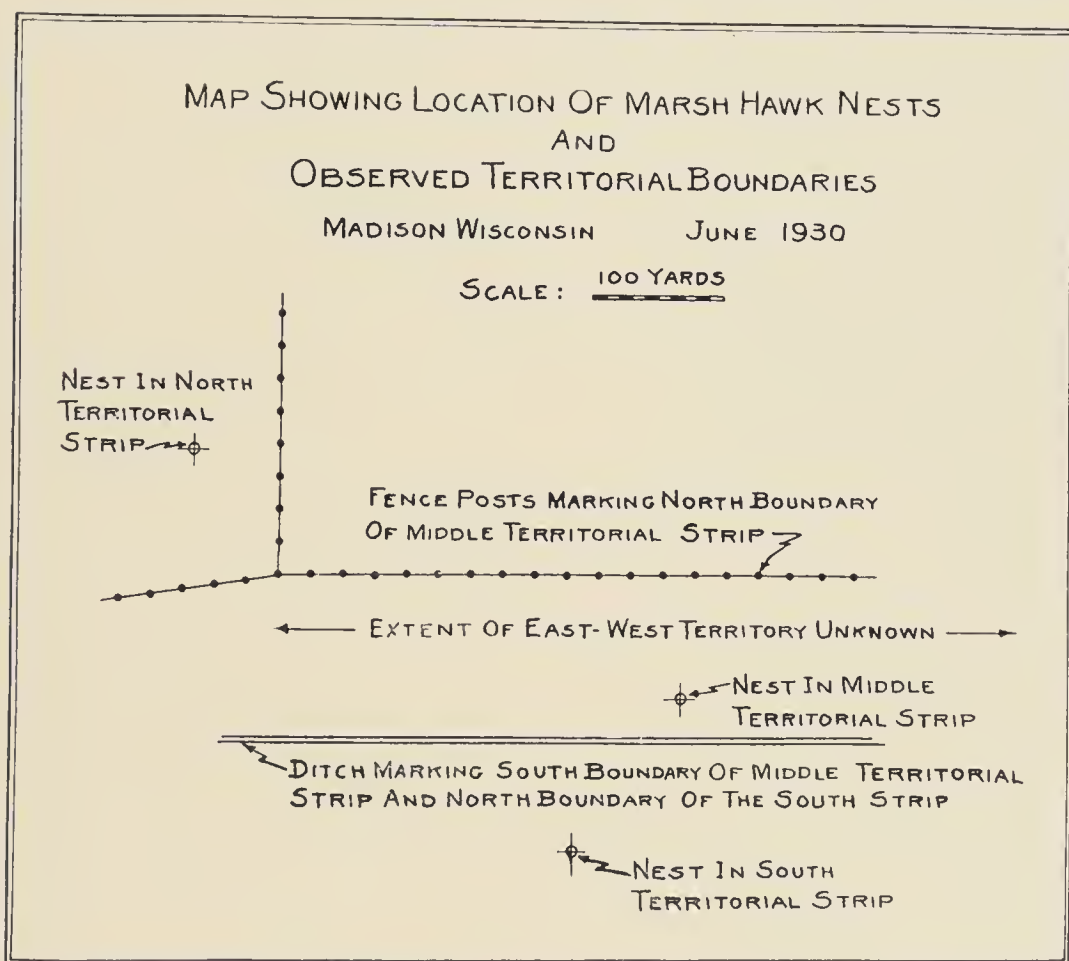
While the young of four species are coming to the island, the adult Common Terns are fast leaving, so that there is a time when the island is inhabited almost entirely by young birds. The young Common Terns are then able to hunt food for themselves, but perhaps could not endure long distance flight—thus later departure may be explained.

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## TERRITORY DISPUTES OF THREE PAIRS OF NESTING MARSH HAWKS

BY PAUL L. ERRINGTON

Early in June, 1930, three Marsh Hawk nests were located for study in a small portion of a drained marsh near the State Fish Hatchery, Madison, Wisconsin. The marshy land, upon which the studies were conducted, was largely uncultivated, grown up to golden-rod, nettles, etc., and roughly a square mile in area. The east end



of this tract was occupied by only one pair of Marsh Hawks; the west end by the three pairs to be discussed.

The nests were situated in three approximately parallel strips of territory, and with regard to each other somewhat as the points of an isosceles triangle. The nest representing the apex of the triangle was about 400 yards from those at the base, which latter were about 130 yards apart. No explanation is offered as to why the three pairs of hawks nested so closely together; they had ample space for spreading out farther, had they wanted to.

As might be expected, the occupants of the middle territorial strip were frequently involved in disputes with one neighbor or the other, especially in the forepart of the nesting season. The middle strip, 120 yards in width, apparently was not restricted to any particular length, but was bounded on the south by a drainage ditch and on the north by a wire fence. All of the nesting hawks seemed to accept these man-made landmarks, at least for a considerable distance, as the proper bounds of their adjacent territories. The ditch was neutral ground, which the rival birds would not ordinarily approach nearer than 30 to 50 feet. The fence posts to the north were recognized as the inviolable feeding and lookout perches of the middle pair.

The greatest strife was noted during the incubation and hatching period, when the returning prey-laden male of the middle pair would cut across the territory on the south. Such trespass would not meet with the approval of the south pair and they would shortly point out to the offender the magnitude of his error, often to the extent of persuading him to leave the way he arrived, thus compelling him to make a pronounced detour to his own nest. The incubating female of the middle strip would join her mate if the trespass was committed by the other parties. On one occasion, before the ditch and the fence were respected as territorial borders, the entire population of six hawks was observed in the air, engaged in simultaneous argument as to who was who and why.

Intra-specific raptorial relations grew more amicable as the summer progressed. The birds of the middle territory learned to enter their strip from the end, thereby sparing themselves no small amount of grief. Virtually the only subsequent unpleasantness came about on account of the detested man-creature, who appeared every day or so to squeeze the ground-squirrels from the gullets of the nestlings. The female resented the most this maltreating of the offspring, and a person had to be quick on the dodge to keep her talons out of his hair.

Even an object of special hatred like a meddlesome human visitor seldom caused the parent birds to forget the ditch and fence. To the ditch or to the fence they would attend the invader, but there the pursuit would cease. If the female Marsh Hawk from south of the ditch would follow across, she would be embarrassed by the female from the north side.

Less parental jealousy was witnessed between the pairs as the young attained their growth and power of flight, however vicious the adults became toward the investigator. No animosity was shown the heavy-flying juveniles by adults, although it is presumed that the

youngsters attached no unusual significance to the ditch or to the fence. For a few days after they had left the grass and weeds in late July, buffy juveniles were seen sitting on posts throughout the whole west half of the marsh; territorial intolerance plainly did not persist this long in the season.

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## SEASONAL CHANGES IN A BIRD HABITAT IN TEXAS

BY G. EIFRIG

During thirty years of bird observation I have seen many and profound changes taking place in the country as a whole as well as in local, circumscribed bird-habitats. Many of these were unavoidable, such as the clearing of forests to be made into farms, which has been going on ever since the first settlement of the country. Some of these changes are violent and disastrous to bird and animal life in general, and many are unnecessary and even foolish. This would seem to apply especially to many of the changes, or rather the havoc, wrought by our modern genus of "realtors", or worse yet "sub-dividers". How they often unnecessarily and even foolishly cut down a copse of trees or a thicket of bushes is well known.

Equally disastrous is some of the modern draining of swamps, which so entirely changes the aspect of a countryside and deprives hundreds and thousands of birds and other animals of their legitimate habitat.

Once in awhile, however, it happens that nature herself produces a change for the better in a certain habitat. A very interesting instance of this kind was noticed by the writer in Texas during two stays there in 1925 and 1926. The former year was an exceptionally dry one, even for Texas, it not having rained in some parts for over a year or more. During the stay near Kingsville, some twenty miles north of Corpus Christi, I visited a so-called pasture. This, in the local vernacular, means a piece of original prairie, sparingly covered with the typical Texas small trees, such as mesquite, huisache, retama, and rattle-box (*Daubentonia longijolia*). In 1925 this place was bone-dry. The sparse grass more or less turned gray and brown, and the cow paths were distinctly dusty. The bird population was correspondingly small in this area of about a hundred acres. The only birds seen were Scissor-tailed Fly-catchers, Yellow-billed Cuckoos, Western Lark Spar-

rows, Western Mockingbirds, several pairs of Western Mourning Doves, Western Blue Grosbeak, and a Turkey Vulture sailing overhead.

The year 1926 on the contrary was an unusually wet year for this part of Texas. I again visited the same spot. To my surprise I heard a regular din and babel of bird voices issuing from it, even from a distance. On reaching the edge of the tree-covered area, I found it to be covered by two or three feet of water, on which floated thousands of the pretty blue water-lily (*Castalia elegans*), and other species equally interesting to the northerner. The bird population in numbers and variety was equally bewildering. Here is a list of species seen in this now lovely spot during five or six visits: 150 White-faced Glossy Ibises; several Wood Ibises; 1 Roseate Spoon-bill; several Pied-billed Grebes with nests; 10 Mexican Grebes, mostly with young on their backs; 100 Laughing Gulls; 30 Ruddy Ducks; 1 Scaup Duck; 75 Mexican Cormorants; 20 Anhingas; many Louisiana Herons, Little Blue Herons, Little Green, and Black-crowned Night Herons; 1 Ward's Heron; many Florida Gallinules, with nests or young; many Purple Gallinules, with nests and eggs; 200 Coots, with nests and eggs; 50 Black-necked Stilts; 1 Killdeer; several Rio Grande Red-wings; 1000 Great-tailed Grackles, with young in the nests, or eggs, as high as five nests in one bush.

Add to these the residents of the year before, plus four or five Nonpareils, several Gray-tailed Cardinals, a Lesser Cliff Swallow, and ten Texas Night Hawks soaring overhead and one has to admit that there was not only greatly increased bird life here, but a regular congestion of it. The poor old Scissor-tails certainly had their hands full. They ordinarily sail into every bird that comes near them, but this year they were overwhelmed, almost stupefied with the numbers of birds around them, so that they could only make weak attempts at jabbing any bird that came near them. The Great-tailed Grackles which frequently act the part of clowns among the birds of the Gulf Coast, here exhibited themselves as ogres. They sometimes sneaked up to a silently-standing young Black-crowned Night Heron and pushed it off its perch into the water below. This, however, would not disconcert the herons very much, as they would just swim up to the nearest bush and clamber up on it.

It is evident that such a natural change, produced simply by the difference between a dry and a wet season would be impossible in the latitude of Chicago and probably in most other places.

RIVER FOREST, ILLINOIS.

## NOTES ON THE BIRDS OF SOUTH CENTRAL KANSAS

BY F. M. ALEXANDER

The birds considered in these notes are those which have been observed in the past few years on or near a farm located near Wellington, Kansas. This farm is not radically different from others in this locality, being level upland, and possibly having a few more trees than the average; the land not in pasture is given over to the growing of wheat, corn and sorghums, and hay. There are no streams within a quarter of a mile, so that water birds and shore birds are not commonly met with; but during periods of migration many flocks of ducks and geese are seen. Winters as a whole are open and mild with a few short periods of zero and snowy weather. During the summer there are often periods of extreme heat but there is always sufficient rainfall for the growth of crops.

Among diving birds the Pied-billed Grebe is the only common one. Horned Grebes are occasionally seen.

Gulls and terns are fairly common in the spring, especially during April and May when they follow the plows and listers in the corn fields. The same birds will often visit a field regularly for several days as in the case of what appeared to be an immature Franklin's Gull. Franklin's Gulls are the most common, sometimes coming in flocks of a hundred or more; however, on May 3, 1927, three Herring Gulls spent the afternoon in the field. Black Terns are common during this time but in smaller flocks than the gulls and rarely ever do they visit a field when the gulls are there. Some observers declare they have never seen the Black Terns except on the wing; however, the writer has observed them resting on the ground and on the fence posts.

Ducks and geese are seen generally only as migrants. Some of the ducks may nest around artificial lakes and in waste places but they are rare. Ducks flying north have been seen as early as February 7 and by February 23 the flight of both ducks and geese was general. In some cases the flocks were low enough to distinguish them as Canada, and Snow Geese, and Pintails. Blue, and Green-winged Teals, Mallards, Pintails, and Shovellers are the most common ducks, but Bluebills, Buffleheads, Goldeneyes, Redheads, Canvasbacks, and American, and Hooded Mergansers are shot on the larger lakes. Mallards, Teals, and Shovellers are most commonly found on our upland ponds. Single pairs of Shovellers are often seen in the spring. In a recent trip through the western part of the state in a single afternoon two pairs of Shovellers were seen in separate places and in another place a male and two females.

Along the larger streams Great Blue Herons are sometimes found Little Green Herons are common, Yellow, and Black-crowned Night Herons, rare. The Bittern is not at all uncommon.

In the spring of 1926 a pair of Sandhill Cranes flew over the farm every evening about five o'clock from the west, probably from the creek, and alighted on the stream east of the farm. They became a rather common sight until July of that year but since none have been seen until May of this year when one has again appeared on this same stream.

A small local museum contains specimens of Wilson's Phalarope, Avocets, Willets, and Curlews but these were all taken several years ago. The writer is not very familiar with shore birds but has noted Wilson's Snipe, Solitary Sandpipers, Spotted Sandpipers, and Yellow-legs. Killdeers are quite common from early in the spring as is also the Upland Plover.

The common Quail, or Bob-white, is our only representative of that order here; however, farther west in this state Prairie Chickens are found in large numbers. Early this spring Mexican Quail were distributed over the county, four in a place where there were flocks of the common quail, with the hope of improving the vitality of the local species. Efforts at introducing pheasants have met with only moderate success. A flock of fourteen quail spent the past winter along an osage orange hedge near the buildings. Shocked cane and other feed around the barns no doubt had considerable attraction for them; on one occasion the writer found them just outside the hen house. On June 5 a nest and pair of old birds were found along this same hedge. The nest was made of dry grass, slightly depressed in the ground, covered with grass above with an opening to the south and contained two eggs.

Mourning Doves arrive in March and are common until late fall. Their nests are often made on the ground in wheat fields, and during harvest the bird flies off in apparent great distress at the approach of the binder. It uses the ruse of being injured to lead any intruder away from its nest more than any other of our local birds.

Although eagles have been killed here in years past, it was not until November 20, 1927, that the writer ever found a wild one here. While rounding a bend in the road through rough pasture land, I came onto a large Golden Eagle feeding on a jack rabbit and not more than thirty feet away. The approach and stopping of the car did not seem to interest him, but after several minutes the continued attacks of three crows finally made him rise and after circling several times alighted



on a fence post about 300 yards across the pasture.

Marsh Hawks are perhaps most often seen here while Swainson's, Cooper's, and Rough-legged Hawks are not at all rare. A pair of Marsh Hawks were seen almost daily at the farm during the winter. Sharp-shinned, and Sparrow Hawks are also fairly common; it may not always hold true but I see the former only in winter months and the latter during the summer. The Prairie Falcon is rare.

On March 31 of this year, nine days later than last year, the first Burrowing Owls of the season appeared. Four years ago these owls took up residence in abandoned prairie dog holes and now there are several colonies through the pasture. In the fall as many as seventeen owls have been counted sitting about the entrance to one hole. The young drop into the holes on the slightest pretense but the older ones allow a person to approach quite closely before flying or entering the holes and show little fear of horses or cattle. Short-eared Owls, Screech Owls, and Barn Owls are relatively common but Horned Owls are rare.

The Belted Kingfisher is not often seen here. Two were seen in March of this year. Hairy, Downy, and Red-headed Woodpeckers are common, the former being seen during much of the year. The Red-headed Woodpecker does not become common until late in April or early May. By March Flickers have arrived in considerable numbers and are common all summer.

Although Chimney Swifts occur here I have not seen a great many. While going to school at Manhattan the writer had opportunity a number of times to observe the Ruby-throated Hummingbird as it was flying among the flower beds on the campus, but the bird seems to be rare in this section. Nighthawks are very common during the summer. I have found their "nests" in June in wheat fields and in corn fields. Two years ago while cutting wheat two young ones were found. These were about the size and shape of the domestic chick, a light gray in color and while they were not large enough to fly were active and proficient at concealing themselves in the wheat stubble.

The Scissor-tailed Flycatcher is frequently seen here during the summer, generally arriving late in April. The common Kingbird and Arkansas Kingbird are here in large numbers by May. They do most of their hunting on the wing returning generally to the same perch after making a short flight.

Both the Prairie Horned Lark and the Meadowlark are present the year round, if anything more generally seen in winter. Many small flocks of around a dozen can be found near farm buildings and feed

yards during the winter. Even during snow storms I have seen them searching for food on ground swept clean by the wind.

The Blue Jay generally arrives by the middle of April. Apparently the bird prefers the town to the country as it is more often seen there. There is rarely a time that a few Crows cannot be found. Early this spring the Crows and Blackbirds were doing an unknown amount of good by eating grubs and cutworms which were causing damage to wheat. A bounty of five cents a head is given on Crows by the county and there is some agitation to have this law repealed. The Red-winged Blackbird is the first to arrive here, followed closely by the Yellow-headed Blackbird which remains until early May. Bronzed Grackles arrive early and are sometimes seen in the winter as are Cowbirds. Small flocks stay for days during the winter in the feed lots and on January 10, 1927, there were three birds which appeared to be Rusty Blackbirds. In September, October, and November the large flocks of grackles and Cowbirds do considerable damage in kafir corn fields, in some cases eating practically all the grain in the field.

Orchard Orioles and Baltimore Orioles are fairly common. I see only a few American Goldfinches during the summer but some report seeing them frequently. English Sparrows and Harris's Sparrows are present in large numbers the year round. Fox, Lark, and Black-throated Sparrows are seen, especially the two former. The Slate-colored Junco is very common in late winter.

The Cardinal is present during the entire year. Rose-breasted and Blue Grosbeaks are but rarely seen. Indigo, and Painted Buntings are present but the latter is very rare. Even during the hottest days the Dickcissel is active and singing. The only swallow I have had opportunity to observe is the Barn Swallow and true to its name one or more broods are raised in the barn every year. Small flocks of Cedar Waxwings are sometimes seen. The White-rumped Shrike is present practically all the year and the Northern Shrike sometimes ranges this far south.

The Red-eyed Vireo is sometimes found here. The Yellow Warbler and Maryland Yellow-throat are seen, especially the former. Mockingbirds, Catbirds, and Brown Thrashers are all common during the summer. Among wrens, the House, and Carolina Wrens are both common.

The White-breasted Nuthatch, Tufted Titmouse, and Blue-gray Gnatcatcher occur here but are not common. Black-capped Chickadees are quite common. In the thrush family, Robins are very common, the Wood Thrush and Bluebird comparatively rare.

WELLINGTON, KANSAS.

NOTES ON THE BIRDS OF CRANBERRY GLADES, POCAHONTAS  
COUNTY, WEST VIRGINIA

BY MAURICE G. BROOKS

High up in the Allegheny Mountains of West Virginia is a region known as Cranberry Glades, a place of unusual interest to naturalists in general, and to bird-lovers in particular. Located in Pocahontas County, in the southeastern part of the state, it forms a meeting place for many northern and southern forms. West Virginia never having been glaciated, the reedy bogs and lakes that are so common northward are almost entirely absent, and the few glades that do occur are worthy of special note.

Pocahontas County lies almost entirely above the 2,000 foot contour mark, and is mountainous throughout. The Cranberry Glades are at a level of about 3,100 feet, and surrounding them are ranges that rise to 4,600 feet. Some 300 acres are included in the glades region, the whole suggesting in appearance a northern muskeg. As the name implies, Cranberries (*Vaccinium*) of two species are abundant, and with these may be found round-leaved sundew, bog rosemary, buckbean, cotton grass, horned bladderwort, and other plants suggestive of a more northern region. Around the fringes of the open glades are dense thickets of alder, with balsam fir, red spruce, and quaking aspen coming in as firmer ground is reached.

As an indication of the possibilities for the collector, it might be well to note that E. A. Preble, of the U. S. Biological Survey, and Fred E. Brooks, of the U. S. Department of Agriculture, secured here in July, 1909, specimens of the yellow-cheeked meadow mouse (*Microtus chrotorrhinus*) a species not previously reported south of the Adirondack Mountains.

Some of the ridges surrounding the glades are densely wooded with mixed spruce and deciduous forests, while on others there are open, park-like areas characterized by groves of crataegus. Where the timber has been lumbered out, dense thickets of fire cherry have occupied the spaces, so that the region offers a wide variety of conditions for the observer. Some years ago there was a lumber railroad which reached the glades, but this has been abandoned, and the territory is now accessible only to those pedestrians who are willing to hike five miles, drawn by the lure of the unusual.

Observations recorded in these notes were made on three different trips, the first about the middle of June, 1914, the second in early September, 1925, and the third in late May, 1926. Opportunity was

thus given to see something of both spring and fall migrations, while the June trip gave a week to the summer resident species.

One hundred and three species and forms were listed as follows:

AMERICAN WOODCOCK. *Philohela minor*. Several seen both in 1914 and in 1926. The abundance of their borings noted in the sand and muck banks around the alder swamps seems to indicate that the species is common. Mr. Frank Houtchens, a trapper of this region, reports that he has several times found "Snipe's" nests in the snows of late spring, and says that he has seen the old bird on the nest with only her head above the snow.

SOLITARY SANDPIPER. *Tringa solitaria solitaria*. One observed along a branch of Cranberry River September 7, 1925.

SPOTTED SANDPIPER. *Actitis macularia*. Common summer resident along Cranberry River, which flows out of the glades.

HUDSONIAN CURLEW. *Numenius hudsonicus*. A single specimen of this bird was collected May 25, 1926, by A. B. Brooks, C. L. Brooks, and the author. When seen, the bird was nervously running about on the sphagnum of Big Glade. The specimen is deposited in the State University Museum, at Morgantown, W. Va. This is the only recorded occurrence of the species within the state.

BOB-WHITE. *Colinus virginianus virginianus*. Apparently not common here. One heard calling on the uplands above the glades September 7, 1925.

RUFFED GROUSE. *Bonasa umbellus umbellus*. Seen on all three trips. Commonly found dusting themselves along the old lumber railroad right-of-way.

TURKEY VULTURE. *Cathartes aura septentrionalis*. Occasionally seen flying above the glades. Very abundant in more settled parts of the region.

MARSH HAWK. *Circus hudsonius*. One observed September 7, 1925. Its breeding here is a possibility, but this has not been definitely recorded.

SHARP-SHINNED HAWK. *Accipiter velox*. Fairly common about the wooded ridges.

COOPER'S HAWK. *Accipiter cooperi*. Seen less frequently than the last.

RED-TAILED HAWK. *Buteo borealis borealis*. Often seen circling high in the air above the glades.

RED-SHOULDERED HAWK. *Buteo lineatus lineatus*. Circling and calling, thus making itself frequently conspicuous.

BROAD-WINGED HAWK. *Buteo platypterus platypterus*. A pair of these birds, giving their characteristic whistle, were seen repeatedly on the June, 1914, visit.

SPARROW HAWK. *Cerchueis sparveria sparveria*. Commonly seen in the dead trees about the edges of the glades.

BARRED OWL. *Strix varia varia*. The varied notes of this species help to make the nights on the glades interesting.

SCREECH OWL. *Otus asio asio*. Heard commonly.

GREAT HORNED OWL. *Bubo virginianus virginianus*. In the owl chorus this fellow carries an abundant bass. Frequently heard in broad daylight about the glades.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus*. Not uncommon.

BELTED KINGFISHER. *Ceryle alcyon*. Seen and heard along the Cranberry River at the lower end of the glades.

HAIRY WOODPECKER. *Dryobates villosus villosus*. Common on the wooded ridges above the glades.

DOWNY WOODPECKER. *Dryobates pubescens medianus*. Abundant throughout the region.

YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius varius*. This species appears to be a summer resident, since it was heard frequently on all three trips.

NORTHERN PILEATED WOODPECKER. *Phloeotomus pileatus abieticola*. The rolling notes of the big Pileated often come down from the higher ridges above the glades. Frequently seen flying from one mountain-side to the other.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus*. Not uncommon.

RED-BELLIED WOODPECKER. *Centurus carolinus*. Probably fairly common. Seen several times on the September, 1925, visit.

NORTHERN FLICKER. *Colaptes auratus luteus*. Common.

WHIP-POOR-WILL. *Antrostomus vociferus vociferus*. The dense alder thickets bordering the glades form a cover from which Whip-poor-wills may sometimes be flushed in daytime. Commonly heard.

NIGHTHAWK. *Chordeiles virginianus virginianus*. Abundant in their fall flight September 7, 1925.

CHIMNEY SWIFT. *Chaetura pelagica*. There being no permanent human habitations near the glades, we wondered at the abundance of this bird, and just how far it kept up its habit of nesting in hollow trees. At the lower end of the glades, in 1914, stood a large abandoned

lumber camp. In connection with this had been an open blacksmith shop with the forge set against the board wall. This wall had become heavily covered with soot, and plastered to this wall we found, to our delight, several nests of the swift. Thus had the birds taken advantage of every opportunity to show their preference for the artificial conditions.

RUBY-THROATED HUMMINGBIRD. *Archilochus colubris*. Common. A nest, with eggs, found May 27, 1926, in a red spruce. The nest was placed on a tuft of "Reindeer Moss".

KINGBIRD. *Tyrannus tyrannus*. Apparently not very common, but seen several times around the crataegus thickets.

CRESTED FLYCATCHER. *Myiarchus crinitus*. One pair seen in deciduous woods May 27, 1926.

PHOEBE. *Sayornis phoebe*. Common about the abandoned lumber camps.

OLIVE-SIDED FLYCATCHER. *Nuttallornis borealis*. This fine flycatcher makes himself conspicuous all around the glades. Selecting the topmost twig of a spruce or balsam, he sends his unmistakable "Come right here" note out to greet you long before you reach the glades themselves. This locality is one of the few places in the state where one can be sure of finding the bird at any time during the summer.

WOOD PEWEE. *Myiochanes virens*. Fairly common.

ACADIAN FLYCATCHER. *Empidonax virescens*. This is not good country for the Acadian, but he can be found along the beech-bordered streams of the uplands. Not seen about the glades themselves.

ALDER FLYCATCHER. *Empidonax trailli alnorum*. This species is here nearing its southern breeding limit, and it is surprising to find it so abundant. Whether or not it may be a coincidence, in June, 1914, and in May, 1926, old nests with young of this species dead were found. Two nests were located each year, each nest having two or three dead young birds in it. No explanation is offered.

LEAST FLYCATCHER. *Empidonax minimus*. Abundant. During the first week of June, 1914, four nests with eggs were found in the glades region.

BLUE JAY. *Cyanocitta cristata cristata*. Common throughout the region.

NORTHERN RAVEN. *Corvus corax principalis*. The raven is rare in West Virginia, but it may be seen occasionally near the glades.

Four were watched and heard June 6, 1914, and a fine opportunity for comparison was offered when a crow obligingly attacked them.

One of the striking features of bird life in the region covered by this paper is the large number of "wild-sounding" notes to be heard day and night. Hawks, owls, jays, and flycatchers all contribute, but by far the most impressive is the croak of the raven.

CROW. *Corvus brachyrhynchos brachyrhynchos*. Common.

BOBOLINK. *Dolichonyx oryzivorus*. A pair, doubtless late migrants, observed May 27, 1926. Bobolinks pass through the central part of the state in spring migration during late April, and these had lingered beyond their season apparently. Although known to breed in the state, the only known locality is in some two hundred miles northwest of the Cranberry region.

COWBIRD. *Molothrus ater ater*. An egg of this parasite in the nest of a Song Sparrow in 1926, was proof of its presence.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus phoeniceus*. Common along the water-courses.

BRONZED GRACKLE. *Quiscalus quiscula aeneus*. A few seen.

PURPLE FINCH. *Carpodacus purpureus purpureus*. The presence of this bird in considerable numbers in June, 1914, would seem to indicate that it breeds here. Young were seen September 7, 1925.

GOLDFINCH. *Astragalinus tristis tristis*. Abundant.

VESPER SPARROW. *Pooecetes gramineus gramineus*. Found in the park-like uplands.

WHITE-THROATED SPARROW. *Zonotrichia albicollis*. One heard singing May 24, 1926. There is no West Virginia breeding record for this species.

CHIPPING SPARROW. *Spizella passerina passerina*. Common around the crataegus groves.

FIELD SPARROW. *Spizella pusilla pusilla*. In the grassy uplands.

CAROLINA JUNCO. *Junco hyemalis carolinensis*. Abundant throughout.

SONG SPARROW. *Melospiza melodia melodia*. Very common.

SWAMP SPARROW. *Melospiza georgiana*. Perhaps the most abundant bird in the glades proper. Several nests were found in May, 1926. On moonlit nights this bird sings as freely as in the daytime.

TOWHEE. *Pipilo erythrophthalmus erythrophthalmus*. Fairly common on the ridges.

CARDINAL. *Cardinalis cardinalis cardinalis*. Rare at this altitude, where its place is taken by the Rose-breasted Grosbeak. One seen September 7, 1925.

ROSE-BREASTED GROSBEAK. *Hedymeles ludovicianus*. Quite common summer resident. One of the most showy features of the landscape.

INDIGO BUNTING. *Passerina cyanea*. Only one seen here, where the surroundings do not suit it. Seen in blackberry thicket September 7, 1925.

SCARLET TANAGER. *Piranga erythromelas*. Several seen in the higher regions around the glades.

TREE SWALLOW. *Iridoprocne bicolor*. Many seen in September, 1925.

BANK SWALLOW. *Riparia riparia*. Common along the Cranberry river below the glades.

CEDAR WAXWING. *Bombycilla cedrorum*. This species was observed several times feeding on the tent caterpillar larvae which abounded on the wild cherry. Common at all seasons visited.

RED-EYED VIREO. *Vireosylva olivacea*. Common on the chestnut and oak timbered ridges.

YELLOW-THROATED VIREO. *Lanivireo flavifrons*. In same localities as the last-named species, but less common.

MOUNTAIN SOLITARY VIREO. *Lanivireo solitarius alticola*. Frequently observed. Several specimens were taken to establish the record in 1914.

BLACK AND WHITE WARBLER. *Mniotilta varia*. Common in deciduous woods.

WORM-EATING WARBLER. *Helmitheros vermivorus*. A few seen in deep woods along small streams.

BLUE-WINGED WARBLER. *Vermivora pinus*. An exceedingly tame individual of this species visited our camp May 28, 1926. He allowed himself to be thoroughly examined at a distance of only a few feet. This was the only one seen.

GOLDEN-WINGED WARBLER. *Vermivora chrysoptera*. Many seen and heard in May and June. Evidently breeds here commonly.

NASHVILLE WARBLER. *Vermivora ruficapilla ruficapilla*. Not known to breed in Cranberry Glades, although it does breed commonly in a glady region about one hundred and fifty miles north. Many were seen in May, 1926.

YELLOW WARBLER. *Dendroica aestiva aestiva*. Found around the crataegus groves above the glades.

CAIRN'S WARBLER. *Dendroica caerulescens cairnsi*. Specimens matching the descriptions of this subspecies were taken in June, 1914.



Doubtless the type form also occurs, but I have seen no specimens to back it up.

MAGNOLIA WARBLER. *Dendroica magnolia*. Common summer resident.

CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica*. Apparently the most common warbler in the brushy thickets about the glades. During the times that birds sing here one is scarcely ever out of hearing of this species.

BLACKBURNIAN WARBLER. *Dendroica fusca*. Observed in June, so it probably breeds here. Seen also in May, 1926.

BLACK-THROATED GREEN WARBLER. *Dendroica virens*. Abundant summer resident.

OVEN-BIRD. *Seiurus aurocapillus*. Common on the dry ridges.

NORTHERN WATER-THRUSH. *Seiurus novaboracensis novaboracensis*. As the Chestnut-sided Warbler is abundant in brushy places, so the Northern Water-Thrush is along the wooded streams. Four, five, or six singing at one time is nothing unusual.

LOUISIANA WATER-THRUSH. *Seiurus motacilla*. Rare when compared with the last-named species. A few occur regularly.

MOURNING WARBLER. *Oporornis philadelphia*. An abundant warbler at the glades in June, 1914, this species was seen only once in May, 1926. On my first trip to the glades, that of June, 1914, our party managed to get lost for the greater part of the day. Carrying heavy packs, we wandered about through rhododendron and blackberry thickets for what seemed an illimitable number of miles, but late in the evening, to the accompaniment of a Veery serenade, we broke through a fringe of bushes to see the promised land of the glades before us. Suddenly our packs, and the miles we had carried them, were forgotten, for right in front of us there appeared a pair of warblers with bluish-gray heads and white eye-rings. When the male burst into full song we knew we had found the Mourning Warbler, one of the objects of our search.

MARYLAND YELLOW-THROAT. *Geothlypis trichas trichas*. Abundant in the whole glade region.

YELLOW-BREASTED CHAT. *Icteria virens virens*. Not very common.

HOODED WARBLER. *Wilsonia citrina*. Found in all the uplands of the region.

CANADA WARBLER. *Wilsonia canadensis*. The Canada flashes his necklace in many of the thickets about the glades.

REDSTART. *Setophaga ruticilla*. Abundant at the times of all three visits.

CATBIRD. *Dumetella carolinensis*. Common.

BROWN THRASHER. *Toxostoma rufum*. Frequents the open spaces on the ridges.

CAROLINA WREN. *Thryothorus ludovicianus ludovicianus*. Common.

BEWICK'S WREN. *Thryomanes bewicki bewicki*. Not very common, but a few heard.

HOUSE WREN. *Troglodytes aedon aedon*. Frequently seen about the abandoned lumber camps. Much more common than the last.

WINTER WREN. *Nannus hiemalis hiemalis*. This tiny bit of condensed melody pours out his song from the thickest and dampest ravines of the region.

WHITE-BREASTED NUTHATCH. *Sitta carolinensis carolinensis*. Common on the ridges.

RED-BREASTED NUTHATCH. *Sitta canadensis*. Abundant summer resident.

TUFTED TITMOUSE. *Baeolophus bicolor*. Common.

CHICKADEE. *Penthestes atricapillus atricapillus*. Specimens taken here, together with the song, show this to be the northern Chickadee, rather than the Carolina Chickadee which is found in the lowlands of the state. The latter species probably occurs.

GOLDEN-CROWNED KINGLET. *Regulus satrapa satrapa*. Abundant in September, 1925. This species breeds regularly in the Red Spruce belt of the state.

BLUE-GRAY GNATCATCHER. *Poliophtila caerulea caerulea*. Not uncommon in the dry woods above the glades.

WOOD THRUSH. *Hylocichla mustelina*. Of frequent occurrence.

VEERY. *Hylocichla fuscescens fuscescens*. Abundant wherever there is coniferous woods.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. Common in June, 1914; not so common in May, 1926. Probably breeds here, as its nests have been found at no great distance.

HERMIT THRUSH. *Hylocichla guttata pallasi*. My only definite record for this species at Cranberry Glades was made on May 26, 1926, but its occurrence in summer as a breeding bird is probable. It is a common summer resident only a few miles to the north.

ROBIN. *Planesticus migratorius migratorius*. Common on the open uplands.

BLUEBIRD. *Sialia sialis sialis*. On the side of Black Mountain, above the glades is an open pasture field, and here, as might be expected, the Bluebird occurs.

FRENCH CREEK, WEST VIRGINIA.

## BIRDS OF BUCHANAN COUNTY, IOWA

BY FRED J. PIERCE

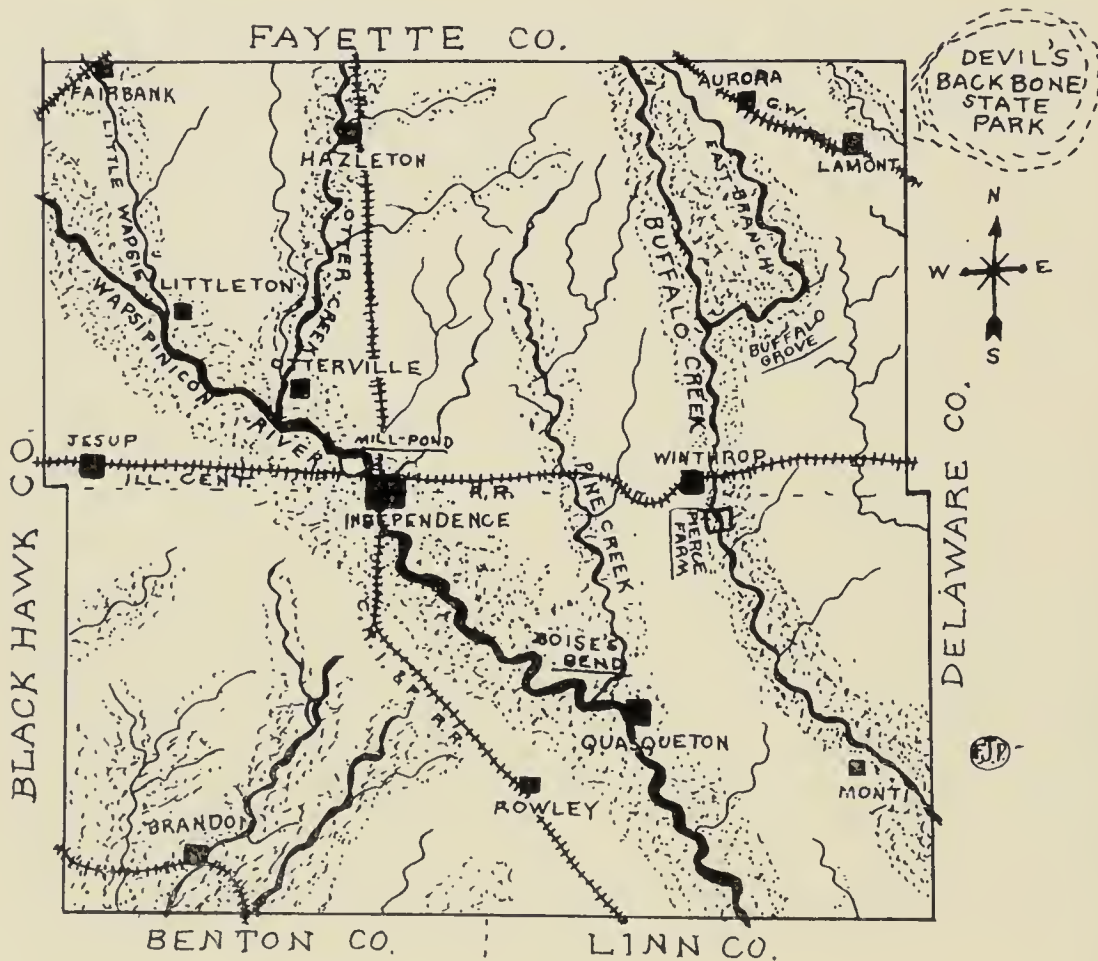
Viewed topographically, Buchanan County is very similar to its adjoining counties in eastern Iowa. It presents little variation and a summary of the general topographic aspects of the neighboring counties includes the features to be found in Buchanan as well. Studied geologically, the surface is almost entirely covered with drift of Iowan age, as left by the glacial ice. The work of erosion is absent except in a few scattered localities, and any variation in topographical features is to be mainly accounted for by the ice forces which molded the surface ages ago. Taken as a whole, Buchanan County is a succession of broad, slightly rolling prairies, drained by a number of streams of varying size, around which virgin woodland is to be found. The drainage is effected principally by the Wapsipinicon River and its branches. This river flows in a general southeast direction from the northwestern to southeastern edge of the county, being joined by the Little Wapsipinicon at Littleton. Buffalo Creek, a typical prairie stream, meanders from north to south through the eastern portion of the county. Its course is parallel to some extent to the Wapsipinicon. There are seven or eight minor streams.

Buchanan County is twenty-four miles square; it is square in shape except for a slight correction jog which divides the county into two nearly equal parts, upper and lower. On the eastern side, Delaware and Dubuque Counties lie between it and the Mississippi River and the State of Illinois, a distance of some sixty miles. On the north Fayette and Winneshiek Counties separate it from Minnesota. Buchanan also touches Black Hawk on the west and Benton and Linn Counties on the south.

Small tracts of natural timber are scattered about the county, but the extensive wooded regions are found only along the water courses. One hundred or more trees are indigenous to the county. All along the Wapsipinicon River the belt of timber was formerly wide and heavy, but the work of the wood-cutter has greatly reduced the acreage of standing timber. The native timber is fast disappearing, a fact that nature lovers note with regret. The oaks and hickories are the principal trees to be found wherever there are woodland tracts of any size. Buffalo Creek, for the greater part of its course, flows through a very narrow belt of woods, consisting chiefly of ash and soft maple, except in the northern and southern parts of the county, where the larger tracts of oak and hickory occur. Wild plum and crabapple thickets are common all over the countryside. Where the timber has been cut

within recent years, hazelbrush invariably grows up in rank profusion, while in places where hazelbrush is less persistent and the land more in the nature of grassy pastures, the hawthorn bush is much in evidence.

The natural features of the county are sufficiently diversified for the attraction of practically all forms of bird-life regularly found in the upper Mississippi Valley, and representatives from all groups of birds that follow the great Mississippi Valley migration route are to be found along the Wapsipinicon and its tributaries at the proper



season. Among the many places favorable for birds within the county, I shall briefly mention a few that have proved particularly good. There is a large tract of timber a mile southeast of the village of Monti, in the southeastern corner of the county. Buffalo Creek flows through the tract, which is an ideal one for bird study at any season of the year. The country about "Boise's Bend", about three miles upriver from Quasqueton, is also very good. Here the Wapsipinicon describes a great bend and flows through a wooded gorge, on whose sides bluffs rise to a height of 100 feet at several points—a region of great interest during the spring migration. Buffalo Grove, a tract of hard-

wood timber six miles north of Winthrop, is another bird haunt that has given me unusual species. The mill-pond at Hazelton I have visited many times. Although the pond is too near the town to attract many water-birds, the heavy woods lying along its western shores constitute very fine warbler territory in spring migration. The Independence mill-pond, an area 200 acres or more in extent, is by far the best territory for water-birds within the county, and most of my work with this group has been done at this place. The dam is in the center of the city, but the mill-pond begins a half mile up the river, outside of the city. The land is quite level here and the river backs up nearly a mile, turning the land into a region of narrow, tree-covered islands, ponds, shallow lakes, and shaded lagoons, surrounded by much marsh land. (See "Bird-Life at an Iowa Mill-Pond", *Bird Lore*, XXXI, 1929, p. 105). Much of my bird work has been conducted at the John M. Pierce farm, which lies on Buffalo Creek three miles south of Winthrop. Although I had little time for concentrated bird study while working on the farm on week-days, the birds were always about me, and I often made unusual and interesting records while going about my regular work. No one has greater opportunity for casual observation of this sort than has the farmer.

The natural enemies of birds in Buchanan County are apparently in minimum numbers. The extensive and long-continued trapping of all fur-bearing mammals by men and boys has almost wiped out skunks, minks, weasels, and other predatory species which must have preyed on bird-life to a serious extent in former years. Reptiles seem to be very scarce also. But man, in his work in many directions, has inadvertently depleted the numbers of many birds. The timber lands are being devastated quite rapidly, ponds and sloughs are drained, while the mowing-machine and grain-binder destroy countless nests and often incubating birds which are on the ground in haying and harvest time. Sloughs and hedges are sometimes burned during nesting time. Two paved highways, having a total length of about fifty miles, cross the county. A major part of the traffic on these roads moves at from forty to sixty miles an hour, and considerable bird-life is destroyed by the fast-moving autos; most of the victims are low-flying birds that inhabit the fields or the more open country.

My bird work in Buchanan County has extended from 1917 to 1930, and the list of birds comprising this paper, the result of my observations during this period, represents my present knowledge of the avifauna of this region. A great deal of time has been spent in the field during these years, in an effort to make the catalogue as com-

plete and representative as possible. In 1921 I published a short list of ninety-eight species seen in 1919, 1920. ("Buchanan County, Iowa, Birds", *The Oologist*, XXXVIII, 1921, pp. 4-7).

In compiling the list I have made use of several sources of information other than my own records. Chief among these are the records of Mrs. Robert I. Bordner, a resident of Buchanan County for many years who made extensive studies of birds during her residence. She has very kindly given me permission to make use of all of her records that do not duplicate my own. Records that are not my own are indicated by the asterisk (\*) in the following list.

Although there have been several residents of Buchanan County who have made some study of its bird life, so far as I know there have been no papers on Buchanan County birds published in the bird journals except my own writings, which have appeared during the last decade. A list of my papers relating to this county is given at the end of the present paper.

The following list contains 215 named forms.

HOLBOELL'S GREBE. *Colymbus holboelli*. A rare visitant. I have but one record, April 25, 1926, when one bird was observed at the Independence mill-pond. It was seen in the late afternoon, when the rays of the sun were directly upon it. It was in a small, willow-bordered cove, about twenty-five rods away, and was studied for a long time with 45x telescope on tripod. All markings were distinctly seen—black forehead, crown, and nape; very distinct white throat and rufous neck; grayish back. It was a very large and handsome bird; part of the time it folded its neck back upon its back, swan-like. The bird was with a flock of Blue-winged Teals, Shovellers, Redheads, Canvasbacks, Scaups, and Coots, about forty birds in all. This bird was also observed by Richard Gillespie, Vance Allyn, and Harvey Nichols, all reliable observers. The record was first published in *Bird-Lore*, (XXXI, 1929, p. 106). Holboell's Grebe may occur at the mill-pond quite regularly, but due to its extreme wariness, it is only rarely seen.

HORNED GREBE. *Colymbus auritus*. A scarce visitant. On April 22, 1928, one bird was carefully studied on a lagoon at the Independence mill-pond. Several others were seen at some distance, and one dead bird was found on the shore.

PIED-BILLED GREBE. *Podilymbus podiceps*. A rather common migrant in spring and fall; seen most frequently at Independence mill-pond. Spring dates, from April 6 to May 23; seen in the fall as late as October 17.

LOON. *Gavia immer*. A rare visitant. My only record was made on April 7, 1929, when one bird was seen at the Independence mill-pond. The bird was first seen in the air, but it soon dropped to the water, where it at once dived and reappeared far away, a performance repeated many times. I was astonished to note the speed with which it swam under water, indicated by the points of its reappearance which were so far from the place where it dived. I had become familiar with the Loon on Round Lake, Crow Wing County, Minnesota, in September, 1926, and this bird was satisfactorily studied with 8x glass.

FRANKLIN'S GULL. *Larus franklini*. Rare visitant. I have but one record for this species—April 28, 1919, when two birds were seen at the Pierce farm, southeast of Winthrop. I was plowing that day, and these birds followed me back and forth across the field many times, pausing here and there to pick up food from the freshly turned furrows.

FORSTER'S TERN. *Sterna forsteri*. Fairly regular spring migrant, seen at the Independence mill-pond. It is possible that some of my records may be for *Sterna hirundo*, which is so similar I have not attempted to separate the two in the field. I have referred all records to *Sterna forsteri*, which is apparently the more common species in Iowa. It arrives in the last part of April or first week in May, usually but two or three birds seen on arrival; but I have seen as many as fifteen at one time (May 5, 1929). I have one fall record, August 1, 1926.

BLACK TERN. *Chlidonias nigra surinamensis*. Fairly common spring migrant, seen at the Independence and Hazelton mill-ponds, and often seen proceeding across the open country, where it flies quite low over the newly plowed fields. Arrives in the first half of May, in flocks of from four or five to thirty-five birds. I once saw 200 in one flock. It is quite often seen in the Independence region during the summer, and there is good reason for thinking it may nest there occasionally. Latest fall date, August 21.

DOUBLE-CRESTED CORMORANT. *Phalacrocorax auritus auritus*. Regular spring migrant at the Independence mill-pond, arriving in the last half of April. I have seen it there as early as April 6 and as late as May 23, but most of the birds have departed by early May. My latest fall record is October 16, 1926. The bird is usually seen in small numbers, but on April 25, 1926, a flock of eighty was seen, and on April 24, 1927, a flock was seen which contained from 150 to 175 birds. The last flock was well out on one of the large lakes. The

birds floated quietly in a compact group, and the water was fairly black with them. The formation had the appearance of an island at the distance from which I saw them. On April 13, 1930, I found a flock of about 200 there. On nearly all of my April trips to this mill-pond I have seen the Double-crested Cormorant. The birds are either flapping slowly back and forth over the treetops or are perched in dead trees on the islands. Many stumps and rotting snags stand in the water at different places about the mill-pond. These are favorite perches for the cormorants. The occurrence of this species in Buchanan County has been quite fully described in *Bird-Lore* (XXXI, pp. 105-107).

WHITE PELICAN. *Pelecanus erythrorhynchos*. I have one positive record, that on April 28, 1929, when one bird of this species was seen at the Independence mill-pond. I have several times been fairly certain that I saw the bird, but had to leave it unrecorded because of the distance at which it was observed. The bird seen at Independence did not stop at the mill-pond, though it flew directly over it, going north. It passed over me at a height of 200 feet and was studied carefully with 8x glass in bright sunlight.

RED-BREASTED MERGANSER. *Mergus serrator*. Probably rather common in former years. I have one record—a flock of fifteen birds seen at the Independence mill-pond April 21, 1929.

MALLARD. *Anas platyrhynchos*. Formerly a very abundant migrant and doubtless many bred in the county. It is still a common migrant. Appears early in March and late September. Most of the fall Mallards pass through the county in October. Small flocks often linger until December in sheltered places where there is open water. I saw a flock of five Mallards on a small stream at the Devil's Backbone State Park, Delaware County, on December 23, 1923.

\*BLACK DUCK. *Anas rubripes*. Mrs. R. I. Bordner gives me two records: September 25, 1922, a pair on a pond north of Winthrop; April 18, 1926, three at Independence mill-pond.

GREEN-WINGED TEAL. *Nettion carolinense*. A spring and fall migrant that seems to be somewhat scarce at the present time. It is much less common than the Blue-winged Teal. My earliest spring record is April 6.

BLUE-WINGED TEAL. *Querquedula discors*. A common migrant, probably the commonest of the ducks in eastern Iowa. It arrives in early April and is common at the Independence mill-pond until the last of May. I have never found its nest, but I believe the bird nests at the mill-pond. Latest fall date, September 13.



SHOVELLER. *Spatula clypeata*. A migrant appearing in small numbers regularly each year. The most I have seen at one time was a flock of fifteen. Spring dates, March 30 to May 20. Latest fall date, October 6.

PINTAIL. *Dafila acuta tzitzihoa*. Formerly common but now scarce. I saw a flock of seventy-five March 21, 1926; a smaller flock of twenty-five was seen on March 30, 1930. I have no fall records.

\*WOOD DUCK. *Aix sponsa*. Hunters have found the Wood Duck a rather common migrant in former years, but it is now rare. W. M. Woodward of Independence, says he has seen many of the birds along the Wapsipinicon in past years.

REDHEAD. *Marila americana*. I have one record—three birds seen at the Independence mill-pond on April 25, 1926.

CANVAS-BACK. *Marila valisineria*. Very scarce. Seen only twice in Buchanan County—on April 26, 1925, and April 25, 1926, at Independence mill-pond. A flock of fifteen was seen on the last date.

SCAUP DUCK. *Marila* sp. A common spring migrant at Independence mill-pond, seen in flocks of from ten to forty birds. Spring dates, March 21 to May 13, also one record on June 22. To avoid possible errors I have not tried to separate *Marila marila* and *Marila affinis* in the field.

BUFFLE-HEAD. *Charitonetta albeola*. I have one record—six birds seen at Independence mill-pond April 25, 1926.

SNOW GOOSE. *Chen hyperboreus hyperboreus*. I have one record for this species. A flock of thirty-five (traveling southwest) passed over the Pierce farm on the morning of November 1, 1927. Hunters call this the "White Brant" and report it as being rather common in the county in past years.

CANADA GOOSE. *Branta canadensis canadensis*. Formerly a very abundant migrant, but in recent years it has become quite scarce. Appears in February and October, usually seen or heard migrating over the country, but seldom stopping on its journey to and from the North. On the afternoon of November 16, 1921, I saw a flock of fifty alight on a plowed field near the Pierce farm. There was a great deal of honking for a time, then the flock quieted down and formed a rather compact group. They could be very plainly seen—the big, grayish birds against the black field. After about two hours of rest they went on. The start was made with a great deal of honking and the flock turned toward the north. After proceeding for some distance, a split occurred in their ranks; about a third of their number turned and flew

southwest, while the others went on north. In a short time a flock of geese was seen flying south, and I inferred that this was the same flock hurrying to join their apparently wiser companions. The Canada Goose does considerable traveling at night, so I have missed seeing many of the migrating birds. During mild winters it is not unusual to see flocks of Canada Geese flying north or south at any time. The advance of cold weather sends them south, but a period of mild, thawy weather often brings them back again. I have many winter records for the Canada Goose—December 21, 1917; December 21, 1918; December 16, 1920; December 23, 1921; January 5 and 8, 1922; January 4, 1923; December 23, 1923; December 24, 1927; December 23 and 28, 1928. I had only one record for the Canada Goose in 1929, viz., a flock of thirty on October 28.

\*WHISTLING SWAN. *Cygnus columbianus*. One specimen of this bird, shot by an Independence hunter, was brought in to the W. M. Woodward hardware store in that city. Mr. Woodward has had much experience with game birds during the years that he has sold hunters' supplies at his store, and he identified the swan for the hunter. He was unable to tell me the year in which the bird was brought in, but told me it was many years ago, at least ten or twelve years, he thought.

BITTERN. *Botaurus lentiginosus*. A scarce migrant and one that I see only very irregularly. I have a few spring dates, from May 1 to May 23; I have also seen it on June 10. My latest fall record is October 12. It is hard to find because of its very retiring disposition.

LEAST BITTERN. *Ixobrychus exilis*. The Least Bittern is probably found more or less regularly in this county, but owing to its ability to hide itself in the marsh it is only rarely seen. I saw it on May 17 and May 23, 1925, in the marsh at the Independence mill-pond region.

GREAT BLUE HERON. *Ardea herodias herodias*. A regular migrant, appearing early in the spring. Spring dates, from March 24 to May 16. My records do not indicate the beginning of the fall migration, for the bird is seen so often during the summer months there is no way to tell just when this begins. I have seen one or two of the immense birds standing along the shores of our small streams and ponds on many different dates during the summer, beginning as early as June 26 and extending irregularly through July and August through the various years. It appears to become more common after the first of August. I have no proof that it nests within the county, but the presence of the bird through the summer, though very irregular, would seem to indicate this fact. The bird is usually quite solitary, usually only one and sometimes two being seen at one time. On one occasion,

however, I saw a flock of ten along Buffalo Creek (July 28, 1921). Latest fall date, October 24.

GREEN HERON. *Butorides virescens virescens*. Rather common summer resident, nesting along small streams, in plum thickets, and small groves. Several pairs of Green Herons nested in a willow grove on the Pierce farm for many years, then deserted the place. Tree squirrels were quite numerous in the grove, and I blamed them for the disappearance of the herons, whose nests they doubtless robbed. Arrives last week of April or first week in May and remains until the last of September. Latest fall record, October 5.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius*. Formerly a rather common summer resident, but now very scarce. The depredations of Crows at the herons' nests are doubtless responsible for their decline in numbers. The loud *quark* of the night herons used to be a common sound over Buffalo Creek in the warm summer evenings, but it is no longer. Spring arrival dates, from April 10 to May 12; latest fall date, October 10. On one occasion I saw a night heron that arrived too early in the spring and got caught in an unseasonable blizzard on April 16, 1921. I found the bird perched on a limb of a tamarack tree, his plumage heavy with the wet snow that covered the trees and ground with a white blanket—a summer bird in winter surroundings. (See WILSON BULLETIN, XXXIV, 1922, pp. 186-187).

\*SANDHILL CRANE. *Grus mexicana*. Formerly a common bird in the county, but never seen at the present time. Will Griswold tells me of seeing Sandhill Cranes many years ago when he was a boy on the home farm near Winthrop. They were then rather common in the spring, and he would see the immense birds standing together on the knolls and sandy hills near his home. The following note is taken from "History of Buchanan County, Iowa, and Its People", by Harry C. and Katharyn J. Chappell, 1914 (Vol. 1, p. 35): "An old settler told us about the Sandhill Cranes that used to visit this county every fall in their migratory flights south for the winter. They would come in small flocks and in their particular haunts, the sand hills, from which they derived their name, and perform the most peculiar and interesting dance, forming a sort of circle, then balancing back and forth alaround left and circling right, resembling the figures of a cotillion, flapping their wings and seeming to thoroughly enjoy the terpsichorean art quite as much as humans." This mating dance is performed in the spring, not in the fall—a slip in the narrative of the old settler, no doubt.

\*KING RAIL. *Rallus elegans*. Mrs. R. I. Bordner gives me the following records: June 8, 1918; April 22, 23, 24, and 30, 1924. One bird was seen each time and all were seen in the same location, a marshy roadside north of Lamont.

VIRGINIA RAIL. *Rallus virginianus*. I have a number of records made at Independence mill-pond (one bird seen each time): May 23, 1926; August 21, 1927; May 13, 1928 (dead bird found inside the rails of Rock Island tracks); May 12, 1929 (this bird I found along a small stream near a culvert. It was three feet from me and suddenly darted out of sight. I looked closely and found it hiding in some grass beside the culvert. It seemed very tame and it was almost like holding the bird in my hand).

SORA. *Porzana carolina*. Common migrant in most years, but I am unable to find it some years. Spring dates, May 5 to May 23. I have seen as many as a dozen at the Independence mill-pond in one day, but it is hard to find them, as a rule, for they are expert in hiding in the marsh. I have a mounted specimen of a Sora that I picked up in a ditch beside a paved highway near Winthrop on May 12, 1929. Its skull had been broken between the eyes, which suggested that it had struck the telephone wires beside the road.

\*YELLOW RAIL. *Coturnicops noveboracensis*. One was flushed from the marsh grass at Independence mill-pond by Vance Allyn on May 16, 1926. He viewed the bird at a distance of only a few feet and was entirely certain of the identification. I was walking a few rods behind him and missed seeing the bird. We searched in the marsh at that point, but it could not be found again.

FLORIDA GALLINULE. *Gallinula chloropus cachinnans*. Rare. My only record is one bird that I found along a tiny stream on the Pierce farm on May 2, 1919.

COOT. *Fulica americana*. A common migrant and probably a summer resident at Independence mill-pond. It is always very common in the spring at this mill-pond and is present in flocks varying from a dozen to a hundred birds. Arrives last week in March or first week in April. Latest fall date, October 17.

WILSON'S PHALAROPE. *Steganopus tricolor*. I have one record, a pair seen on a small pond at the Independence region on May 2, 1926.

\*BLACK-NECKED STILT. *Himantopus mexicanus*. "Last spring (1924) north of Lamont there were ponds in fields that had held no water for years, and we haunted that vicinity. . . . The ponds lasted all summer owing to the many rains we had, and in August we found a

pair of Black-necked Stilts. You may be sure we were again daily visitors and on August 31 we visited the pond three different times during the day to observe the stilts. They were unafraid, allowing us to approach very near. Nearly every day (September 5, 6, 7, and 8, 1924) we returned to this pond on the outskirts of Lamont where there were also flocks of Yellow-legs, four Blue-winged Teals, and one Green-winged Teal in addition to the stilts. September 12 the water was gone and also the birds. This was very interesting to me, for I had never before seen a stilt, and to observe them so closely was indeed a pleasure."—Mrs. R. I. Bordner in a letter to me dated February 17, 1925.

WOODCOCK. *Rubicola minor*. Rare visitant. I have only one record—one seen along Buffalo Creek on November 5, 1922.

WILSON'S SNIPE. *Gallinago delicata*. Fairly common migrant. Spring dates, March 28 to May 16; fall dates, August 8 to November 1. This bird can usually be found along ponds and in marshes at the proper season.

PECTORAL SANDPIPER. *Pisobia maculata*. A spring migrant usually found in small numbers. My earliest spring record is March 25 and the latest is May 18. In the fall I have seen it from July 31 to September 4, but I have only a few fall records and these are scattered through many years. I find them in small flocks of less than a dozen, as a rule, although I have found as many as 300 in a flock (this was at Independence mill-pond, April 26 and 27, 1930). They are usually found in sloughs or boggy meadows, feeding in the grass with only head and neck visible. Suddenly they will start up and fly erratically away, the whole flock often wheeling in the air as one bird. One day while I was at the Independence mill-pond I was watching a flock of Pectoral Sandpipers flying overhead at great speed. They wheeled in the air and flew very near to the telegraph wires on the railway right-of-way. As the flock swept by one of the birds struck a wire and dropped to the ground below. The bird's wing was hopelessly broken, almost completely severed from its body, so I killed it at once.

LEAST SANDPIPER. *Pisobia minutilla*. Fairly regular migrant, but not very common. It appears in May and is seen again after the middle of August. Latest fall record, September 7.

RED-BACKED SANDPIPER. *Pelidna alpina sakhulina*. Rare migrant. My only record was made on May 26, 1927. On this date four were seen on the shores of a small pond in a plowed field on the Pierce farm. The birds were studied at a distance of only twenty feet. They

were very tame, taking wing only when I came too near or moved suddenly.

\*SEMIPALMATED SANDPIPER. *Ereunetes pusillus*. Mrs. Bordner gives me one record: May 13, 1917, several seen on the Wapsipinicon River near Independence.

GREATER YELLOW-LEGS. *Totanus melanoleucus*. Fairly regular migrant, appearing in April and remaining often until the middle of May. Seen in flocks of a few birds and up to as many as twenty-five, and is often with *Totanus flavipes*. My first fall record is July 31; I have August dates, but none to indicate when it leaves in the fall.

YELLOW-LEGS. *Totanus flavipes*. Fairly regular migrant, usually seen in larger numbers than the last species. My earliest spring date is April 10; earliest fall date, July 31, and latest, August 22. On July 31, 1926, I saw a flock of over 500 Yellow-legs on the wet ground bordering Buffalo Creek on the Pierce farm. I heard a very loud chorus of their whistles early in the morning before arising; I went out and found the largest flock of Yellow-legs that I have ever seen. That year we had an unusually wet summer and fall, and all the low pastures lying along the creek were flooded. In these pastures the Yellow-legs were holding high carnival.

SOLITARY SANDPIPER. *Tringa solitaria solitaria*. Fairly common migrant. It is seen regularly, but seldom are more than two or three seen at a time. Spring records, April 25 to May 20. It appears again in late July (23d to 27th) and is usually seen until the first week in October.

WESTERN WILLET. *Catoptrophorus semipalmatus inornatus*. I have one record. One was seen at the Independence mill-pond on May 5, 1929. It was feeding with a flock of about 50 Yellow-legs of both species along the shores of one of the ponds. The plumage of this bird was very light gray, almost white, in fact.

UPLAND PLOVER. *Bartramia longicauda*. A fairly common summer resident, appearing in April. Its habitat is the meadowland, the region of large sloughs and meadows that fill many of the valleys in the rolling prairies of the county. The Upland Plover seems to be more common in the spring, when it is fond of sailing high in the sky and uttering its melodious whistle.

SPOTTED SANDPIPER. *Actitis macularia*. Summer resident, usually fairly common. It arrives in May and remains until the middle of September. The Spotted Sandpiper is a familiar figure along the streams of the county during the summer months.

BLACK-BELLIED PLOVER. *Squatarola squatarola cynosurae*. My only record was made May 20, 1927, when four of the birds were seen on the shores of a small pond in a plowed field of the Pierce farm. They were studied at considerable length with 8x glass. This appearance of the birds has been completely described by me in a note in *Bird-Lore* (1927, pp. 416-417).

KILLDEER. *Oxyechus vociferus*. Very common summer resident. It arrives very regularly about March 10 and remains until the last of October or the first week of November, depending on the weather. My earliest spring record is February 21, 1930, and my latest fall record is November 19, 1928. The bird is often caught in snowstorms; it flies about, calling cheerfully, even though the ground be covered with snow. It nests commonly in cornfields, placing its nest between the corn-rows or beside a hill of corn in the month of June. When the nest is approached by the farmer with his team and corn-plow, the sitting bird either tries to intimidate the horses or attempts to lead the farmer away with the crippled wing ruse. In the fall Killdeers are seen along small streams in flocks of from twenty to forty birds.

SEMPALMATED PLOVER. *Charadrius semipalmatus*. I have only a few records for the bird in Buchanan County: May 20, 1927 (one); May 26, 1927 (two); July 31, 1927 (one). I have two records for Black Hawk, the adjoining county, (May 14 and August 21, 1925).

BOB-WHITE. *Colinus virginianus virginianus*. A permanent resident that was once very common but is now barely able to hold its own in numbers. It has been protected since 1917 and is to remain on the list of protected birds for an indefinite period. The severe winters that we quite often have seem to be very hard on these birds. Many of them starve when unable to find sufficient food when there is much snow and cold weather, while others, in a weakened condition, fall easy victims to enemies. Unprincipled hunters frequently shoot them, and there are plenty of stories that the introduced Ring-neck Pheasant is driving them from their accustomed haunts; it is said, and doubtless with truth, that this new aggressor both destroys the Bob-white's nest and kills any of the birds caught unawares. The Bob-white usually winters in sheltered hedges near corn-fields. Here it picks up shelled corn in the fall and eats such weed seeds as it can find along the borders of the field. In very severe weather I have seen a small flock come into the feeding yards on the farm, where they eat with the farm animals and poultry in the manner of domestic birds. Many farmers appreciate the value of Bob-white and like to have the

bird come about the farm buildings. They scatter grain for him and thus provide food when his need for it is greatest. On the Pierce farm there was usually a small flock of Bob-whites that wintered each year.

RUFFED GROUSE. *Bonasa umbellus umbellus*. Rare permanent resident. I saw one bird in the heavy woods southeast of Monti on May 6, 1923, but that is my only record for this county. On December 23, 1923, while taking a Christmas census in the Devil's Backbone State Park, Delaware County (about four miles from the Buchanan County line), I found one Ruffed Grouse, but it is rare there also.

PRAIRIE CHICKEN. *Tympanuchus americanus americanus*. Formerly an abundant permanent resident, but now rare. In past years I would hear it "booming" in the wide region of sloughs that lie a mile or two to the east of the Pierce farm, but at the present time this is a spring sound not often heard. The past abundance of the Prairie Chicken and the history of the hunting and trapping of the bird in this county have been completely described in a paper published in the WILSON BULLETIN. (See "The Prairie Chicken in East Central Iowa", WILSON BULLETIN, XXXIV, pp. 100-106). In concluding this paper I said: "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 prophetic, we shall have large numbers of them with us in the future." My prediction did not bear fruit, and time has shown that this was only a temporary increase that could be noted at the time my paper was written. The Prairie Chicken is protected by law (the protection began in 1917), but no permanent increase in its numbers has resulted. As in the case of the Bob-white, the Ring-necked Pheasant is blamed for the decrease in the numbers of the Prairie Chicken. In February, 1930, I found a flock of fifty-five Prairie Chickens a mile north of Winthrop. It had been a number of years since I had seen a flock of even fair size, and this large flock was a pleasant surprise. I usually see only one or two birds during the year.

RING-NECKED PHEASANT. *Phasianus colchicus torquatus*. A permanent resident that is increasing quite rapidly in eastern Iowa and promises to become a very plentiful game bird. I do not know when the pheasant first appeared in the county. I first saw it in 1924, but I know it had been here several years before this. Only a few were seen at first, but now rather large flocks are often reported (a dozen to twenty birds). Farmers say the pheasants come into the cattle



feeding yards and eat corn in the winter, then roost in nearby trees at night like a flock of chickens. There is considerable complaint from farmers in this county about the pheasants eating newly planted corn.

\*WILD TURKEY. *Meleagris gallopavo silvestris*. "Wild Turkeys were in great abundance and were seen in flocks of as many as a hundred, but they have entirely disappeared."—"History of Buchanan County, Iowa, and Its People", by Harry C. and Katharyn J. Chappell, Vol. 1, p. 35.

\*PASSENGER PIGEON. *Ectopistes migratorius*. "Early settlers tell of enormous flocks of wild pigeons that for several years visited this county and then for some strange unaccountable reason failed to return and have never revisited these haunts since and never could be traced. . . . In June, 1858, the sportsmen of Independence were having rare sport shooting them, thousands having congregated in the fields about town, the Cobb pasture just west of Independence being literally alive with them."—"History of Buchanan County, Iowa, and Its People", Vol. 1, p. 35.

MOURNING DOVE. *Zenaidura macroura carolinensis*. Very common summer resident, arriving in the last week of March or the first week in April and remaining until the last of October. I have one record of it on November 15. The Mourning Dove often nests late in the season; I have found it nesting early in September. On two occasions it has wintered on the Pierce farm. A pair remained through the entire winter of 1920-21 around a corn-fodder stack and in a willow grove back of the farm buildings. Another dove stayed around the feeding yards through December, 1928, or until the 23d of that month, which was the last date on which it was seen.

\*SWALLOW-TAILED KITE. *Elanoides forficatus*. "The last recorded observation of this bird in Iowa was made by Mr. J. H. Scott, of Iowa City, on Wapsipinicon River near Independence in August, 1912."—"The Raptorial Birds of Iowa", by Bert Heald Bailey (1918), p. 53.

MARSH HAWK. *Circus hudsonius*. A fairly common summer resident, but rare in winter. I have a number of winter records for the Marsh Hawk, but it is not often seen until March or early April.

SHARP-SHINNED HAWK. *Accipiter velox*. A fairly common migrant, appearing in the latter part of April. Latest fall record, October 11. This bird nested in the woods along Buffalo Creek on Pierce farm in June, 1920. The nest, a bulky affair of coarse sticks, was in the top of an ash tree, about twenty feet from the ground.

COOPER'S HAWK. *Accipiter cooperi*. A summer resident, but not common at any time.

RED-TAILED HAWK. *Buteo borealis borealis*. A permanent resident, not common at any season.

RED-SHOULDERED HAWK. *Buteo lineatus lineatus*. There are three records for the species in this county: One bird seen by Mrs. Bordner at Independence on September 15, 1918; one seen by Chas. J. Spiker on Quasqueton-Independence road August 14, 1926; and one seen by me at the Independence mill-pond March 9, 1930.

SWAINSON'S HAWK. *Buteo swainsoni*. Fairly common as a migrant. My earliest spring record is April 17. I have numerous summer records for the bird, which indicate that it must nest in this region.

BROAD-WINGED HAWK. *Buteo platypterus*. Seen only as an irregular migrant. On December 23, 1923, while taking a Christmas census with Chas. J. Spiker in Devil's Backbone State Park (in Delaware County near Buchanan), a Broad-winged Hawk was found. This is my only winter record.

ROUGH-LEGGED HAWK. *Archibuteo lagopus sancti-johannis*. Irregular winter visitant, for which I have made the following records: December 23, 1920 (one); January 24, 1926 (two); December 10, 1929 (one); December 23, 1929 (three). It has been seen on other occasions, but I have no records available.

FERRUGINOUS ROUGH-LEGGED HAWK. *Archibuteo ferrugineus*. Rare visitant. I saw one bird of this species on the Pierce farm on March 17 and 19, 1926. I saw another in an open field near Hazelton, April 13, 1930.

GOLDEN EAGLE. *Aquila chrysaetos*. Very rare visitant. An adult specimen of the Golden Eagle was found in a slough southwest of Lamont in the fall of 1922. It was shot and mounted by a son of Mr. Joe Foffel, of Lamont. The mounted specimen is in the possession of this man, and I examined it on May 19, 1928. The legs of the bird were feathered all the way down to the toes, eliminating any question that it might have been an immature Bald Eagle.

BALD EAGLE. *Haliaeetus leucocephalus leucocephalus*. A rare visitant. My records of the species in Buchanan County are: May 6, 1919 (one, four miles west of Winthrop); September 12, 1920 (two, a mile south of Pierce farm); September 15, 1920 (one, on Pierce farm); May 18, 1924 (one, at Hazelton mill-pond). Mrs. Bordner saw one near Lamont September 22, 1926. It was later shot by a farmer and given to Mr. Bordner who had it mounted.

PIGEON HAWK. *Falco columbarius columbarius*. This bird doubtless appears in the county rather regularly, but I have made only two records. I saw one on November 24, 1926, and another May 13, 1928. Mrs. Bordner records one on October 14, 1922, and another on April 1, 1923.

SPARROW HAWK. *Cerchneis sparveria sparveria*. Fairly common migrant and a summer resident in small numbers. Arrives in the last of March or first of April. I have one winter record; I saw one flying across the pavement four miles west of Winthrop on January 18, 1929. My earliest spring record is March 4.

OSPREY. *Pandion haliaetus carolinensis*. A rather rare migrant. My records for the county are as follows (one bird seen on each date): April 17, 1927; May 1, 1927; May 3, 1927; May 3, 1928; April 28, 1929; April 13, 21, and 26, 1930.<sup>1</sup>

BARN OWL. *Tyto alba pratincola*. A rare visitant. One bird appeared at Pierce farm April 13, 1922, and stayed in the silo all that day. I saw another at a barn in Winthrop August 23, 1929. This owl had been noted by the renter of the barn for a week or more previous to this and it seemed to be making its home there. Soon after this it disappeared and did not return so far as I know.

\*LONG-EARED OWL. *Asio wilsonianus*. Very rare resident, one that I have never been able to find within the county, although I have been on the lookout for it ever since I began the study of the birds of Buchanan County. Mrs. R. I. Bordner has been more fortunate than I in seeing the bird. She writes to me under date of December 3, 1926:

"I first found it nesting April 7, 1919, in the cemetery for insane at Independence. It is located south of the Hospital and filled with evergreen trees. Some girls had told me of seeing the Great Horned Owl at that place and suggested we go there; we were fortunate in seeing both owls. The Long-eared was on the nest, and when we tapped on the tree would pop his head over the edge and gaze at us, a most weird spectacle. We went back several days later to show some of the members of our family and repeated the performance, much to their amusement.

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<sup>1</sup>In the spring of 1930 I saw the Osprey at the Independence mill-pond on the three dates given above. Although a pair of the birds had been reported there, I saw but one on each occasion. An Independence man shot one of the birds on April 24. As my next record was made on April 26, there was no doubt of there having been two Ospreys at the mill-pond. The dead bird, which proved to be a male, was turned over to me and I had it mounted.

"In 1923, November 17, I was at Independence a few days, and went for a tramp along a little creek on the east edge of town—a place that had been a favorite bird haunt of mine, and by the way the place where I saw the Evening Grosbeaks. It was a gray day, and suddenly before me, on a level with my eyes, was the familiar cat-face of the Long-eared Owl."

SHORT-EARED OWL. *Asio flammeus*. A regular winter resident, which can be found frequenting sloughs and meadowland during the winter. It is occasionally found in small flocks, but it is not common to see more than one or two in one place. My earliest fall record is November 20. I have two very late spring records—May 13, 1924, and May 24, 1925.

BARRED OWL. *Strix varia varia*. Permanent resident in heavy timber. The Barred Owl may be almost as common as the Great Horned Owl, but since it is so retiring by day and does not fly from its retreat unless one comes very near, it is not often seen. I usually see it once or twice each year, but some years I have missed it entirely. When one is along the Wapsipinicon River before sunrise the bird is often heard hooting. The notes are much louder than those of the Great Horned Owl and carry a considerable distance if the air is still.

SCREECH OWL. *Otus asio asio*. Fairly common permanent resident, but owing to its nocturnal habits is not often seen. Its notes, however, are quite often heard and tell of the presence of the bird. A pair of Screech Owls used to nest in a grove of tamaracks and willows on the Pierce farm, and I would often find a row of four or five of their young sitting on a limb among the trees.

GREAT HORNED OWL. *Bubo virginianus virginianus*. Fairly common permanent resident in regions of heavy timber and often found outside of this habitat. One can seldom go into the heavy timber anywhere in the county without hearing a flock of Crows annoying a Great Horned Owl. Often a pair will be found sitting in the same tree, after the Crows have disclosed their presence. A pair nested on or near the Pierce farm for five or six years or longer, but they were both shot by a farmer's boy who happened to find them in 1929. I described their nesting of one season in *Bird-Lore*, XXVI, 1924, pp. 94-96.

SNOWY OWL. *Nyctea nyctea*. Very rare winter visitant. My only record is for one shot by a farmer near Lamont November 28, 1926. I saw the dead bird.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus*. Common summer resident, arriving in May. This bird is the farmer's "Rain Crow".

BLACK-BILLED CUCKOO. *Coccyzus erythrophthalmus*. Summer resident, but much less common than the last.

BELTED KINGFISHER. *Ceryle alcyon alcyon*. Common summer resident. Occasionally winters along open streams. There are few open streams, however, except those fed by springs or having swift water; in mild winters there is considerable open water, but we do not often have mild winters. One kingfisher stayed through the entire winter of 1920-21, along Buffalo Creek on the Pierce farm. One was found along a small stream in Devil's Backbone State Park on December 23, 1923. I found another along the creek at Buffalo Grove January 3, 1929. My earliest spring date is March 16.

HAIRY WOODPECKER. *Dryobates villosus villosus*. Fairly common permanent resident.

DOWNY WOODPECKER. *Dryobates pubescens medianus*. Common permanent resident.

YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius varius*. A common migrant, appearing early in April and again in late September. Latest fall date, October 12.

RED-HEADED WOODPECKER. *Melanerpes erthrocephalus*. Formerly an abundant summer resident, but now becoming scarce. Many red-heads are killed by automobiles along almost every mile of paved highway. This has been occurring for a number of years and now we notice that the bird is becoming scarce, a circumstance that the automobile has no doubt brought about. The red-head frequently winters in the heavy timber of the county and I have many winter records. My earliest spring record is March 28, but most of the birds come in early May and remain until September.

RED-BELLIED WOODPECKER. *Centurus carolinus*. Permanent resident in heavily timbered regions and sometimes seen outside of this habitat. It can hardly be called a common bird, but it is nearly always to be found in the heavy woods, though in small numbers.

NORTHERN FLICKER. *Colaptes auratus luteus*. An abundant summer resident. It arrives in March and remains until September. Occasionally it winters. I have a few winter records scattered through the years.

WHIP-POOR-WILL. *Antrostomus vociferus vociferus*. A rather scarce summer resident in the woods along the Wapsipinicon, arriving

the last of April or early in May. I often find the bird when tramping through the woods in May and have often heard it calling at night along the river. I once heard two birds along Buffalo Creek, but their presence there is unusual.

NIGHTHAWK. *Chordeiles virginianus virginianus*. A scarce summer resident, arriving about the middle of May and remaining until late September. It is often very common during the fall migration, which begins in late August. During this period flocks containing hundreds are often seen. These flocks are usually strung out across the sky and take many minutes in passing.

CHIMNEY SWIFT. *Chaetura pelagica*. A common summer resident, arriving the last week in April or the first week in May and remaining until September. My latest fall record is September 19.

RUBY-THROATED HUMMINGBIRD. *Archilochus colubris*. A scarce summer resident, arriving in the last half of May and remaining until the middle of September.

KINGBIRD. *Tyrannus tyrannus*. A fairly common summer resident in most parts of the county. It arrives the last week of April or the first week of May and remains until the first week of September.

ARKANSAS KINGBIRD. *Tyrannus verticalis*. Rare visitant. The only one I have seen was found along a roadside near Buffalo Creek on May 15, 1927. This bird perched on a wire fence and was studied at a distance of fifteen feet. It flew off into a plowed field several times, catching insects, but returned each time to the wire near me. Mrs. Bordner has seen the bird three times in the county: on June 2, 1918, she saw one north of Independence; on May 21, 1921, she saw one near Lamont, and on June 4, 1922, another near Lamont.

CRESTED FLYCATCHER. *Myiarchus crinitus*. Fairly common summer resident, arriving in the early part of May and remaining until September.

PHOEBE. *Sayornis phoebe*. Formerly a common summer resident, but in recent years, when old-fashioned wooden bridges have been rapidly replaced by concrete structures, the numbers of the bird are diminishing in proportion. The species seems to have found no substitute for the wooden bridge nesting place. It arrives regularly from the 21st to the 27th of March and often remains as late as October 12.

OLIVE-SIDED FLYCATCHER. *Nuttallornis borealis*. A rather rare migrant. I saw one along Buffalo Creek on September 3, 1925. Mrs. Bordner found one August 25, 1918, and another on August 31, 1924, both records in Buchanan County.

WOOD PEWEE. *Myiochanes virens*. A common summer resident in the woodlands of the county from the middle of May until September. September 14 is my latest fall record.

YELLOW-BELLIED FLYCATCHER. *Empidonax flaviventris*. I have one positive record. One bird of this species was seen in the Monti woods on June 13, 1928. It was pointed out to me and identified by Chas. J. Spiker.

TRAILL'S FLYCATCHER. *Empidonax trailli trailli*. A fairly common migrant appearing in the second and third weeks of May.

LEAST FLYCATCHER. *Empidonax minimus*. The little Chebec is a fairly regular migrant and is usually rather common in its migrations during May.

PRAIRIE HORNED LARK. *Otocoris alpestris praticola*. Permanent resident. Much less common during the winter months. I always think of the Prairie Horned Lark as a spring bird, for it is more or less migratory and early in February it appears in flocks, some of which are quite large. It is then, too, that the bird begins its singing, which is done while it mounts high into the sky. This habit is continued through the spring months and I have hundreds of times watched the bird give its aerial demonstrations. After the performance the lark closes its wings and from a great height drops to the earth like a stone, opening its wings when the descent is almost finished and alighting gracefully on the ground or on a convenient perch.

BLUE JAY. *Cyanocitta cristata cristata*. A permanent resident that is abundant during the spring and summer and is fairly common in the wooded regions during the winter. The species is migratory to a considerable extent and becomes very common during the spring migration. In late September large flocks are sometimes seen proceeding southward. I have seen as many as 200 in such a flock.

CROW. *Corvus brachyrhynchos brachyrhynchos*. Common permanent resident. Crows are quite gregarious and flocks of some size are frequently seen. The largest flock I have ever seen contained about 300; the birds were assembled in a cornfield (December 23, 1920). I know of no large Crow "roosts" within the county. Crows nest commonly wherever there are groves or tracts of natural woodland of fair size.

BOBOLINK. *Dolichonyx oryzivorus*. Common summer resident, arriving the first week in May and remaining until September. Latest fall date, September 17.

COWBIRD. *Molothrus ater ater*. Very common summer resident, arriving early in April. My latest fall record is September 3.

YELLOW-HEADED BLACKBIRD. *Xanthocephalus xanthocephalus*. This species formerly nested at the Independence mill-pond and doubtless a few pairs still do, but at present the bird does not appear in very large numbers, usually small flocks of from a half dozen to fifteen being the extent of the number seen. These I find each year at the Independence mill-pond during the month of May. On one occasion I saw one near Buffalo Creek on the Pierce farm. There are large areas of marsh land and reedy ponds at Independence, so of course this is where the yellow-head is always found.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus phoeniceus*. Common summer resident wherever there is suitable nesting ground for the bird. It appears about the second week of March and is often seen as late as November. On January 12, 1928, I saw a flock of fourteen. The appearance of the birds at that time was, of course, very unusual, but it was during a spell of warm, spring-like weather, a typical "January thaw", and this was doubtless responsible for their venturing north. The red-wing nests in the marsh, as a rule, but I have found its nest in an oatfield. One nest, which was woven into the oat-stalks, contained young at the time of harvesting the crop. The oat-binder nipped off the stalks supporting the nest and the young birds narrowly escaped destruction.

MEADOWLARK. *Sturnella magna magna*. Abundant summer resident, arriving regularly about March 12 and remaining until early October. Wintering Meadowlarks are occasionally reported, but I have only one winter record for the bird. I saw one December 4, 1929.

WESTERN MEADOWLARK. *Sturnella neglecta*. Common summer resident, arriving at about the same time as the eastern form.

ORCHARD ORIOLE. *Icterus spurius*. Anderson, in his "Birds of Iowa", says the Orchard Oriole is a "common summer resident in all parts of Iowa." I have found the bird to be rare in Buchanan County. During the period of my bird study in the county, I have had only these few records (one bird seen in each case): June 13, 1917; June 10, 1918; May 17, 1924.

BALTIMORE ORIOLE. *Icterus galbula*. Common summer resident, arriving about the second week of May and remaining until the first week of September.

RUSTY BLACKBIRD. *Euphagus carolinus*. An abundant migrant, arriving early in March and remaining common until April in the spring migration; in the fall is usually common until late November, although the bulk of the birds have passed before that. A straggler is occasionally seen in the winter.



BRONZED GRACKLE. *Quiscalus quiscula aeneus*. An abundant migrant and summer resident. It assembles in flocks of thousands in August before migrating and arrives in large flocks as well. It is common from early March until the last of October, and a straggler or two may occasionally be found in the winter.

\*EVENING GROSBEAK. *Hesperiphona vespertina vespertina*. Rare visitant. Mrs. Bordner saw two along a small brook at the eastern edge of Independence on February 16, 1919.

PURPLE FINCH. *Carpodacus purpureus purpureus*. A regular migrant in spring and fall, but rare during winter. It arrives in April, leaves in May, and returns in late September and during October. I have two winter records: A flock of ten seen December 23, 1923, in Devil's Backbone State Park, Delaware County, and a flock of ten seen January 31, 1924, in Buchanan County.

CROSSBILL. *Loxia curvirostra minor*. A rare visitant. The bird has visited the county only once to my knowledge. During April, 1923, there was a large incursion of the Crossbill into the county, and it was reported as rather common in many places, including the city of Independence. The birds that I saw were on the Pierce farm. A flock of about twenty-five stayed in our tamarack grove from April 4 to April 22, 1923. A small flock of Redpolls were also in the grove at about this time. This occurrence of the Crossbills and Redpolls has been quite fully described in the WILSON BULLETIN, XXXV, 1923, pp. 157-159.

REDPOLL. *Acanthis linaria linaria*. Rare visitant. A flock of ten visited the tamarack grove on the Pierce farm between March 16 and April 10, 1923. On some days only two or three birds could be found there, but the entire flock was often present. See note on Redpolls under last species.

GOLDFINCH. *Astragalinus tristis tristis*. Permanent resident, abundant in spring and summer, but rather scarce during the winter. Goldfinches are usually seen in small flocks. They gather in some tree in the spring months and give concerts which are very pleasing to the listener.

PINE SISKIN. *Spinus pinus*. Scarce winter visitant. I saw one in Devil's Backbone State Park, Delaware County, December 23, 1923. A flock of seven stayed in the heavy shelter-belt of pine, birch, and spruce at the northern edge of the State Hospital grounds at Independence during December, 1929 (I saw them on the 17th and 23d of the month), and as they appeared there at different times during

January and February, 1930, it seems probable that they spent most of the winter at that place.

**SNOW BUNTING.** *Plectrophenax nivalis nivalis*. Rare winter visitant. A flock of about 200 appeared near Winthrop and remained a week or more during January, 1927. During the latter part of January, 1930, flocks totaling at least 200 appeared. I saw them along the road between Independence and Waterloo.

**LAPLAND LONGSPUR.** *Calcarius lapponicus lapponicus*. A rather scarce winter resident, but always very common in the fall. Beginning in early November it appears in flocks containing hundreds, even thousands, of longspurs, which move restlessly about the country. By December these flocks seem to have disappeared and only a few birds will be seen or heard during winter.

**ENGLISH SPARROW.** *Passer domesticus domesticus*. Abundant permanent resident in towns and at every group of farm buildings. It seldom nests in the open country and is nearly always found about buildings of some sort.

**VESPER SPARROW.** *Pooecetes gramineus gramineus*. Common summer resident, arriving the first or second week of April and remaining until October. My earliest spring record is March 20, and my latest fall record is November 25.

**SAVANNAH SPARROW.** *Passerculus sandwichensis savanna*. A scarce migrant, one that I have seen but a few times. Very careful search for it would doubtless reveal many individuals during migrations, but lack of time has often prevented my making a lengthy search at the proper season.

**GRASSHOPPER SPARROW.** *Ammodramus savannarum australis*. A fairly common summer resident, arriving in the latter part of April or early May.

**LECONTE'S SPARROW.** *Passerherbulus lecontei*. This species may be fairly common in migration, but owing to its habit of hiding in grass and high weeds in sloughs and meadows I can only rarely find it. I have never seen it in the spring. My latest fall record is October 21.

**LARK SPARROW.** *Chondestes grammacus grammacus*. Along the Cedar River near Waterloo in Black Hawk County, the Lark Sparrow is fairly common and seems to be a summer resident, but I see it very irregularly in Buchanan County and then only as a spring migrant.

**HARRIS'S SPARROW.** *Zonotrichia querula*. A fairly regular migrant in spring and fall. There have been only a few years that I did not find it at all. It appears in May and October.

WHITE-CROWNED SPARROW. *Zonotrichia leucophrys leucophrys*. Very scarce migrant. I have only a few records, all of these during the month of May.

WHITE-THROATED SPARROW. *Zonotrichia albicollis*. Common spring and fall migrant, appearing from the first week of April to the end of the month and remaining until the middle of May in some years. In the fall migration I have noted it from September 27 to October 19.

TREE SPARROW. *Spizella monticola monticola*. Common winter resident, from the last of October and early November until April. Latest spring date, April 25.

CHIPPING SPARROW. *Spizella passerina passerina*. Scarce summer resident. It arrives from April 7 to April 22.

FIELD SPARROW. *Spizella pusilla pusilla*. Common summer resident in regions where the timber has been cut off and the land has grown up to hazel-brush and hawthorn bushes. Brushy hillsides are also a favorite habitat. It arrives early in April. I have had it as early as March 28, but this is unusual.

SLATE-COLORED JUNCO. *Junco hyemalis hyemalis*. Common winter resident. It arrives in October and remains until the middle of April. It is always very abundant from the middle of March until the first week of April. I have seen it as early as September 27 and as late as May 1.

SONG SPARROW. *Melospiza melodia melodia*. Abundant summer resident, arriving about March 17 and remaining until the middle of October. My earliest spring record is March 10; latest fall record, November 1.

LINCOLN'S SPARROW. *Melospiza lincolni lincolni*. Seen only as a migrant, but it is so shy I do not often see it. Earliest spring record, April 27.

SWAMP SPARROW. *Melospiza georgiana*. Common migrant. In the spring migration I have seen it from April 6 to May 23, and in the fall from October 10 to October 17.

FOX SPARROW. *Passerella iliaca iliaca*. Common migrant. In the spring migration I have records from March 28 to April 15, and in the fall from October 6 to October 19.

TOWHEE. *Pipilo erythrophthalmus erythrophthalmus*. The Towhee is a common migrant, but appears to be a rather scarce summer resident in the timber along the Wapsipinicon. It arrives in late April or early May, though I have seen it as early as April 10. My latest fall record is October 21. I found one nest of the Towhee on a high

wooded bluff overlooking the Wapsipinicon on June 5, 1927. The nest contained four eggs and the bird was evidently incubating at that time.

CARDINAL. *Cardinalis cardinalis cardinalis*. Fairly common permanent resident in the timbered regions. It does not often appear outside of the timber during the winter, except for occasional visits to feeding stations maintained for birds in towns and in other places.

ROSE-BREASTED GROSBEAK. *Hedymeles ludovicianus*. Rather common summer resident, usually arriving during the second week of May and remaining until early September.

INDIGO BUNTING. *Passerina cyanea*. Common summer resident, arriving about the middle of May and remaining until early September.

DICKCISSEL. *Spiza americana*. Abundant summer resident, arriving in May. The date of arrival is varied. My records for the bird, covering a twelve-year period, shows that in seven years it arrived during the last half of May, while in five years it arrived during the first half of the month. My latest fall record is September 3. It has usually disappeared by August 15.

SCARLET TANAGER. *Piranga erythromelas*. Very scarce summer resident. I quite often see it during the spring migration, but rarely during the summer. My records show the appearance of the bird to be very irregular, for it has been seen only in these years: 1917, 1919, 1920, 1923, 1924, 1926, 1928, 1930.

PURPLE MARTIN. *Progne subis subis*. Common summer resident in towns where houses are provided for the bird. It arrives about the middle of April and departs about the middle of August. I now and then see colonies of martins in the country, about a house that the farmer has provided for them, but such colonies are rare, for not many houses are provided and if such provision is made the house is almost invariably appropriated by English Sparrows which are very hard to evict. I have tried to attract martins to a house in the country for several years, but I had no success at all until 1929, when three pairs were induced to take up housekeeping on my place.

CLIFF SWALLOW. *Petrochelidon lunifrons lunifrons*. Scarce summer resident, arriving in May. I more often see Cliff Swallows in the late summer than in spring. Several Cliff Swallows attempted nesting under the eaves of the barn on the Pierce farm several years ago, and got as far as building their nest, but they were driven out by English Sparrows and did not return.

BARN SWALLOW. *Hirundo erythrogastra*. Abundant summer resident, arriving in the last week of April and remaining until early September. My latest fall record is September 20.

TREE SWALLOW. *Iridoprocne bicolor*. Common migrant in spring, flocks of hundreds often being seen. I have spring dates from April 7 to May 18. Most of the Tree Swallows have passed by early May.

BANK SWALLOW. *Riparia riparia*. Rather common summer resident, arriving in early May. Latest fall record, September 4.

ROUGH-WINGED SWALLOW. *Stelgidopteryx serripennis*. Common summer resident, arriving in the last week of April. It is much more common than the Bank Swallow.

\*BOHEMIAN WAXWING. *Bombycilla garrula*. Rare visitant. Mrs. Bordner reports one that came to her garden in Lamont, remaining to eat the berries of asparagus for three days, February 15, 16, 17, 1920.

CEDAR WAXWING. *Bombycilla cedrorum*. A rather irregular visitant, for which I have many records. I have seen flocks varying from one or two birds to as many as twenty-five at various times of the year. I have one record in September, 1925; one record in May and one in August, 1926; four records in September, 1927; one record in June, 1928; one record in February, and one in March, 1929.

NORTHERN SHRIKE. *Lanius borealis*. Rare visitant. One stayed for a time in the Buffalo Creek woods near the Pierce farm during December, 1921; I saw one east of Winthrop on November 13, 1929.

MIGRANT SHRIKE. *Lanius ludovicianus migrans*. Rather common summer resident, arriving in the last two days of March or the first week in April, depending on the nature of the weather. Latest fall record, August 24.

RED-EYED VIREO. *Vireosylva olivacea*. Common summer resident, arriving about the middle of May, as a rule. I have one spring date of May 4.

WARBLING VIREO. *Vireosylva gilva gilva*. Common summer resident, arriving about the middle of May and remaining until the first week of September. I have one spring record made on April 26.

YELLOW-THROATED VIREO. *Lanivireo flavifrons*. Rare migrant. I have the following records: May 13, 1923, five birds seen along the Wapsipinicon River; May 11, 1924: two birds; May 20, 1924, one bird.

BLUE-HEADED VIREO. *Lanivireo solitarius solitarius*. A regular migrant during May, but less often observed in the fall migration. Latest fall record, September 27.

BLACK AND WHITE WARBLER. *Mniotilta varia*. Common migrant during the first week of May and about the first week of September.

PROTHONOTARY WARBLER. *Protonotaria citrea*. Rare. My only record was made on May 16, 1926, when two of the birds were observed in some willows on a sequestered pond near the Wapsipinicon River between Independence and Otterville.

BLUE-WINGED WARBLER. *Vermivora pinus*. A summer resident in the hazel-brush-covered land near the Wapsipinicon and a common migrant. It usually arrives during the second week of May; I have one record of May 4.

GOLDEN-WINGED WARBLER. *Vermivora chrysoptera*. Rare. I have but one record. I saw three in the heavy woods near the Hazleton mill-pond on May 18, 1924.

NASHVILLE WARBLER. *Vermivora ruficapilla ruficapilla*. A scarce migrant that is very hard to find, as a rule.

ORANGE-CROWNED WARBLER. *Vermivora celata celata*. A scarce migrant.

TENNESSEE WARBLER. *Vermivora peregrina*. Fairly common migrant, though there is great variation in the numbers seen from year to year. Earliest spring record, May 11.

NORTHERN PARULA WARBLER. *Compsothlypis americana pusilla*. A rather rare May migrant, for which I have but a few records.

CAPE MAY WARBLER. *Dendroica tigrina*. An irregular migrant, usually appearing after the middle of May, for which I have a few records. I have one record made on May 8.

YELLOW WARBLER. *Dendroica aestiva aestiva*. Common spring migrant, appearing early in May. It breeds in the county in rather small numbers.

\*BLACK-THROATED BLUE WARBLER. *Dendroica caerulescens caerulescens*. Rare. Mrs. Bordner gives me one record. She saw one at Independence, May 18, 1915.

MYRTLE WARBLER. *Dendroica coronata*. Abundant migrant, arriving in the last half of April. During the spring migration I have records from April 16 to May 25, and in fall from September 27 to October 26.

MAGNOLIA WARBLER. *Dendroica magnolia*. Common migrant. It is most often seen during the second and third weeks of May. I have seen it as early as May 10 and as late as May 30.

CERULEAN WARBLER. *Dendroica cerulea*. The Cerulean Warbler is probably a regular migrant in the county, but it is very seldom seen because of its shyness. My only record is May 15, 1927, when I found one in the Monti woods. The bird, a male, was in a small tree about eight feet from the ground, and I studied it with an 8x glass. It was

on a cold and cloudy day, which perhaps brought this haunter of the treetops near to the ground.

CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica*. A fairly common migrant, appearing from May 4 to May 25.

BAY-BREASTED WARBLER. *Dendroica castanea*. Quite rare. I have the following records (one seen on each date): May 18, 1921; May 7, 1924; May 20, 1927.

BLACK-POLL WARBLER. *Dendroica striata*. Fairly common spring migrant. My dates of its appearance are from May 13 to May 31.

BLACKBURNIAN WARBLER. *Dendroica fusca*. A regular spring migrant, but usually found in very small numbers. My spring dates are from May 7 to May 30.

BLACK-THROATED GREEN WARBLER. *Dendroica virens*. A rather irregular migrant not seen every year. My spring dates are from May 4 to May 25.

PINE WARBLER. *Dendroica vigorsi vigorsi*. A very irregular and scarce migrant.

PALM WARBLER. *Dendroica palmarum palmarum*. An abundant migrant, appearing the last week of April (April 24 is earliest date) and remaining until the middle of May. My fall dates are from September 16 to October 17.

OVEN-BIRD. *Seiurus aurocapillus*. A rather common summer resident in the timbered sections of the county, arriving from May 7 to May 16.

GRINNELL'S WATER-THRUSH. *Seiurus noveboracensis notabilis*. Common migrant. My spring dates are from May 2 to May 25; fall dates, August 31 to September 18.

LOUISIANA WATER-THRUSH. *Seiurus motacilla*. Rare. I have but one record. I found three at the borders of a small pond near the Wapsipinicon River, upriver from Independence, on May 16, 1926. They were very carefully studied with 8x glass.

CONNECTICUT WARBLER. *Oporornis agilis*. Rare. I found one in the Monti timber on May 15, 1927. It was found in bushy growth and was carefully studied with 8x glass in good light; the white eye-ring was noted. The song I heard was quite similar to the Oven-bird's.

MOURNING WARBLER. *Oporornis philadelphia*. An irregular migrant that I sometimes do not find for two or three years in succession. My spring dates are from May 12 to May 30.

MARYLAND YELLOW-THROAT. *Geothlypis trichas trichas*. Common summer resident, arriving from May 4 to the 12th and remaining until September.

WILSON'S WARBLER. *Wilsonia pusilla pusilla*. Fairly common migrant. My spring dates are from May 7 to May 25. There have been a few years in which I failed to find the bird.

CANADA WARBLER. *Wilsonia canadensis*. A regular migrant, but usually found in very small numbers. It arrives in Buchanan County about May 18.

REDSTART. *Setophaga ruticilla*. An abundant migrant and a common summer resident. It is found in the summer in nearly all tracts of natural woodland of fair size. It arrives from May 4 to May 16 and remains until September.

PIPIT. *Anthus rubescens*. An irregular visitor. My records were nearly all made while I was plowing on the farm. The bird frequents freshly plowed fields and other open country. My records are as follows: May 4, 1920 (2); April 21, 1922 (3); May 1, 1926 (1); May 4, 1926 (6); May 2, 1927 (1); May 12, 1928 (3).

CATBIRD. *Dumetella carolinensis*. A fairly common summer resident, arriving about the first week in May and remaining until late September and early October. I have one record on April 24. I think the Catbird is slowly retreating as the hedges and brush lands through the county are being cleared away. The Brown Thrasher seems to welcome the society of man and builds its nests near his homes and about his farms, while the Catbird becomes less common and retires into the woodland as man advances.

BROWN THRASHER. *Toxostoma rufum*. Common summer resident, arriving in the third and last week of April and remaining until late September. My latest fall record is October 9.

CAROLINA WREN. *Thryothorus ludovicianus ludovicianus*. Rare. My only record is given below:

"On April 20, 1923, I saw my first Carolina Wren, which, according to Anderson's *Birds of Iowa* (1907, p. 368), is very rare and local in Iowa. The bird I saw was scurrying about in a brush heap near my home. Its extra large size and rusty brown plumage at once distinguished it as a species other than our common House Wren. The white eye line was conspicuous, while the absence of white tail feather tips eliminated the possibility of its being a Bewick's Wren. Its notes were much different from the House Wren's. I saw the bird plainly and in good light."—From "April Notes from Winthrop, Iowa," in the WILSON BULLETIN, Vol. XXXV, 1923, p. 157.

WESTERN HOUSE WREN. *Troglodytes aedon parkmani*. Abundant summer resident, arriving in the last week of April and the first week in May and remaining until September.



WINTER WREN. *Nannus heimalis heimalis*. A rather scarce migrant. My spring records range from March 25 to April 22; fall records, from September 20 to October 12.

SHORT-BILLED MARSH WREN. *Cistothorus stellaris*. A fairly common summer resident in the sloughs that lie near the Independence mill-pond, but I have only rarely found it at other places in the county. My earliest spring date is May 1, and my latest fall record is September 4, but the bird no doubt remains longer than this.

PRAIRIE MARSH WREN. *Telmatodytes palustris iliacus*. About the middle of May I find a few of these birds at the Independence mill-pond. They nest there in small numbers, but are very seldom seen during the summer.

BROWN CREEPER. *Certhia familiaris americana*. The Brown Creeper is usually a scarce and irregular visitor. Most of my records were made during April. I have a few in March, quite a number in October and December, but I have not found it during January and February. It is seldom that more than two birds are seen at a time.

WHITE-BREASTED NUTHATCH. *Sitta carolinensis carolinensis*. Common permanent resident. It is more conspicuous in the winter, when other birds are scarce.

RED-BREASTED NUTHATCH. *Sitta canadensis*. Rare visitant. I have a number of records, but have never seen more than one bird at a time. The following records are all for Buchanan County: May 12, 1920; May 10, 1924; December 10 and 23, 1929; January 18, 1930.

TUFTED TITMOUSE. *Baeolophus bicolor*. Fairly common permanent resident in timbered sections of the county, but seldom seen outside of this habitat.

CHICKADEE. *Penthestes atricapillus atricapillus*. Common permanent resident.

GOLDEN-CROWNED KINGLET. *Regulus satrapa satrapa*. A common migrant and found irregularly during the winter. It arrives in spring during the first half of April and is seen again in the fall migration in October. I have a number of winter records for the bird. Nearly all of these were made on the grounds of the State Hospital at Independence, where there is a heavy shelter-belt of pine and spruce which seems to be very much to the bird's liking. A small flock was found there during January, 1927. A flock of ten was seen there at different times during December, 1929, and January, 1930, and it was evident that it spent the entire winter in the tract of trees.

RUBY-CROWNED KINGLET. *Regulus calendula calendula*. An abundant migrant in spring and common in the fall. It regularly appears

in the first or second week of April. I have seen them as early as March 28. In the fall migration the dates range from September 27 to October 19.

BLUE-GRAY GNATCATCHER. *Polioptila caerulea caerulea*. Rare. On May 13, 1923, I saw three in the heavy woods along the Wapsipinicon River at "Boise's Bend"; on May 13, 1928, I saw another in the same location.

Mrs. Bordner found a nesting bird in Devil's Backbone State Park, Delaware County, in the summer of 1923. The nest disappeared before she had opportunity for a second visit. A severe storm loosened the bark that held the nest in the tree.

WOOD THRUSH. *Hylocichla mustelina*. The Wood Thrush breeds within the county in small numbers, I believe, but I see it only as a rather scarce migrant in May. Occasionally I see it in late summer.

VEERY. *Hylocichla fuscescens fuscescens*. Rather rare spring migrant, appearing from April 18 until the middle of May.

GRAY-CHEEKED THRUSH. *Hylocichla aliciae aliciae*. Fairly common migrant, during the first two weeks of May.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. Fairly common migrant during the last half of May.

HERMIT THRUSH. *Hylocichla guttata pallasii*. Fairly common migrant, appearing about April 10. My earliest spring record is March 29; latest fall record, October 9.

ROBIN. *Planesticus migratorius migratorius*. Abundant summer resident, arriving about the first week in March. Occasionally their arrival is a week or more later if the weather is cold and there are early March snows. I have seen Robins as early as February 22 and 23. I recorded a flock of thirty-five on February 22, 1922. When they arrive in March, they are usually common almost at arrival. The bird remains until early November and I have seen it as late as November 21. Occasionally wintering Robins are reported, but this is unusual in Buchanan County. My only winter record was for two Robins that remained in an apple orchard and berry thicket in Winthrop during December, 1929. One of the birds had an injured wing, though it was able to fly quite well. The two birds were present much of the time during December, but in the last week of the month one of them disappeared. The remaining Robin stayed until January and managed to survive the cold and snows for a time. Food was placed on the ground for it and it ate there almost every day. About the middle of January, after a continued period of unusually cold weather,

the bird disappeared. It might have flown south, but it seems more probable that it was frozen to death or killed by a cat.

BLUEBIRD. *Sialia sialis sialis*. A common migrant, but a very scarce summer resident. It arrives from the first week of March to the third, depending on the weather prevailing in early March. I have frequently seen it in the last week of February. On February 22, 1922, I saw a flock containing thirty or more. My latest fall record is October 26. It was formerly a common summer resident, according to reports of older people. No doubt the English Sparrow's habit of driving it out of nesting places in towns and about farm homes has had much to do with its decline in numbers.

Published papers by the author which bear on the abundance and distribution of certain birds found in Buchanan County are:

"Migration of Ducks and Geese at Winthrop, Iowa." *Bird-Lore*, XXII, 1920, pp. 159-160.

"Buchanan County, Iowa, Birds." *The Oologist*, XXXVIII, 1921, pp. 4-7.

"Scarcity of Nighthawks." *Bird-Lore*, XXIII, 1921, p. 197.

"The Prairie Chicken in East Central Iowa." *The WILSON BULLETIN*, XXXIV, 1922, pp. 100-106.

"Some Iowa Owl Notes." *The WILSON BULLETIN*, XXXIV, 1922, pp. 164-166.

"Nighthawk Migration Notes." *The WILSON BULLETIN*, XXXIV, 1922, pp. 236-237.

"Some Further Iowa Owl Notes." *The WILSON BULLETIN*, XXXV, 1923, pp. 56-57.

"April Notes from Winthrop, Iowa." *The WILSON BULLETIN*, XXXV, 1923, pp. 157-159.

"The Great Horned Owls of Buffalo Creek." *Bird-Lore*, XXVI, 1924, pp. 94-96.

"Summer Birds of an Iowa Farmstead." *Bird-Lore*, XXVII, 1925, pp. 315-319.

"Lapland Longspurs at Winthrop, Iowa." *Bird-Lore*, XXIX, 1927, pp. 119-120.

"Black-bellied Plovers in Eastern Iowa." *Bird-Lore*, XXIX, 1927, pp. 416-417.

"Bird-Life at an Iowa Mill-Pond." *Bird-Lore*, XXXI, 1929, pp. 105-107.

"Winter Birds of Northeastern Iowa as Revealed by the Christmas Census." *The WILSON BULLETIN*. (In Ms.).

WINTHROP, IOWA.

# THE WILSON BULLETIN

Published at Sioux City, Iowa, by the Wilson Ornithological Club.

The present editorial organization is as follows: T. C. Stephens, Editor-in-Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

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## EDITORIAL

After serving for many years as Editor of the *Ibis*, official organ of the British Ornithologists' Union, Dr. W. L. Selater retires. He is succeeded by Dr. C. B. Ticehurst, of Kent, England.

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The issue of the WILSON BULLETIN for March, 1930, is now practically exhausted. If any of our readers are not accustomed to retain permanently their copies, and would be willing to donate the March issue, they may be sent to the Editor and will be thankfully accepted. We have had a great many calls this year for back numbers, and most of the two hundred new members for the year have asked for back numbers of the year. These two demands were not foreseen, and only the usual number of copies of the March issue were printed. And so we ask our readers to send us only such copies as might otherwise be lost or destroyed.

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MR. E. C. HOFFMAN, of Lakewood, Ohio, is still working on the Starling problem. He finds that this species is continuing to increase and spread rapidly. In Cleveland, for instance, the Starlings began roosting in the Public Square on October 13, 1930, at which time they numbered about 150. On November 8th they had increased to more than five thousand, and the greater number of these were roosting on nearby buildings. At sunset flocks of a thousand or more fly in compact formation high over the roofs of office buildings. Mr. Hoffman is anxious to receive reports from all parts of the country concerning the movements of the Starling this winter, and he may be addressed at 1041 Forest Cliff Drive, Lakewood, Ohio.

THE FIRST AND ONLY TIME we ever visited the American Museum of Natural History must have been about 1896, or thereabouts. We have a vague recollection of an old wooden fence around the premises. We are now profoundly impressed with the scope and development of this institution as briefly sketched in the September-October number of *Natural History*, one of the Museum's periodical publications.

The modern metropolitan museum is not merely a collection of natural history exhibits or sponsor of a course of lectures, but it is an institution of research and exploration—an influential contributor to the store of human knowledge. The present-day art of taxidermy is a wonderful advance over the methods of the past. Most of us have little conception of the skill and variety of the accessory work in the preparation of the exhibits in the modern museum. The best exhibits of today blend art with science—if exact reproduction of natural environment may be called art, and who will deny the artistry of nature? The great collections of study material are important features of the big museums of today. The active educational work carried on in the local community is by no means the least of the museum's functions. Fortunate, indeed, is the school system of a community which supports a modern museum of this kind, where pupils may be taken by classes to observe and study the collections under expert guidance, to profit by the courses of lectures, and to benefit by the inspiration which arises from contact with an intellectual and cultural center. The educational work of the modern museum is also carried on by means of circulating nature study collections, by loan libraries of lantern slides and motion picture films, and by various other extramural aids. The services performed by the public museum in a community are as important as are those of the public library, and probably cost no more in smaller communities. The number of people served by the public museum may be very great. Over twelve millions of school pupils were served by the educational activities of the American Museum during the year of 1929, and this figure does not include the regular adult visitors to the museum exhibits. We have been told that the Field Museum, of Chicago, often entertains five thousand visitors in a single day. Is it not time for many of the communities of the middle west to begin to profit by the examples of the older eastern cities in this public enterprise?

## THE CLEVELAND MEETING

The Seventeenth Annual Meeting of the Wilson Ornithological Club will convene in Cleveland, Ohio, on Monday and Tuesday, December 29 and 30, 1930, in conjunction with the American Association for the Advancement of Science.

The reading of papers will form a prominent feature of the meetings. All members are earnestly requested to contribute and to notify the Secretary as to the titles of their communications, the length of time required for their presentation, and whether they will be illustrated by lantern slides, small films, or standard films. If a definite place on the program is desired, members should so indicate.

Meetings will be held in Room 32, Clark Hall, College for Women, Western Reserve University, from 9.00 A. M. until 5:00 P. M.

The annual banquet of the Wilson Ornithological Club will be held with the Cleveland Bird Club and the Inland Bird Banding Association at a time and place to be determined later.

The attention of all Wilson Club members is called to the meeting of the Inland Bird Banding Association which will meet in Cleveland on Wednesday, December 31. All Wilson Club members are urged to stay over one day and attend this meeting.

At this meeting, the new Constitution and By-Laws will come up for ratification.

The headquarters of the Wilson Club will be at Hotel Hollenden, Superior Avenue at East Sixth Street, where rooms may be secured at the following rates: single room with bath, \$3.00 to \$6.00; double room, \$6.00 to \$12.00. Reservation should be made well in advance.

A special railroad rate is made to all members of organizations associated with the American Association for the Advancement of Science. Since the Wilson Ornithological Club is an associated organization, this special rate applies to its members. To secure this special rate, purchase a one-way ticket to Cleveland, Ohio, and secure from the agent a certificate to the annual meeting of the American Association for the Advancement of Science. Do not purchase a ticket without securing this certificate. This certificate must be presented to the proper official at the convention for validation. After validation, the certificate entitles its holder to a return ticket at half the regular rate.

JESSE M. SHAVER, *Secretary*.

George Peabody College for Teachers, Nashville, Tennessee, October 28, 1930.

## GENERAL NOTES

Conducted by M. H. Swenk

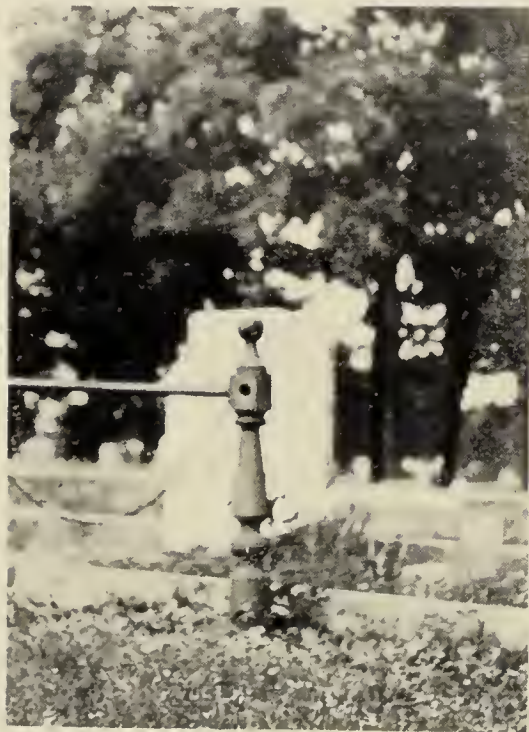
**A Partial Albino Junco.**—On April 18, 1930, I took in a trap a junco which appeared quite different from usual. Upon careful examination, it seemed to be an ordinary Slate-colored Junco (*Junco hyemalis hyemalis*) showing partial albinism. Two large white spots under the eyes were connected by a line extending over the bill, and the throat was white. The bird was banded No. C21839 and released. Albino juncos must be rather common, though I have had none before in banding some 700 of them, nor do I recall seeing any in the field.—O. A. STEVENS, *Fargo, N. Dak.*

**A Starling Killed by Lightning.**—During a severe electrical storm on September 14, 1930, a large elm at Peterboro, N. Y., was splintered by lightning. Following the storm an adult Starling (*Sturnus vulgaris*), which apparently had taken refuge in the tree and became a victim of the bolt, was found under the tree. The bird's belly was ripped open so that the intestines protruded. I have never before heard of a bird being struck by lightning, and think it rather an unusual occurrence.—CHAS. J. SPIKER, *Canastota, N. Y.*

**Snowy Egrets in Des Moines County, Iowa.**—During August, 1930, a flock of some thirty Snowy Egrets (*Egretta candidissima candidissima*) visited Ray Lake, a small, partly tree-bordered body of water in northeastern Des Moines County, Iowa, normally not deep and at the time conspicuously shallow owing to the prolonged drought. They arrived on August 1, the entire group, apparently, remaining in the immediate locality until August 15, after which their numbers began to decrease. By August 20 all but five had departed, while only one could be found on the 24th, this last individual taking leave three or four days later. The birds were not particularly wary, and frequently permitted quite close approach. There had been no previous record of Snowy Egrets at Ray Lake over a rather careful observation period that included the past ten years.—H. M. HOLLAND, *Galesburg, Ill.*

**The Rose-breasted and Black-headed Grosbeaks Hybridize.**—During the past fifty years the Rose-breasted Grosbeak (*Hedymeles ludovicianus*) has considerably extended its range from the Missouri River region to the westward in Nebraska, along the principal water courses. And, meantime, the Black-headed Grosbeak (*Hedymeles melanocephalus papago*) has been pushing eastward along the same streams. As a result the two species have met, and now occur together along the upper Elkhorn River west of Norfolk, and along the Platte, Little Blue, and Republican Rivers, between the 98th and 99th meridians, as well as in some of the wooded intervening territory. That these two species sometimes hybridize where they thus meet on the same ground, is shown by two adult male specimens taken at Inland, Clay County, by A. M. Brooking, the first one on May 18, 1920, and the second one on May 24, 1923. Both have the normal plumage of the adult male Rose-breasted Grosbeak, except that the chest and breast are buffy cinnamon, this diluting the normally rose red chest patch to a dull buffy red, and extending below it across the breast as a broad, pure buffy cinnamon band. The areas on the rump and upper tail coverts that are white in the Rose-breasted Grosbeak are pale buffy in the hybrid birds.—MYRON H. SWENK, *Lincoln, Neb.*

**Peripheral Lag in Migration.**—It seems to me that this term, suggested by Professor Swenk (WILSON BULLETIN, XLII, p. 93) may be given slightly different interpretation. Near the border of a migration area individuals of the particular species are few, and are most likely to be seen only during the main period of movement. In the main path the numbers are large and early birds are more commonly seen. Thus it is partly a matter of observation. The difference is increased by the fact that most of the records come from casual rather than intensive observation. Comparison of dates for the less common species is generally unsatisfactory. By the same reasoning the date of departure also should be earlier near the border. The data for these are still less complete. Systematic trapping over a period of years will yield figures which can be compared to much better advantage.—O. A. STEVENS, *Fargo, N. Dak.*



**An Odd Nesting Site of the Bluebird.**

—In April, 1929, I had an odd experience with some Bluebirds (*Sialia sialis sialis*) that had chosen a hole in an iron post in the city cemetery for their nest. Desiring to band the young birds, I tried to get my hand into the opening but had no success. I could just feel the nestlings with the tips of two fingers. Finally I thought of some ice-tea spoons that were small and long enough to reach under the nestlings, and smooth enough not to hurt them. With one of these I lifted out the five baby Bluebirds one after another, and banded them, afterward replacing them in the nest. The parents sat on nearby tombstones, not much disturbed by the operation, as the accompanying photograph shows. Two days after I had banded them the young Bluebirds were

out and flying around.—MRS. JACK HAGAR, *Corsicana, Texas.*

**Upland Plover in Calhoun County, Michigan.**—Two bird lovers, Mrs. I. C. Nielson and Mrs. Peterson, reported finding the Upland Plover (*Bartramia longicauda*) only a short distance from Battle Creek during the latter part of June, 1930. On July 1, we visited the locality where they had made the observation but were rather disappointed at first in that the birds could not be found. We were almost ready to leave when a bird was seen to alight upon a fence post, raising his wings as he did so, then folding them carefully against his sides. We left the car immediately and watched him several minutes through our binoculars, easily noting the pigeon-shaped head and other characteristics of the Bartramian Sandpiper. Soon we moved closer and at the same time flushed two more birds from the meadow about which the fence bordered. Their plaintive tree-toad-like call was uttered many times as they hovered about the pasture. While they had apparently been in the neighborhood for some time, this was the last time that they were observed, but we are of the opinion that they nested in this same region.—LAWRENCE. H. WALKINSHAW, *Battle Creek, Mich.*



**American Egret and Little Blue Heron in the Lake Michigan Dunes of Indiana.**—On the afternoon of August 21, 1930, Mr. Coffin and I drove with Dr. Lewy in quest of some white birds that he had seen the previous Sunday, August 17, and was strongly inclined to think were American Egrets. Our first stop was a marsh concealed by low dunes, shortly before reaching the suburbs of Gary. Here we saw one bird in company with a Green Heron, which was much smaller. We were close enough to be sure it was an American Egret (*Casmerodius egretta*), noting the pale iris, the yellow before the eye, and the deep yellow bill quite plainly before it flew.

The next stop was at Long Lake, north of the high bridge over the lake about half way between Millers and Dune Park. Just as we arrived a passing train startled a flock of twenty-three herons into flight; some of these returned later and were quite evidently the white phase of the Little Blue Heron (*Florida caerulea*). They fed in the marshy part of the lake with three Green Herons not far away.

In the more open water stood four of the larger American Egrets, their slender bodies and graceful necks reflected in the water. Here again were two Great Blue Herons which afforded satisfactory opportunity for comparing size and form. Some of these birds were still in Long Lake on Sunday, August 31.

Dr. Amos Butler writes he has received reports of these birds in the counties of Newton, Allen, and St. Joseph, Indiana.—MRS. LUCY BAXTER COFFIN, *Chicago, Ill.*

**A Robin Roost Close to a House.**—Near my house, in fact just outside my sun porch, is a Robin roost, the development of which I may describe as follows. Fifteen years ago, when we built our home, I had the grounds landscaped with special reference to attracting birds. I had sumac, high-bush cranberry, panicled dog-wood, sheep-berry, and buckthorn (*Rhamnus cathartica*) planted near the house. Desiring a natural growth, I let these shrubs grow at will. The buckthorn grew very thick and tall. I noticed early in the spring that the Robins ate the small black berries, and also were fond of the sumac seeds. Then I found that a number seemed to sleep in the buckthorn. But not until three years ago (1928) did I pay any special attention to them. At that time, upon returning from a summer in Europe, I found a flock of blackbirds preempting the Robins' sleeping quarters, much to the latter's distress, and I realized for the first time how many Robins were interested. So I went out for several nights and drove the blackbirds away. They objected, but finally they left for other quarters. It is impossible to count the Robins as they fly in and out so much, but that year I estimated at least twenty-five of them slept there. Next year (1929) the very first Robins came to the same place in larger numbers. A Cardinal that feeds here all winter had decided to sleep in the buckthorn, but the Robins would not let him stay. This year (1930) I claimed to have fifty or sixty Robins in my roost, but others have thought that there must be over a hundred of them. It is an interesting sight, and in the spring their vespers are delightful, while mornings they are much more musical than an alarm clock, although a trifle too early. As soon as the young are old enough they all come here, and the bushes seem alive with them. These bushes are very leafy with small branches, which I imagine discourages owls or cats.—MRS. J. FREDERICK CLARKE, *Fairfield, Iowa.*

**Unusual Nesting Sites of the Prothonotary Warbler.**—The Prothonotary Warbler (*Protonotaria citrea*) is a rare species at any season near Toledo, so when a newly found friend and a beginner in bird study, Kenneth Byers, told me of a nesting pair, I determined to investigate. What made his report doubly interesting was the statement that the birds were nesting in a paper sack!

Mr. Byers' father is a fisherman, and has his home in Lucas County, near the Ottawa County line at the point where Crane Creek enters Lake Erie. Among other buildings are two large sheds for the storage and repair of nets. In one of these a small paper sack, partly filled with staples, had been left carelessly on a beam near an open window, and this the warblers had chosen as a home. When I visited the place on June 16 the sack contained five fledglings.

My friend then took me to the other shed and showed me the nest of last year—a coffee can also partly filled with staples. In the two preceding years a cheese box and a lard pail had been utilized. It was reasonable to suppose that the same individuals returned each year.

Then I led a search along the adjoining marsh for more Prothonotary Warblers. Arriving at a place where many tall stubs of water-killed willows stood in the marsh, we heard the bird's loud song and in a short time had located three more pairs. Only one nest was found, in a hole drilled by a woodpecker in one of the stumps.

I wonder what opinion these warblers held of the pair which turned up their noses (figuratively, of course) at the usual nesting sites, and insisted on living in man-made homes.—LOUIS W. CAMPBELL, *Toledo, Ohio.*

**Abundance of the Golden Plover in Ohio in 1930.**—I learned of more Golden Plovers in the spring of 1930 than in any previous year. In Wood County, which is south of Toledo, there were more than in the counties to the east, due no doubt to the richer soil and the fact that much more of it was being plowed for corn at the time of the plover migration. At Sandusky in Erie County, where many of my former pupils are still living, I was unable to learn of a single Golden Plover, either by correspondence or by inserting a request for information in a local paper. South of Cleveland two Golden Plovers were seen on May 17 by one of my former pupils, who would have seen others if they had been numerous and widely distributed in that region.

The number of Golden Plovers actually seen by myself and by those who made reports to me in a restricted area, none of which lies more than thirty miles from Bowling Green, is about 3,000, if we omit what are likely to be duplications and accept the lower estimates made by those reporting. In Hancock County, to the south, much of it lying within thirty miles of Bowling Green, P. H. Ballard, Civil Engineer at Findlay, the County seat, believes that there were several thousand Golden Plovers this spring. One of my pupils saw about 400 at one time in that county, seven miles north of Findlay. It is quite possible that many of these plovers that were observed in Hancock County were reported to me by those who saw them later farther north, but it is unlikely that the 3,000 reported from the eastern half of Wood and Lucas Counties, and the adjacent part of Ottawa County, were half of all that stopped to feed in this small region. The largest number reported by one observer was about 1,200, these constituting over half of a flock estimated at about 2,000 shore birds, seen April 23, about 5:30 p. m., about a mile and a half or two miles east of Bono, which is only a

few miles south of Lake Erie. The remainder of the flock was composed of Pectoral Sandpipers, Yellowlegs, and a few Upland Plovers. The observer was Roger Conant, Curator of Reptiles, Toledo Zoological Society. Several others reported seeing flocks of 200 or more. A number of the flocks were seen repeatedly at or near the same place for a week or more.

In 1930 the first Golden Plovers were seen unusually early, March 16, south of the Little Cedar Point marsh, Lucas County, by Louis Campbell, who saw fifty on April 6, and again on April 12 and 19, several miles to the southeast, near Bono. These places are only a few miles from Lake Erie. On April 26, near Genoa, about twelve miles from the Lake, Prof. William P. Holt, saw a flock in which he estimated there were two or three hundred plovers. Large numbers of Golden Plovers were seen in Hancock County, April 19 and 20 and later, and in Wood County from about April 22 until May 8. Flocks of about fifteen were seen May 10 and 11; after that none in Wood County and only three birds reported from other counties.—E. L. MOSELEY, *Bowling Green, Ohio*.

**The Cardinal's Love for Home.**—A little girl neighbor of mine, who is a great lover of birds, confided to me a few weeks ago that she had a "Redbird" nest and wanted me to see how "cute" it was. Warning her of the danger of visiting her neighbors too often, I accompanied her to the orchard, where the nest was cunningly placed in the fork of a low limb of an apple tree. Taking up an unobtrusive position where we could watch, we soon saw the mother bird go to the nest. She proved to be a Cardinal (*Richmondia cardinalis*).

A few days later the child, forgetting my warning, took her chum and proudly exhibited her bird treasures to her. The chum, being a very ordinary sort, later slipped away from the house, and, taking a long pole, proceeded to punch the nest so that she could see the little birds. She was caught in the act by the birds' guardian, and a bit of scratching and hair pulling ensued. The distressed child procured some strips of cloth, and, punching holes in the sides of the nest, tied it as nearly in its former position as she could, replacing the little birds in their home. One of the young birds was killed when the nest fell. The parent birds, who had been wildly proclaiming their distress, inspected the nest and decided that it would do, and returned to their routine of living.

A pair of Cardinals very early the past spring set up housekeeping in a haw tree in the back yard of Mr. and Mrs. N., which was on the bank of the Cumberland River. Mr. N. was very much interested in the affairs of the tenants of his tree, and daily watched the family life of the Cardinals. When the little Cardinals arrived he watched the comings and goings with renewed interest, especially in the early evening hours upon his return from business. When the young were several days old, on a very chilly evening, he heard a commotion in the vicinity of the haw tree, and, hurriedly investigating, discovered an owl in pursuit of the mother bird, who betook herself to other and safer ground. Mr. N. watched for the return of the mother, but as dark settled and the chill increased the little Cardinals set up a plaintive chatter, and after dark he decided that the owl had made its supper on the mother bird and that her babies would die of exposure. Removing the nest from the tree he carried it into the living room, and warming a woolen sweater deposited the family in their nest on it. He then secured some cotton, and after warming it placed it in the nest, so that the desolated family were once more happy in the warmth.

At dawn the next morning the distressed cries of the parents of the little birds awoke Mr. N. He at once carried the family to their former location. Flying to the nest the old birds inspected it and seeing the cotton which Mr. N. forgot to remove, they proceeded to pull it out by the mouthful, carry it to the outside of the branches, and drop it on the ground. After the nest was cleared the female took up her place of house-mother and went about her family duties the rest of the day as if nothing had happened.

Now comes the strange part of this story. The next evening the owl again attacked the mother bird, who again left her family to the mercies of her landlord and took herself to safer quarters. The little birds were again cared for through the night and replaced in the tree at the call of the mother bird at dawn. This performance was repeated for five nights, when Mr. N. became tired of acting nurse to his Cardinal tenants and decided to place a piece of poultry netting over the tree to protect the birds. The family accepted the protection and the mother continued to rear her family, seeming to know they were safe from the "winged wildcat".

Certainly fixedness of purpose seems characteristic of the mother Cardinal when it comes to sticking to the home, despite all interference in family affairs from outside sources.—MARGARET STACKER. *Cumberland City, Tenn.*

**Behavior of Bob-whites Upon the Approach of a Marsh Hawk.**—On March 25, 1930, from 1:30 to 3:00 P. M., at Madison, Wisconsin, west of University Bay, twelve Bob-whites were watched while feeding in and about a number of corn shocks still left in the field from the winter. While the birds were thus occupied, an adult male Marsh Hawk approached, scouting low over the stubble. The Bob-whites apparently did not see the hawk until he was within eighty to a hundred feet from them. Two of them then flushed to a strip of roadside brush some thirty-five yards distant; the other ten ran easily into the openings at the base of the corn shocks. The ten birds displayed no great alarm nor any haste whatever. Their behavior was comparable to that of well-trained school children going through a fire drill.

The Marsh Hawk went methodically about his business without showing any especial designs against the Bob-whites, although his line of flight took him directly over the corn shocks and past the roadside brush in which the first two birds had alighted. Thirteen minutes after the raptor's departure, a single Bob-white flew from a shock to the roadside brush. A minute later, three more ventured out, one of which joined the last bird in the brush. The remaining two in sight, subsequent to a short period of calling, resumed feeding. Twenty-one minutes after the Marsh Hawk had left, the six issued forth from their shock, pecked disinterestedly at miscellaneous material, until all eight flew as a group eighty yards to the edge of a sweet clover patch. The scattered birds drew together when they became ready, the covey bunching up to roost for the night beside the sweet clover.

Mention might be made that a cock Ring-necked Pheasant was also feeding amid the corn shocks, fully exposed, when the Marsh Hawk appeared. The hawk flew within ten feet or less of the pheasant, but did not deviate from his course in the least, nor did the pheasant exhibit uneasiness nor make any effort to conceal himself. He merely continued eating, evidently confident that he was altogether too big game for Marsh Hawks, with which the Marsh Hawk seemingly agreed.

These incidents rather typify the southern Wisconsin observations to date, with respect to Marsh Hawk-upland game relationships. In general, the evidence indicates that the Marsh Hawk is too weak to kill game of appreciable size; i. e., adult pheasants, and that he is ordinarily too slow to catch healthy alert birds like Bob-whites, especially if the latter are well fed and have suitable cover for refuge.

It is particularly significant to note, in this connection, that corn shocks, properly constructed and open at the base, may serve a double purpose in northern conservation or game management by making available both an excellent food and a fair emergency cover at the same time.—PAUL L. ERRINGTON, *Madison, Wis.*

**The Nesting Habits of the Baltimore Oriole.**—Of all our beautiful summer residents the Baltimore Oriole (*Icterus galbula*) is the most handsome. This statement applies to both form and coloration. Migration records covering twelve years show that these birds come to southern Iowa on dates ranging from April 26 to May 6, and that the last of them usually disappear about September 1. Thus they remain with us about four months in each year.

Orioles are most conspicuously useful in their food habits, living as they do, almost exclusively on caterpillars, bugs, beetles, and grasshoppers (nearly all of them harmful species), and merely tasting ripe fruit, such as cherries and mulberries occasionally, in the most dainty manner.

The song of the Baltimore Oriole, though not the most elaborate, is yet quite distinctive and cheerful and is given in short whistled phrases, all day long, even while the singer is searching among the tree tops for its favorite food. When alarmed, however, it utters a rather harsh penetrating "perk" and chatters. During the mating season the males are quite gallant and pugnacious. I have observed one of them fighting with his own reflection in an upstairs chamber window, intermittantly for several days, in a fierce combat with a supposed rival. Mrs. Oriole meanwhile was quietly weaving her nest but a short distance away.

This oriole's nesting habits are of especial interest. For the purpose of acquiring more information about the matter I have recently made some careful observations in regard to this phase of their home life. The much traveled street in Sigourney, Iowa, upon which I live, is paved throughout with concrete. I kept nine blocks between my residence and the Legion Park under observation during the season of 1927. There are about six residences to the block fronting upon this street. The street is well provided with shade trees of the following named varieties: soft maple, hard maple, elm, cottonwood, catalpa, ash, boxelder, and some species of evergreens.

The purse-shaped nest of the Baltimore Oriole is a remarkable structure, taking into consideration the materials the bird has to work with and the tools with which she does the work, for it is Mrs. Oriole that usually constructs the nest. She receives no help as a rule from the male at this work, excepting his songs of encouragement and chirps of approval. To make a structure like this, a human being would not only require two hands with ten deft fingers and a darning needle, but also a select lot of materials and plenty of time. Mrs. Oriole hunts and gathers the materials from a thousand places, both far and near. She weaves and quilts her nest without any other tool than her bill. She works as a rule with her head downward while she holds fast with her feet to the twigs above, and she finishes the job in two or three days!

During the season of 1927, there were nine nests of this species in the trees by the side of the street above described, averaging one nest to each block of the street. Although only about one-half of the trees along this street are elms, yet eight of the nine nests were suspended from the elms. The ninth nest was on a soft maple. In elevation they were placed from nine to fifty feet from the ground or pavement. Four were placed directly over the pavement with hundreds of automobiles and other vehicles passing under them daily. Three of the nests were above the sidewalk and the other two between the pavement and the walk. Two of the nests were suspended from ascending limbs of small size. One hung from a horizontal limb the size of a walking cane. The other six were all suspended from the thin swaying, pendant, outer switches of the elms. Some of these were hanging at a distance of twenty-five feet or more from the main stem of the tree. One of the nests was not only situated directly over the center of the pavement but also a distance of only fifty-five feet from a railroad track over which trains pass every few hours both day and night. Whenever the wind blew from westerly points of the compass, this nest was enveloped by great clouds of coal smoke from every passing train. But this did not seem to deter the birds in the least for they were always to be seen near their nest tree during daylight hours, singing and hunting for food.

From the facts as above related we may safely draw the following conclusions: The Baltimore Oriole in this locality prefers the elm among all our native trees for its nesting site. It does not object to the presence of humanity, or their structures or mechanical contrivances near its nest. It appears to prefer to make its home near human habitations, for its nests are rare in the forest and away from human abodes. When, however, the elm is not present or near the place where it wishes to make its home, it will readily adopt some other tree, for in the season of 1926 I noticed a large wide spreading cottonwood standing alone on another street, which had three of these nests upon it.

Observations extending over thirty years lead me to the conclusion that the enemies of this oriole are not very numerous. Because of its wonderful agility and the fact that the nest is usually pretty well concealed and on a very flimsy and unsteady support, the hawks and owls do not molest it much. But on several occasions I have seen the Blue Jay robbing its nest and once I observed a Fox Squirrel taking a young bird out of an oriole's nest, running over the branches of the tree for a short distance, then dropping it to the ground. This was perhaps mostly mischievousness on the part of the squirrel, for it made no effort to devour the bird. So far as I am able to state none of the nine nests under especial observation during the season of 1927, were robbed. But after all the painstaking work of nest building and the patient brooding and carrying of food for the young performed by the parent birds, all that one of these nests yielded was just an ugly Cowbird.

Thus it is, that in every grand Symphony of Nature there must be at least one discordant note, else it would not be natural. But no one who is acquainted with the facts will deny that among all the beautiful and beneficial summer residents of the northern United States, which so richly earn and deserve our gratitude and admiration, the Baltimore Oriole stands at or very near the head of the list.—E. D. NAUMAN, *Sigourney, Iowa*.

## ORNITHOLOGICAL LITERATURE

THE ORIGIN OF BIRDS. By Gerhard Heilman. D. Appleton & Co., New York. 1927. Pp. 1-209. Figs. 1-142 and frontispiece (2 in color). Price, \$7.50.

This profusely illustrated work is the most recent contribution to the subject of avian ancestry. Part I includes a detailed study of *Archaeopteryx* and *Archaeornis*, especially the latter which the author had opportunity to study directly; and of *Ichthyornis* and *Hesperornis*. The conclusion is that on the basis of the skeleton alone *Archaeornis* is strictly reptilian. Part II is a comparison of avian and reptilian embryology. Part III is a theoretical application of the facts to form a phylogenetic explanation of birds. The final sentence runs thus, "In this way the reptile, through millions of years and innumerable generations, has been changed into a bird." The author's "this way" is far from clear and sufficient to the reviewer, but we know of no better presentation of the data.

We make this tardy reference to this work because the remainders have been acquired by the Union Library Association (118-120 East 25th St., New York) and are being sold at \$1.98 postpaid.—T. C. S.

VERTEBRATE NATURAL HISTORY OF A SECTION OF NORTHERN CALIFORNIA THROUGH THE LASSEN PEAK REGION. By Joseph Grinnell, Joseph Dixon, and Jean M. Linsdale. Univ. Calif. Publ. in Zool., Vol. 35, pp. i-v+1-594, figs. 1-181. Price, \$6.00.

This extensive report on vertebrate fauna covers a rectangular area lying about east and west across the eastern half of the northern quarter of the state, and including the Lassen Volcanic National Park. Field notes by ten observers and collectors, besides the authors, are used in the report. Again in this instance Miss Annie M. Alexander appears as the patron of the Museum of Vertebrate Zoology, under whose auspices the work was carried out. The text deals with the terrestrial vertebrate fauna, including 11 species of amphibians, 20 species of reptiles, 257 species of birds, and 99 species of mammals. The analysis of habitats as presented in this paper is particularly interesting and helpful. The numerous illustrations are of excellent quality and pleasing to the eye. It is a noteworthy publication.—T. C. S.

THE WOODPECKERS OF OKLAHOMA. By Edward Drane Crabb. Publ. Univ. Okla., Vol. II, No. 3, pp. 105-158, pls. 1-IV. 1930. Price, 75 cents.

Fifteen forms of woodpeckers are described as inhabiting Oklahoma, and one additional extirpated form, namely, the Ivory-billed Woodpecker, is listed. Not all of the fifteen woodpeckers discussed are known to nest in Oklahoma, however. It is reported that Red-headed Woodpeckers had been killed by poisoned grain placed to kill prairie dogs. A typographical error credits 100 genera of woodpeckers to North America, instead of 10. Under the topical heading "Description of Species" the author discusses not only the taxonomic characters, but also breeding and feeding habits, behavior, ecology, etc. This report does for the south-central part of the country about what was done for the northwestern corner by Neff's study of the woodpeckers of Oregon. Crabb's paper is issued by the Biological Survey of the State of Oklahoma.—T. C. S.

CALCULATING WATERFOWL ABUNDANCE ON THE BASIS OF BANDING RETURNS. By Frederick C. Lincoln. Circular No. 118, U. S. Dept. Agric., May, 1930. Pp. 1-4. Price, 5 cents.

An attempt is made in this paper to establish a law by which the total population of North American ducks may be estimated. It is assumed that the ratio of the total number of ducks banded in the preceding year (TDB) to the number of the same lot recovered in the following year (TDR) is equal to the ratio of the total number of ducks on the continent in the preceding year ( $x$ ) to the number of ducks killed in the following year and reported to the game authorities (TDK). In terms of ratio and proportion the proposition may be stated thus:

$$\text{TDB} : \text{TDR} :: x : \text{TDK}$$

The three values being known, the fourth value,  $x$ , or the total number of ducks on the continent for a given year, may be easily calculated. It is a very clever idea.

The ratio of TDB to TDR has been found to be remarkably constant over a period of years, averaging approximately 12 per cent. In the nature of the case, however, it must remain an assumption that the ratio of  $x$  to TDK is the same, since the value of  $x$  is unknown. We may grant that the laws of chance operate to control both ratios (TDB : TDR and  $x$  : TDK), but there are several well-known interference factors which can not be neglected, viz., 1) lack of control of reports of dead ducks, both banded and unbanded; 2) other mortality causes, such as alkali sickness. 3) disturbance of the breeding areas. Even if we grant that the laws of chance may operate to distribute the error equally in the two ratios, we are still confronted with the possibility that tagging may be done on a large scale in one part of the country, while killing may be done on a large scale in another area affecting a different duck population. Nevertheless, while we think there can be little certainty on any figures of absolute duck population as derived by this method, we do believe it is capable of yielding relative values from year to year, thus indicating fluctuations in the total duck population.—T.C.S.

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CHECK LIST OF THE BIRDS OF TOLEDO, OHIO, AND VICINITY. By Louis W. Campbell. Published by the Toledo Nature Study Society. [1930].

Two hundred and thirty-seven species are listed for the region treated. Mr. Campbell presents the list very modestly, and states that it is published primarily to assist in local study, while, nevertheless, it has been prepared with scrupulous care. Such local lists must be helpful to beginners, and should be encouraged.—T. C. S.

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OBSERVATIONS OF SOME BIRDS OF WYOMING. By Arthur B. Fuller and B. P. Bole, Jr. Sci. Publ. Cleveland Mus. Nat. Hist., Vol. 1, No. 2, pp. 37-80, pls. VII-XVI. 1930.

Three trips into Wyoming, in 1914, 1923, and 1927, furnished the material upon which the report is based. The list contains 122 species, 65 of which are represented by 172 specimens collected. No extensive bulletin on the birds of Wyoming has been produced since Knight's report of 1902 (leaving out of consideration Cary's ecological paper), and all contributions toward a new list must be welcome.—T. C. S.



OCCASIONAL PAPER NO. 3, UNIVERSITY OF MINNESOTA MUSEUM OF NATURAL HISTORY. 1930.

This pamphlet contains four ornithological papers, viz., "Some changes in the distribution of certain Minnesota birds in the last fifty years", by Thos. S. Roberts; "Breeding of the Connecticut Warbler (*Oporornis agilis*) with special reference to Minnesota", by William Kilgore; "Breeding of Nelson's Sparrow (*Ammodramus nelsoni*) with special reference to Minnesota", by Walter J. Breckenridge; "A hybrid *Passerina* (*Passerina cyanea*+*Passerina amoena*)", by Walter J. Breckenridge.

Paintings by Mr. Breckenridge of the hybrid and of Nelson's Sparrow are reproduced in color. We cannot avoid thinking that such valuable papers would reach a wider circle of readers, and thus be more generally useful, if published in the regular ornithological periodicals; and yet, conditions in the large institutions seem to encourage independent publication, even though science may not be best served.—T. C. S.

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BIRD PAPERS FROM THE VIRGIN ISLANDS. By Stuart T. Danforth.

BIRDS OF ST. CROIX. By Harry A. Beatty. Both reprinted from Journ. Dept. Agric., Porto Rico, Vol. XIV, No. 3, pp. 107-150. July, 1930.

Professor Danforth lists fifty-eight birds and makes comments on their distribution on the various islands of the Virgin group. Mr. Beatty lists eighty-eight birds which are found on the island of St. Croix, and gives various notes. A map of the Virgin Islands is included.—T. C. S.

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ENGLISH SPARROW CONTROL. By E. R. Kalmbach. Leaflet No. 61, Presumably issued by the Biological Survey, U. S. Dept. Agric. 1930. Pp. 1-8. Price, 5 cents.

This leaflet is a revision, with considerable abbreviation, of Farmers Bulletin No. 493 (1912, 1917, 1922). Information is given for combating the English Sparrow by trapping, poisoning, shooting, and destroying nests.—T. C. S.

The *Indiana Audubon Bulletin* for 1930 is again at hand. The leading article is by Dr. W. S. Blatchley, now one of the Nestors of Indiana. He tells of his observations on the bird life of Indiana of forty and fifty years ago. In these early years he had associations with Dr. David Starr Jordan and Dr. Barton Warren Evermann. Eighteen other short articles, including one by Dr. Amos W. Butler, make up an interesting bulletin of sixty-four pages.

Two numbers of the *Florida Naturalist* (July and October) have reached this desk. Mr. Longstreet gives an account of his work in banding Chimney Swifts. The news is given that the ornithological library of Henry Nehrling was acquired by Rollins College, at Winter Park, Fla. This magazine has been carrying a series of articles on the land and water mollusks of Florida; the writer has found the shell collecting game to be a very fascinating one.

The *Western Nature Study* for April, 1930, is devoted entirely to "Birds". This number makes a very useful teachers' handbook of general information about birds—and will be as useful in other parts of the country as on the Pacific Coast.

The *Wren-Tit* for April contains an interesting short note on the time limits of crouch-concealment in birds. A young Killdeer was observed to remain in a "freeze" state, without sound or movement, for 77.75 minutes. The circumstances surrounding this incident were rather violent and abnormal, but a new line of behavior investigation is here suggested.

Among the local mimeographed publications we record the appearance of the *Migrant*, prepared for the members of the Tennessee Ornithological Society (\$1 per year, Geo. B. Woodring, Editor, 1414 Stratton Ave., Nashville). Vol. I, No. 2, for September, 1930, consists of six pages, and contains short articles by R. A. Wilson, Dr. H. S. Vaughn, E. D. McNish, and A. F. Ganier.

Five copies (June, July, August, September, and October) of the *Raven* have come to us. Many migration notes of local interest are presented in the pages. The editor is Dr. J. J. Murray, Lexington, Va. Prof. Ruskin S. Freer is President of the Virginia Society of Ornithology.

We also acknowledge copies of the *Snowy Egret* for June, July, August, September, and October. The mimeograph of printing allows this monthly to have a new cover design for each issue. Local field notes with an occasional longer article fill the pages. It is published by H. A. Olsen and R. E. Olsen, at 1120 East Ann St., Ann Arbor, Mich. \$1 per year.

The May-June number of the *Flicker* (Minnesota Bird Club) is at hand, and contains notes on the nesting of the Barred Owl, by Stanley Stein, and of the Great Horned Owl, by Ralph Woolsey; and also a record of the 1930 spring migration dates, Alden Risser.

Inland Bird Banding Notes (Vol. II, Nos. 1 and 2, for March and June) has reached us twice. These pages carry a great deal of current information of particular interest to active banders, and of general interest also to others.

*Nature Notes from Yellowstone National Park* (VII, 1930, for June, July, August, and September) have been received regularly. The Wood Ibis (*Mycteria americana*) is reported as having been seen near Tower Falls in June. This is a second record for this species in the Park. Another item estimates the number of birds on the Molly Islands, as follows: White Pelicans, about 200 adults, 170 young; California Gulls, 400 adults, 250 young; Caspian Terns, about 20. Apparently these colonies are holding their own.

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## DUES FOR 1931

### ANNUAL DUES FOR 1931 ARE NOW PAYABLE

This is the Treasurer's first notice to all members that dues for 1931 are now due and payable to the Treasurer

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

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The Club values the continued support of every member, and every resignation is received with regret. Considerable financial loss is suffered by the organization in sending the March issue of the Wilson Bulletin to members who are slow in paying dues. While many of these delinquent members pay, a still larger number drop out without a resignation; the Club would probably save money by rigidly removing all delinquent members from the mailing list. Is this desirable?



**T**HE WILSON BULLETIN again extends the season's greetings to its readers. The past year has been a good one for us. Through the efforts of Secretary Shaver and his committee more than two hundred new members have been added to the roll. We have published three issues of the Bulletin of eighty pages each, and one usual issue of sixty-four pages. The last annual meeting, held in Des Moines, was our largest, and we are looking forward to a splendid meeting at Cleveland. We ask for the continued support of all our members, and their aid in securing new members.



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